

PRACTITIONER ENQUIRY REPORT

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Open Windows:

Becoming an e-learning school

What does an e-learning school look like? How does a school become an e-learning school? How is e-learning different from traditional teaching and learning?

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What does an e-learning school look like?

Introduction

The National Grid for Learning (NGfL) research report, *Transforming the Way We Learn: A vision for the future of ICT in schools* uses the term 'e-learning' to describe how information and communications technology (ICT) can change the way teachers teach, students learn and schools are led and managed. The term 'e-learning' is a new one for schools, and one which needs 'unpacking'. What does it mean?

The NGfL report says the term e-learning describes:

A range of activities, from the effective use of digital resources and learning technologies in the classroom, through to a personal learning experience enabled through individual access at home or elsewhere. Combined with established e-learning experiences, it can provide individuals with new and exciting opportunities to realise their academic and creative potential at their own pace. It also lays the foundations for effective life long learning.

There are many excellent ideas promoted in this report, but how close are schools to becoming e-learning establishments as described in this vision? Is it a case of the rhetoric being stronger than the reality; is the vision the rainbow which will lead us to the reality of the pot of gold at the end of it?

I wanted to find out first what an e-learning school looked like and secondly, if e-learning schools existed, what did they have in common? How did they become e-learning schools?

I visited one primary and six secondary schools. One of the secondary schools was in an educational action zone (EAZ) – with three primaries attached, and another secondary was part of a virtual EAZ. The seven schools I visited were well advanced in ICT capability. Not many schools will be as far forward as these seven in becoming e-learning establishments.

My data consisted of notes, audio recordings and video recordings of what was said in interviews with headteachers or their representative, and of the action I saw in the seven schools I visited. I was able to group statements together in order to make sense of the data and to find commonalities between the schools. The two main areas of interest in my questioning of headteachers were about gaining a vision and how the e-learning state had been achieved. But I had a strong interest in seeing what e-learning looked like in practical terms and I shall begin my report with what I saw.

What can be seen in an e-learning school?

The basics

Building an e-learning school begins with the foundations of learning to use software applications such as word processing, desktop publishing, draw, paint and PowerPoint in order to communicate and present information. Multimedia authoring, web design and computer assisted design also come within the category of presenting information. Students learn how to handle information, creating and interrogating databases, searching for and interpreting information and using the internet, CD ROMs, automated library systems and so on. They will experience control, through Logo for example, and control of devices such as models of traffic lights, burglar alarms, etc; data logging, eg recording temperatures in experiments; and spreadsheet modelling. Students will learn to review and evaluate their own use of ICT and will be aware of its use in society today. They will also be able to use ICT to communicate, for instance, through email and chat rooms.

As students become more familiar with these applications, they will be able to use the computer as a tool, as and when it is needed in their day-to-day learning.

Students in a primary school I visited access their day's work through the school intranet and work through their Individual Education Plan (IEP) to fulfil their educational needs. Each child has an IEP and the work is set up on the school's intranet. In this way, education is fitted for the stage each pupil has reached, rather than being aimed at the average for the class. These students are learning to become independent learners; the schools all believed that e-learning had the power to develop independent learners and this was what the schools most wanted to happen, or thought was actually happening.

Qualifications indicating proficiency in the use of some of the software packages can be gained through GNVQ, GCSE, AVCE (Advanced Vocational Certificate in Education) and Advanced Level GCE courses, mainly undertaken in Years 9, 10, 11 and the sixth form.

The GNVQ course was popular with schools at Key Stage 4 as it can be related to local circumstances, thereby establishing relevance for the students. Most of the schools I visited were constantly looking at the skills pupils arrive with in their first year at secondary school, and adapting their courses accordingly. Most schools reported that the skills of students at Key Stage 3 are now far in excess of those that the current sixth form students held on entry to the school.

Digital media

E-learning schools are using digital cameras in a variety of ways. In one secondary school I visited the physical education department had enthusiastically taken over the cameras to record students doing physical activities, for instance in the gymnasium, playing basketball and on the sports field. The video recording was the responsibility of any pupil not doing PE for the lesson and the images were downloaded onto each student's disk. The student could then take the disk away and have a record of an achievement during the PE lesson, but more than that, students were then expected to

analyse their performance and be able to discuss it with the teacher and class on a future occasion. This has greatly increased motivation as the students can see where a small adaptation in how they perform a particular action would reap dividends in improving their ability in a skill. This use of digital media is a good example of how ICT can be used as a tool to support learning, and lead to improved standards. At the same time, students are also becoming skilled in the process of digital recording, and are therefore learning ICT skills as well.

Schools are also using digital movie cameras as part of media studies courses, and the advent of the Apple technology has helped students and staff to edit video tape with ease. Lessons can be videoed and then played back to students. I have observed an English lesson in which students acted out a scene of Macbeth while it was video recorded on a camcorder. In a later lesson, the video was played back to the class and paused at certain points when the teacher wanted to draw attention to particular teaching points. In some cases, the student who was playing one of the characters was asked to think back to how they felt as the character at the time and to express their feelings to the rest of the class. This proved a powerful means of generating discussion and was an excellent way of helping students to recall feelings, what was said, and what happened before or after. As a teaching strategy it was a good example of hot seating and much benefit was obtained from it.

Digital video cameras are also used to record achievements and replay them to parents, for instance on parents' evenings. This gives the parents a clear visual picture of what their children are doing in school and highlights exciting moments which would otherwise have to be recalled by memory and words or still photographs. In some schools, students are given the responsibility to record special days, for instance activity days, and edit the film to produce for the benefit of parents or for other students in assemblies. Schools can build pictures to celebrate achievements over time, then edit and show the video at an appropriate time.

One school showed me their recording studio, where advanced level media studies students have created their practical piece for assessment.

At another school, digital video recording is being introduced to a creative arts programme in Year 7 as one of the activities. The idea is for small groups of children to research, prepare, record, edit and show what they have achieved with their digital video camera over a period of six weeks. It is believed that the students will learn the ICT skills through the means of media studies.

The British Educational Communications and Technology Agency (Becta) has run a pilot programme for schools on using digital video technology in the most creative ways (see www.becta.org.uk/teaching).

Music technology

In an e-learning school students have access to other exciting new technologies or software packages. In one secondary and one primary school, I observed students using music software which was motivating and exciting. It also had the capability to enhance the students' general ICT skills and gave opportunities for sharing their skills with each

other. An example was given of a student asking “how do you paste?” One answer was immediately given by another student, but then two further ways of pasting were offered. All three methods worked and had been given by the other students in the group. It is accepted that the teacher is not the only person in the classroom with the knowledge to take learning forward.

The music technologist at one of the schools pointed to several learning outcomes over and above that of making music, which was the prime objective for the lesson. He said that students were keen to listen to their own creations and to each other's; they continually assess their own work and invite comments from their peers and their teacher. In effect this means that they are evaluating their work as they go along, and improving it, rather than waiting for the teacher to assess it on completion. They have much more ownership of their work through this process of continual assessment.

The music technologist stresses that children are not isolated in their learning; they help each other and they believe that what they are doing is ‘cool’ – the highest accolade! Their sense of achievement in music raises their self-esteem. The headteacher of the school said that not only have the students’ IT skills leapt forward, but their love of music has gone through the roof because suddenly it’s brought together music they understand and are hearing all the time with the school. The main point to note here is that the students’ learning in school is relevant to their lives outside it, and therefore gives real meaning to their learning.

Using laptops

Once a school has a wireless network, a suite of laptops makes a mobile classroom. Instead of the class moving to the technology, the technology comes to the class. Broadband access to the internet makes information available at the touch of a button throughout the lessons.

Laptops can also be used with data projectors for presentations to parents, to a class by the teacher and to the class by students.

Sixth form students have used a laptop and video projector to prepare and present revision lessons. This is done in the belief that to be able to teach others what one knows is one of the best ways of being sure one understands and can remember the knowledge one has gained.

Laptops can be used to access the internet in lessons and the information projected on the whiteboard. Such information can be saved and referred to later.

Other uses of new technology

Other uses of technology include:

- video conferencing with other schools – particularly useful for the modern foreign languages departments, and to video conference as part of a teacher training programme
- using electronic notice boards to keep students and staff informed of important administrative details

- interactive whiteboards acting as touch screen computers visible for the whole class, which respond to the touch of a finger on the appropriate place on the screen
- recording student data – to record assessment grades, attendance and for all forms of routine administration
- setting up independent learning centres, sometimes establishing dual platforms – PC and Apple. They have networked the entire school, using wireless technology, and have their own extensive intranets, recording schemes of work, lessons, homework requirements and curriculum materials onto it.

One of the areas schools are looking at currently for a breakthrough is to find secure ways of establishing a home/school link so that students can access the work they do during the daytime when they go home in the evening (see section on teaching and learning (p33) for recent developments in this area). This would represent a big leap forward in home/school communication and opens the door for parents to become more knowledgeable and involved in their child's education.

How does a school become an e-learning establishment? The vision and the culture

We have seen what is happening in e-learning schools. Now it is important to see how the schools have achieved e-learning status. I talked to headteachers to find out how they gained their vision and how e-learning had been achieved.

The headteacher's vision

I gathered from my data that the vision and the action were closely interrelated and as the outcomes to actions became clear, the vision might change to accommodate what happened. The vision is often about learning – both students' and teachers' learning, and about the leadership and management of the culture in which that learning is undertaken. It is about increasing students' self-esteem and giving access to technology for all of them. It is about supporting teachers in learning something completely new and gaining confidence to use technology effectively. And the vision is about the resources needed, the hard-wired and wireless networks, the computers, access to the internet and the development of the school web sites.

So how does a school become an e-learning establishment? Michael Fullan (1993) says that such a change cannot be forced:

You cannot force (people) to think differently or compel them to develop new skills... new ideas of any worth to be effective require an in-depth understanding, and the development of skill and commitment to make them work.

Fullan also likens change to a journey, pointing out that, "You don't know what is going to matter until you are into the journey". This would support the view that headteachers will have a vision which is constantly changing and developing to accommodate new ideas and the evaluation of previous actions. Headteachers are unlikely to set out with a preconceived image of what their schools will become; their vision develops alongside the actions they take.

In my investigations into what an e-learning school could look like I have seen a range of e-learning, a range of schools, and a range of different visions. There were many similarities between all the schools visited but, perhaps significantly, each one had its own very unique character and was very different from each of the rest. The culture of the school became clear as the headteachers talked about their vision of ICT; the culture was the framework into which the ICT fitted.

The headteacher articulated a clear vision of what e-learning looks like in the context of his or her own school (see www.dfes.gov.uk/research for the report, *Establishing the Current State of School Leadership in England*, published in May 2002). This vision was usually inextricably linked with what had been done in order to bring about an e-learning culture.

From what headteachers said, I found that the vision for e-learning is a far reaching view of the school, taking on board the wide ranging possibilities that ICT offers now and in the future. The vision arises from the school's current context, priorities and practice, and the distinctive culture that has been built up by the senior leadership team.

The vision was shared by the senior leaders and teachers I met. In some schools the students also 'sang from the same hymn sheet', using the language that had been given to them by their teachers and was in common use. The e-learning culture had truly permeated the school; students talked about the development of 'our e-learning'.

Fullan advocates the necessity for shared vision and claims that the vision arises out of the experience of putting an idea into practice. He says that:

Under conditions of dynamic complexity one needs a good deal of reflective experience before one can form a plausible vision. Vision emerges from, more than precedes, action.

Perhaps this is why the vision and the action were intricately linked in what the headteachers talked to me about. Additionally, if headteachers want to work from a shared vision, they cannot simply tell the staff what they want and expect them to enthusiastically embrace the change. Fullan says that:

Shared vision, which is essential for success, must evolve through the dynamic interaction of organisational members and leaders. This takes time and will not succeed unless the vision building process is somewhat open ended.

This obviously has implications for the way in which the school is led and managed.

I analysed the notes and transcripts of the discussions I had with the headteachers and then grouped the development of e-learning into the following five different areas:

1. the distinctive culture of the school in which e-learning takes place
2. how the school is led to enable e-learning to happen
3. how the school is managed, including the development of resources and the development of the web site
4. the support that needs to be given to teachers
5. how teaching and learning can be developed

In this section I shall give a brief description of the culture of each school. The remaining four areas of interest will be described in the following sections.

The distinctive culture of the school in which learning takes place

The culture of each school was different, yet each school was well down the e-learning route. It is difficult to do justice to the culture of a school in a few words, so here I shall try to capture a picture of it in relation to the issue of e-learning.

Eggbuckland College

At Eggbuckland, a specialist technology college, it was accepted that having the vision and making it happen were of equal importance. The value system that drove the vision was that of empowering young people, and using ICT is a good means because “that is their world as it is now; they have more skill than the older generation, and they see the skills as everyday tools”. There was a strong belief in the value of personal and social education and community education, together with the development of the tutor as mentor, discussing targets set in key skill areas with students.

As a specialist school, the headteacher felt that:

We should be leading the way in transforming education and the way we can unite the whole college in making this happen is to focus on ICT.

The head acknowledges it was necessary to appoint someone dynamic and ambitious to lead these changes.

One of the changes this head believed in was opening up hierarchies, in particular to give young people opportunities to move and change things, rather than relying on teachers who had been in the organisation for a long while catching up with the internet generation. The headteacher believed that young people have skills “way beyond the expectations of employers and if employers don’t know that, then they are not actually going to be able to exploit that, which is missing this opportunity that this country has to use ICT to transform itself”. So part of the vision and the culture was also to educate employers to see things differently.

The school has developed a culture of leadership throughout the student and staff communities. The deputy head said:

Students are being taken through leadership programmes and being employed within the school as managers with job descriptions. They have responsibilities for training other students and there is this whole leadership model that’s going forward.

Through this, the students were living the experience of how a business was run.

In addition, there was a strong teacher training culture regarding the development of ICT; sustainable e-learning foundations were set up for funding purposes and research to look at teaching and learning styles was taking place in classrooms.

Eggbuckland College acknowledges that there will be difficulties to be overcome as they go along. Difficulties such as departments not putting the technology to its most effective use and running an innovative laptop group of Year 8 pupils and working out as they go along what the most effective ways of teaching and learning are in these circumstances. But being open helps; having meetings in which teachers, pupils and parents can air their views on the quality of learning that is taking place and how to develop the skills of independent learning.

Broadclyst County Primary School

Broadclyst County Primary School has a strong culture of developing the skills of independent learning for all pupils. There was also great pride taken in the culture of inclusive education which pervaded the school. Students excluded from other schools settled into the culture of Broadclyst School because it was seen to value the learning contribution of each student. One student, who had been reclusive and a school phobic in another situation, had blossomed here where he was encouraged to develop his musical talents and play the piano in front of an audience. There were other success stories of previously disruptive pupils settling to work within the context of a class of 48 pupils in the Year 6 class, and of pupils with physical and learning difficulties being absorbed happily into the classes. It will have helped that each child had his or her own IEP, so each child had targets to aim for.

Broadclyst School had 300 pupils, and in Year 6 each pupil had a state of the art computer in what was seen as a multimedia classroom, rather than a computer room. The thrust of the vision was that of 'developing human capital – what I am, can do and how I can do it'. Pupils would need skills in the working world which enabled them to be highly communicative, socially adept and empathetic, able to work in teams, and the school was working towards the development of these skills. The teachers were interested in developing breadth and depth, and were not content to give learning a narrow focus which they felt the National Curriculum, and testing in particular, was leading to.

Teachers and classroom assistants were greatly valued – "Teachers unlock the skills for all people, they hold the key to the country's future". The head's view of the adults working with children in his school was that they are powerful people and it is important that they showed the children that they value them as individuals.

A great strength of the school was that pupils were set work according to need and the work was open ended, thereby encouraging pupils to explore their learning further. Pupils at 11 years old were already using the computer as a tool; work was set up for them on the intranet so they were able to control their own learning. The school had pioneered a way of giving pupils access to the school network which enabled the pupils to reach the work they had done in school from home in a seamless fashion. The school believed it was at the forefront of this technological breakthrough and see it as a key development for the future.

Callington Community College

Callington Community College, a specialist sports college, focuses on teacher training and leading from the middle. My impression is of dynamic leadership, 'walking the talk' of the vision; being excited at the range of developments which crop up as people think, share and talk about what they are doing and how they can push the ideas further. The headteacher has encouraged one person within departments with a love of ICT to start the ball rolling; the idea is "she will share the practice and encourage other people to use it and gradually it will spread out. I find the key players who are going to make things happen and they will spread it. Then as soon as people see the benefits of it, then it snowballs."

“We don’t work in traditional ways” the head said. He was explaining a similar phenomenon to that of Eggbuckland College. Some of his senior team aren’t leading the changes of new technologies in the curriculum, but will support younger members of staff as they develop the ideas ‘from the middle’. This implies that older teachers do not take on board new developments and it should be remembered that this is not always necessarily so!

The culture of Callington Community College is one of training new teachers in a learning organisation. Training new teachers usually means that established teachers will learn from the experience also, and indeed a research culture is developing in the school through what are known as action groups. These investigate ideas for a period of time, put things into operation, or not as seems expedient, and then move onto some other aspect of school life. There is also a strong continuing professional development emphasis and a structure set up to support and recognise the importance of this. The culture is one of encouraging teachers to “create the state of mind where they can learn and develop”. The school embarked on a programme of ICT training with everybody, being trained by some of their own staff:

Most of the teachers are on the silver level of this training programme, and that got them interested; some are going through to gold now.

Networking with other schools and teachers is encouraged in order to stimulate thinking and teachers then need to be brave in taking risks to see if the vision can be made to work.

Fulham Cross School

Fulham Cross School was the one single sex (girls), 11–16 school I visited. It was a school of about 600 pupils and was particularly interesting because it was in the heart of London, and forty nine languages additional to English are spoken by the students at the school. It frequently absorbs asylum seekers, particularly from trouble spots in the world. There is an ethos of warmth and tranquillity within the school, and it was clear that students really valued their opportunities for education; participation in the English lesson I observed using laptops was enthusiastic and productive, and 92 per cent of students go on to further and higher education at post-16.

The school promotes a policy of equality of opportunity, and academic and personal support for the individual child. This policy is a central motivator for developing the ICT capabilities of the school. The headteacher’s vision was to ensure that all of her pupils were able to compete on an equal footing in the job market with other school leavers who might have come from homes favoured with their own personal computers. The school was anxious to address the digital divide in the sense that every opportunity was provided for students to access new technology and to become competent in its use.

The ICT co-ordinator had been particularly successful in gaining funds from outside the school to equip it plentifully with Apple laptops; the Apple provider worked hard to satisfy the demands being made on it in terms of technology and students used Apple Works for word processing, spreadsheets and presentation software.

The vision included the need for the school to serve its community well, setting up classes during the daytime and working through the EAZ with local primaries. The ICT co-ordinator supported the teachers in these primary schools, and the primary school pupils enjoyed the use of a suite of laptops to develop their basic ICT skills. Clearly this will mean that pupils arrive at Fulham Cross School more advanced and ready to move their skills on further at the transfer to secondary stage.

Greensward College

Greensward College is a large, mixed school with Technology College and Beacon School status, in addition to being a training school for initial teacher training. The headteacher strongly believes in the need for schools to change to keep up with the times. He points out that the basic elements of teaching have not changed over the last hundred years, whereas changes in, for instance, medicine have been transformational. He is anxious that learning should change; that students need to be engaged in their learning and that knowledge should be accessed in a different way. We should have moved on from filling students' heads with content – they need to learn how to learn, and e-learning can do just that. The vision for the way forward is through a managed learning environment in which students access and complete their work online, self or auto marking will be usual, and teacher workload would be reduced.

Greensward College is a long way down the e-learning road, and has developed an extensive web site through which students can access learning resources and materials. It is involved with several initiatives and is working hard to produce learning materials which can be shared by other schools, for a small fee. The fee would be necessary to finance the continuing development work which needs to be done.

The headteacher sees considerable scope in working with industry to develop ways of working which can be put to good use in schools, to bring learning under the control of the students, to make it more effective and to administer all aspects of the school online, including the application process for places.

The headteacher sees the importance of the development of entrepreneurs in the local community, and would like to develop the business capacity of his school to open out working opportunities for young people in the community. This is why he set up as a Cisco Academy, realising that Cisco training can bring work to some people who previously saw little future in a fulfilling and well paid working life.

All these developments have taken time – eight years to date. Heads need to be strategic leaders, and to entrust the day-to-day management of the school to others. The head needs to be out and about, looking for opportunities to develop learning, and bringing them back to school and making them happen. Consultation with staff is needed and this takes time – but also finding and knowing the 'right' people outside the school needs to be worked on.

Brooke Western College

At Brooke Western City Technology College the school day starts with a lesson 'interrupted' by breakfast. This is taken with the teacher at specified times during the lesson. The cafeteria is furnished with comfortable seats and good quality tables.

Students get their meal, sit down and eat it in a calm environment, alongside their teachers. Only students from the same year group are in the cafeteria at any one time; year groups do not mix there. The school day is further punctuated by a lunch break which is half an hour only, and again, each year group operates as a discreet unit. If students bring sandwiches instead of having a meal, they eat them in the dining room, and nowhere else. There is no outdoor play space and, indeed, no time allocated for lunch time playground games. The college provides strong support for its students through the role of the personal tutor, who is expected to act as advocate for the student.

The vice-principal explained the learning philosophy which had been set up at the outset of the college. Students choose the level of the curriculum they wish to work at, basic, standard, advanced, or extended. (See 'Fast Forward' in *Ldr* (July 2002, p11) for more detail, or www.ncsl.org.uk/ldr)

He says that the way to help everyone succeed:

... is to provide each individual with the most appropriate learning diet possible for their specific needs... those opting for a basic group are undertaking precisely the same journey towards a grade C or above; they may simply have a different ticket. (from Campbell, 2002, p10)

The school operates a dual platform computer system, with students opting to use an Apple Mac computer if it is more appropriate for the task they are doing. In terms of maintenance, the Apple computers were thought to be much less demanding. All departments are required to use ICT, and students would be critical if their teachers were not seen to be using new technologies.

ICT is ubiquitous, as is the wireless network. ICT was built into the teaching structure of the school since its inception, so its use now is advanced. Students opt to use it during a lesson as and where necessary, and there are clusters of computers at various points along each corridor on the three floors of the school. The internet is easily accessible, as is the school's advanced web site containing learning materials. All students take GNVQ ICT from Year 9 onwards, and the school is geared towards students developing independent learning skills from their arrival in Year 7. Students send completed work by email to staff, and teachers communicate with each other also through email. There are no staff pigeon holes for notes!

King Edward VII School

The headteacher of King Edward VII School in Melton Mowbray has reorganised his priorities in response to the need to provide an e-learning environment. He believes in the need to alter the previous balance between teachers and non-teachers, and has budgeted for each department to have a learning resource assistant (LRA) attached to it. The LRAs will be trained by the school so that they understand and can fulfil the role the school expects them to undertake. The school web site is a well developed learning resource and the intention is that the LRAs will keep their curriculum area up to date on the web and that it will be a rich source of learning materials. LRAs will also have the time to explore web sites which might be useful for the students' learning in the different subject areas.

The school has invested in a wireless network which enables any of the school's 580 laptops to access the network at any part of the school. Each teacher has a laptop and according to the school's ICT leader of development this has given rise to:

... a renewed rapture in learning for both pupils and teachers alike. We're experiencing an exciting shift in the learning process, from passive to active. Every teacher... is keen to discover new ways of creating lively, interactive lessons. Accessing and downloading information from the abundant range of online educational resources makes for a more stimulating multidimensional and involving lesson.

The school's vision is in the transformation of learning from students receiving it to students being active in the process of achieving learning. The learning agenda is in the hands of the student, but it is a developmental process. Learning has to be structured so that independent learning skills can be developed. For instance, the school started the process with its sixth form, requiring departments to write one of the five AS modules for the students to follow a programme of independent learning. They have also developed independent learning centres, where computers are available for students to access the information they need.

Staff development is seen as a key to the management of change through e-learning. The school has invested resources in a staff development suite with its own manager who designs courses for staff or supports individual requests for staff learning needs. This on-site learning facility enables the school to cope with training staff to keep up with new initiatives. So rather than expecting to be able to appoint people with the particular skills to see through an initiative, the school will either retrain its own people or appoint people who will be trained to be able to cope with a specific new initiative.

Commonalities

The cultures of the seven schools are different, but there are commonalities in aspirations.

In my analysis of the data raised in discussion with headteachers, which included their vision, culture and actions taken, the following common areas of interest can be identified.

1. Leadership

- leadership of e-learning
- hierarchies, distributed leadership and non-teaching staff

2. Management

- resources
- web sites
- laptops for teachers
- school development plan

3. Teacher support

- networking and sharing ideas
- providing teachers with laptops
- teacher training
- freeing up teacher time
- changing teaching styles
- school-wide monitoring of ICT use

4. Developing teaching and learning

The rest of this report will explore these areas further.

Leadership

SUMMARY

The leadership of e-learning was headed up in different ways according to the culture and staffing structure of the school.

ICT is changing the way headteachers run their schools.

A combination of strong central direction and distributed leadership can be an effective way of moving the school forward.

The role of non-teaching staff is becoming more significant as their skills receive greater recognition.

Leadership of e-learning

The leadership of e-learning was headed up in different ways according to the culture and staffing structure of the school.

In most schools e-learning was led by the deputy head/assistant principal, or another member of the leadership team, although in one school, the leader was the ICT co-ordinator who was not a member of this team. The leader was characterised by having considerable knowledge of ICT, a strong interest in teaching and learning, and the interpersonal skills to persuade teachers and others of the importance of their cause. Dynamism and ambition were cited as important personal qualities to drive the initiative forward as the IT world is moving so fast and schools need to keep up with the changes. There is an urgency to the development of e-learning in schools, which, it is believed in the schools I visited, will transform schools and education.

However, leadership of e-learning did not always follow the traditional leadership pattern. There were schools where the leadership was not so focused on a senior leader. In one such school the headteacher set the budget with the bursar, but thereafter leadership was distributed in the 'middle'. Teachers with a particular interest in ICT developments were asked to lead certain aspects of it. For instance, the PE teacher led developments with digital video recording, enabling students to analyse and improve their skills. This same teacher led the PE and ICT developments in the training school.

In a school where ICT developments were led by the ICT co-ordinator the senior leadership team is advised of the potential developments which the co-ordinator considered would be of benefit to the school. The leadership team, having little specialist knowledge of ICT, is happy to be advised by him. The headteacher recognises the need for generous funding of resources and funding for the time of the co-ordinator to do the job properly and is prepared to set this up in the school development plan. The co-ordinator feels well supported by the leadership team and is able to lead the developments within this structure.

Whatever the leadership structure set up in individual schools, there was a need for leaders to have the imagination to see how things might be and to have the drive and personal qualities to make them happen. It is also essential for them to be able to communicate effectively to senior colleagues, the staff, governors and computer companies what the school needs and how this might be realised; as well as communicating the excitement and beneficial outcomes of successful ICT integration into the school.

Hierarchies and distributed leadership

ICT is changing the way headteachers run their schools.

Some schools have moved to a model of distributed leadership, in which leadership has been given to those who showed enthusiasm, skill and knowledge in the area of development. It was felt by the headteacher of Eggbuckland College that this enabled schools to move forward rather than being hemmed in by how things had been done in the past. This headteacher thought that not only were many young teachers very confident in the use of ICT and prepared to experiment with its use, but so also were students, and they should be encouraged to take an active part in leading the developments forward. The development of ICT in the school was a way of freeing schools from hierarchies, and as the headteacher of Callington Community College said:

I find key players who are going to make things happen and they will spread the enthusiasm. You do it at all levels and it does work. Then as soon as we see the benefits of it, it snowballs.

(For more information on distributed leadership and leadership models see Section 8 of *Establishing the Current State of School Leadership in England*, published by the DfES at www.dfes.gov.uk/research)

However, the headteacher of Eggbuckland College also saw the need for someone to lead 'e-college development'. She had a sense of urgency about being able to drive the ICT development forward. The person appointed would have to be able to lead the whole staff in the fulfilment of the vision; he or she would need to generate great respect as a leader for, as the head said, "it was such a dramatic change to get 100 staff all working in that way from a standing start".

The head went on to say:

We haven't had people saying 'I can't cope with this, I'm going elsewhere', they haven't left the school. But it's been a really tough few years moving the school from there to here and it's all about those important messages and the support that's there – it has to be a holistic thing. We haven't just worked on ICT, we've worked on many other things like giving massive support for behaviour difficulties and sorting all of those things out that were critical. This is only my fourth year here and the first and biggest issue that the staff presented me with was to sort the behaviour out – the usual thing. I think you build up a trust that there will be support and tackle a few of the things that need to be tackled, and we did masses of work on the environment of the school in terms of improving the way

the school feels. We have spent a lot of money and a lot of time creating spaces within the school. They are still not perfect, but they are mostly painted and brighter, and that has given messages to the staff and students that we respect them and their basic needs.

A lot of the vision statements are really important – ‘this is the way we are going’. We say ‘you can’t resist this because if you do you are denying the future of young people’. We’ve been saying that we have got to be the kind of school that is fit to receive the children that are going into primary schools today. Will we be ready for them? Will we have teachers that are ready to receive them? Will they be trained enough? That all helps to change the culture, and then if you add the kind of expertise that the new deputy head has brought in, you have not only got the statements ‘this is where we are going etc’ you have got somebody determined and with the skills to make the technology work (and that has been quite painful at times).

And we are also giving the teachers something exciting, which is a vision of ‘we are at the forefront and aren’t we proud of that!’

Some schools see a need for a leader to promote the vision and to know what wants doing in order for it to be successful. They also recognise that within the body of the staff, leaders can emerge through their drive, vision and knowledge. It is also useful if they have good interpersonal skills.

Non-teaching staff

Not only can distributed leadership be effective in moving schools on, but so also can the redistribution of resources to give learning support assistants and technical staff a greater role in the school and more of a career structure. For instance, if the school needs a music teacher with skills in using new technology, but does not have one, they can employ a music technologist to support the department and teach alongside the regular teacher. In this way the department can also learn the skills that the newcomer brings to the classroom.

LSAs in Broadclyst School work alongside the teacher and are ready to help pupils both academically and with the technology when needed. There is considerable trust between the teacher and the LSA and both seemed to be equally respected by students and each other alike.

In all the schools which had technical staff on site these people played a significant role in supporting students’ learning, both through ensuring that everything works well and being very knowledgeable about the software, and being able to help students to use it effectively. In Brooke Weston College, at least one of the technical staff was very involved in training students in the use of digital media, and so was of considerable help to Advanced Level Media Studies students. King Edward VII School deployed a non-teaching member of staff to each department to secure the development of their departmental area on the school web site. They would have the time to surf the web for good internet sites for their department, an activity that busy teachers can find very frustrating. Amongst other things, this non-teacher would be expected to work with

teachers to produce the curriculum materials and resources that were considered essential to the development of online learning in each subject.

Management

SUMMARY

Without appropriate resources the job cannot be done.

All the schools declared their web site to be a key to the development of teaching and learning, although some web sites were more advanced than others.

Once teachers are able to take laptops home and explore their potential, the teachers' confidence in the use of new technology increases and the use to which teachers put ICT in the classroom increases.

All the schools had a clear strategy concerned with planning for the development of ICT, and some of them pointed to their school development plan as being the means for expressing this.

Resources

Financial resources

Without appropriate resources the job cannot be done. All seven schools mentioned resources as an important issue but one which didn't stand in the way of progress. The senior leadership team recognised the importance of budgeting for all aspects of new technology, including the personnel to support the developments. All the schools I spoke to seemed satisfied that they had sufficient financial resources to do the job they were asked to do properly, without having to make do with substandard or obsolete equipment, which would work slowly, intermittently or not at all.

Organisation of computers in school

There was no shortage of computers in the schools and some had moved into providing laptops for students in a big way. One way of doing this was to lease purchase a suite of 30 laptops. This has the advantage of being portable, so mobile classrooms were created as and when needed. This means that particular classrooms do not have to be dedicated to desktop machines and so provides greater versatility for the management of the school. Trolleys in which the laptops can be stored and charged when not in use were an essential part of this equipment.

Schools that encouraged the use of laptops were wireless networked so that the laptops could be used in any room in the school yet still connect to the school network and to the internet (see the section on wireless networks at p22).

Most schools still had dedicated computer rooms for the teaching of ICT skills. However, some schools had also been able to set up clusters of computers where space permitted, often as an offshoot of a department area, where desktop computers could be used independently by students. These areas usually had printers connected and were accessible for use throughout the day. The expectation was that students would leave

their classroom to work on a computer if they needed to do so during the course of a lesson. The implication of this is that teaching has changed to accommodate a new way of learning. Students are more in control of their learning; they can find information on the internet or process information in individual rather than whole class ways; they can choose how to set about a task.

In addition, schools had set up independent learning centres, often integrated with library facilities. These served as private study areas for the sixth form or as independent study areas for other students.

In some schools parents were encouraged to lease laptops for their children through an e-learning foundation (see www.microsoft.com/uk/education). The students bring the laptop to school and use it as and when required. Laptops could be seen in use in a range of classrooms, alongside students working with the traditional pen and paper.

In one EAZ, a suite of laptops had been purchased for the partner primary schools and the secondary school ICT teachers spent time in the primary schools supporting the class teachers to teach pupils the skills of using word processing, spreadsheet, desktop publishing and presentation software packages.

Other new technologies

Interactive whiteboards and accompanying projectors were located in several classrooms and teachers used their laptops to connect to them, and present their lesson material through them.

Some schools had invested in electronic notice boards and were therefore able to keep the school population informed of items of importance as the days went by. Reminders of key dates such as parents' evenings, dinner sittings and information about school visits are examples of the use to which electronic notice boards are put.

Wireless networks

Over recent years these schools had changed from hard-wired networks to wireless ones partly in order to enable laptops to be used in any area of the school (see www.becta.org.uk/news/wireless_networks/docs/naacetechbriefing.pdf). Access to the internet was a key element to the development of teaching and learning in school. Therefore the internet connection had to be fast and reliable with a broadband connection in order that many students could access it at the same time.

The Becta information sheet on broadband gives the following advantages:

- a connection which is always on at a fixed cost
- potentially much faster download times
- potentially the practical use of video and audio media
- lower prices than ISDN for comparable speeds (ie ISDN30)

- a move towards online video-rich delivered content to support teaching and learning
- broadband connections can change the way you use computer networks.

(see <http://www.becta.org.uk/technology/infosheets/html/broadband.html>)

Funding

Funding of all these developments is clearly important. Many schools were pleased to have received additional funding through the specialist schools initiative (SSI) or the EAZ, both of which required targets to be set and achieved over a fixed period of time. The setting of school wide targets was helpful in that the school was expected to establish its direction for the immediate future and usually a variety of teachers collaborated in planning developments and writing the bid. Training schools were able to use part of their allowance to support ICT developments as they were relevant for the teaching of new teachers. Grant maintained status had helped schools in the past to establish their computers; building up a business of developing and selling curriculum software was now helping some schools to bring in much needed revenue.

In some cases, schools have been supported in particular projects by industry.

Some schools acquired their hardware through leasing; this enabled them to keep up to date with new technology, replacing computers at an appropriate time, and being able to plan their expenditure over a period of three years. One junior school funded its state of the art multimedia computers directly from its existing budget: each child in Year 6 had his or her own; in Year 5 it was one between two; and further down the school, one between three or four.

Prioritising for new technologies and staffing

All the schools had prioritised ICT resources within their budgets. One headteacher told me how important it was to rethink resource priorities as teaching and learning developed through the use of ICT, not only in terms of hardware and software, but also in terms of staffing. The technical support for ICT was an essential part of the budget – the expansion of the non-teaching staff in schools is a significant feature of e-learning schools. In King Edward VII School, technical support had been carefully planned to the extent that, in order to service the laptops, the school had set up a Toshiba repair service centre on site. The technology does sometimes go wrong, and it is frustrating if servicing is not quick and efficient. Having technical staff on site is useful also for the support they can give to students in using the software applications, when not engaged in servicing the technology.

Having technical staff on site means they are a part of a team. In King Edward VII School the ICT systems team (the technical staff) is overseen by the leader of ICT development, who is a member of the leadership team and provides the link between the educational and technical side. There is then a systems manager and assistant systems manager, and this group of people organise the maintenance, purchasing and development of ICT resources in the school. Two further technicians complete the team.

Creative ideas for staffing

Schools have been creative in their approach to staffing. In order to counter the ICT knowledge and skills shortage amongst teachers, some schools have employed specialists in particular fields; for instance in music technology, to support the classroom teacher. They have also employed learning support assistants and trained them to be confident and competent when working with pupils and their computers. The schools are committed to developing their staff and much of the training is in-house, and therefore closely related to the job the staff have been employed to do. Training needs to be budgeted for accordingly, but staffing costs can be reduced through the employment of non-teachers to take on technical roles with no detriment to pupils' learning.

Freeing up teacher time

There was a strong feeling that technical experts should be employed to do things that teachers might struggle to do instead. For instance, King Edward VII School set aside part of its budget to employ people to put learning materials on the intranet (the 'within school' internet) and Brooke Weston College employed a software writing team to write course materials for the intranet. Greensward College believed strongly in paying people to help teachers so that they can get on with the job of teaching. Therefore, software to reduce teacher workloads and administration staff to support teachers were budgeted for.

Greensward College has put into operation an idea to support teachers in primary schools. Skilled sixth form students who wanted to take a gap year between school and university are encouraged to work in local primary schools in a technical capacity, thereby relieving pressure on teachers to service the machinery in order to keep the system going.

Fulham Cross School used a fully managed service for the support of the technology and declared it to be very effective; the company came out swiftly when there were problems and took a pride in making sure that they had provided the school with an effective solution. There was, therefore, no technical support team on site and this worked well for this school.

Web sites

All the schools declared their web site to be a key to the development of teaching and learning, although some web sites were more advanced than others.

What are web sites for?

Web sites are set up by schools as a means of communication and can act as a comprehensive guide to the school. Information about the school is available, together with the school prospectus, options booklets, plans of the site, a virtual tour of the school, etc. In some cases, schools advertise staffing vacancies through their web sites, and some schools display children's learning and achievements.

The most advanced web sites have curriculum learning materials available for students and it is also possible for lesson materials from interactive whiteboards to be saved and be accessible for students on their return home from school.

At Brooke Weston College, the prospectus points out that:

The most extensive section of the site is devoted to teaching and learning. A wide range of educational material is available for staff and students including programmes of study for all subjects with:

- learning objectives
- assessment criteria
- homework
- tutorials and online tests

Schools begin building up their web sites by focusing on information about the school. As they develop their use of ICT, they begin to see the need for students, and perhaps parents, to be able to access curriculum information and materials through the web site. It is at this point that they often realise they need to pay a worker to be responsible for managing and developing the web site. It is important that technicians understand the educational requirements and benefits of the web site so that the site is user friendly to pupils, teachers, parents and a wider audience of interested parties. Schools thought that the management of the site should be overseen by educationalists, working closely with the technical staff.

In some schools, for example Egguckland College, the web site is designed and managed by a group of students. This is in keeping with the philosophy of Egguckland College to involve students in the leadership and management of the school. The students responsible have produced a user-friendly site and clearly felt the ownership of it was theirs rather than that of the staff.

Laptops for teachers

Schools report that once teachers are able to take laptops home and explore their potential, the teachers' confidence in the use of new technology increases and the use to which teachers put ICT in the classroom increases.

Most of the schools I visited provide at least some of their teachers with laptops and have reaped the benefits of this initiative.

How do laptops help teachers?

Teachers use their laptops for a variety of purposes, depending on the school. For instance, in schools where wireless is ubiquitous and all staff have laptops, they are used for:

- registration
- email communications
- referrals concerning students
- accessing the internet
- preparation of resources for lessons
- administration (which might include maintaining a mark book)
- teaching with the aid of interactive whiteboards
- presenting lesson content through video projectors, and
- recording schemes of work and lesson notes.

However, not all schools can afford to provide all their teachers with laptops. In some schools, laptops are given to individual teachers as part of a recruitment package. In others, teachers can buy into schemes, set up by the school, which make the computer affordable. Alternatively, departments are given the use of a laptop, and whoever has responsibility for it is expected to learn from it and share their knowledge with members of the department.

Teaching with laptops

The laptop is frequently linked by teachers to electronic whiteboards through data projectors. In this way, resources for lessons can be stored ready for use (including clips downloaded from the internet) and presented to students as an exciting visual display. Another great advantage of lesson planning on laptops is that teachers can share good lessons within their departments by putting their work on a shared area for others to use, so that it is not necessary to keep reinventing the wheel in terms of lesson planning. This idea could be extended to groups of schools; a network of teachers sharing lesson planning could greatly reduce the teacher's workload.

In Eggbuckland College, which has set up a laptop group of students in Year 8, all the group's teachers have their own laptop, and there is a programme of support (see the section on teacher support at p28) of which teachers are expected to take advantage. In this initiative, teachers are expected to be creative in their approach to teaching, using their own laptop with which to learn and explore new ways of teaching, and making the most of the laptop facility for the students' learning.

School development plan

All the schools had a clear strategy concerned with planning for the development of ICT, and some of them pointed to their school development plan as being the means for expressing this.

All the specialist or EAZ schools have to draw up a plan which details targets set, how they would be achieved and budget requirements as part of their bid for further funding.

The plans set a clear direction for the school over the forthcoming three years. It is here that resources are prioritised, decisions made about the deployment of learning support assistants, the purchase of hardware and software, upgrading the infrastructure, and how teaching and learning will be developed.

Teacher support

SUMMARY

Most schools were strong at networking and sharing ideas.

A major area of support for teachers is providing them with the hardware to develop their ideas and confidence.

Teacher training was an essential factor in the support for teachers in the use of ICT and was rated highly by all schools.

The main thrust of these e-learning schools was to develop teaching and learning with a view to improving learning, so the idea of freeing teachers to do the teaching came across strongly.

All the schools had been working on the development of teaching. The most succinct way of describing this is that the teachers were moving from the role of pedagogue to that of facilitator, or as one headteacher put it, from “the sage on the stage to the guide on the side!”

Most schools had put in place a system of monitoring how extensive and effective the use of ICT facilities was in departments.

The main areas of support for teachers were as follows:

- networking and sharing ideas
- providing teachers with laptops
- teacher training
- freeing up teacher time
- changing teaching styles
- school-wide monitoring of ICT use

Networking and sharing ideas

Most schools were strong at networking and sharing ideas.

Apart from face-to-face sharing of ideas, the schools used the intra-school network for sharing ideas, experiences, standard letters and so on. Email was a favoured means of communication. In this section I shall consider the informal links within the school and those which take place with people outside it.

The smaller schools found that being able to communicate between teachers was not a great problem. Communication was perceived as happening informally in the staff room and people were always willing to ask if they wanted help and to give help when they heard of a problem that they had solved previously.

Networking for Fulham Cross School involved the EAZ ICT co-ordinator visiting the school on a weekly basis and supporting the teacher with the development of learning through the use of laptop computers. The school also employed an administrator/classroom support assistant who spent some time at the 'home' school and some time with the EAZ primaries. This was budgeted for in the bid to become an EAZ school.

Ideas and developments came from interactions with other people, through attending conferences and courses, through keeping an eye on significant web sites (eg Becta, TC Trust, DfES, NGfL, NCSL, etc), through reading books and the educational papers and from interactions with industry.

Schools look at industry and adapt ideas which they think will work for them. Greensward College had worked particularly hard on its relationships with the government and industry, and hopes to influence government thinking so that it can develop the entrepreneurial side of its work. The headteacher creates his networks by talking to industry, seeing what they are doing and forging productive partnerships with them.

His description of his partnership with Cisco is particularly significant. He told me how he had heard John Chambers, the CEO of Cisco, talk passionately about his vision of the future for Cisco, namely that they would train youngsters to become network engineers capable of earning \$35 000 per year. At the same time they would fill a skills gap in the labour market. The head was inspired by what he heard because he recognised an opportunity to give students in his community better life chances, so followed John Chambers out of the room and said, "If you're setting up academies in the UK I want to be the first!" The partnership flourished and now there are 400 academies in the UK, 30 of which are attached to Greensward College.

So how does he network?

Well first of all you've got to be willing to do the miles. I'm not here a lot – I visit companies and look at how they work – I press the flesh! I go everywhere I think would help to develop ideas and widen the already varied network of people I am in contact with.

Providing teachers with laptops

A major area of support for teachers is considered to be providing them with the hardware to develop their ideas and confidence.

An evaluation of the Computers for Teachers scheme (published in 2001 – see <http://cft.ngfl.gov.uk/>) by Becta reported from a survey of teachers that those who had good access to computers – either laptops or desktops – through the government's scheme:

- use the computer for administration more than previously
- use it for everyday tasks
- recognise the value in use of ICT in teaching
- can download documents

- can engage in online purchasing
- have improved pupils' motivation
- have increased their own confidence in using ICT in teaching
- have increased their skills in using Microsoft Office (word processing etc)
- are confident and frequent users of email
- are experienced users of web sites

Schools that had provided their teachers with laptops reported a great surge in interest, motivation and confidence in their teachers. The teachers take the laptops home and experiment with them, particularly as they have internet access. This willingness to take the learning home and spend many hours on it demonstrates that these teachers are willing to 'go the extra mile' (which has been described as a characteristic of teachers in outstanding specialist schools). (See report from the National Foundation for Educational Research (NFER), *High Performing Specialist Schools: What makes the difference?* (2002) – the summary can be found at www.nfer.ac.uk in the completed research section.)

Teacher training

Teacher training was an essential factor in the support for teachers in the use of ICT and was rated highly by all schools.

There were different approaches in each school. Most schools reported that there was a continuous informal sharing of ideas and solutions to problems between teachers.

Most schools took responsibility for their own in-house ICT training.

Eggbuckland College set up weekly sessions which teachers were expected to attend if they were unsure about the use of ICT. In particular, teacher training support was encouraged for those teachers responsible for teaching the laptop group of students, and for those teachers in departments who had the regular use of an electronic whiteboard. Callington Community College believed that staff had been motivated through their training programme which was run in-house, and formed a part of their carefully structured staff development programme which rewarded teachers for reaching certain levels. Callington Community College had set up action groups for teachers to study particular areas of teaching interest; these had to report back within a certain period of time disseminating what they had learnt.

Using video conferencing to revolutionise teacher training

Callington Community College used ICT to develop their initial teacher training (ITT) programme. As a training school, they had set up video conferencing in their staff development suite so that remote lessons could be recorded and watched in real time by student teachers. For instance, a basket ball lesson taken by one of the school's teachers could be watched by the ITT students in a different room and teaching points made while the lesson is in progress. When I visited the school, the Physical Education staff was on the point of developing a coaching connection, so that the teacher teaching in the sports hall could be communicated with through the technological link. Thus, advice could be given contemporaneously, for example "Watch the group in the top corner, they're going off task!" Or, "See the group in the middle; they're really getting the idea. Give them some praise!" Clearly the technology could be used as a staff development tool for the established staff as well and could apply to a range of classrooms. One of the difficulties in coaching teachers is that the dynamics of the room changes when there is an observer in the room. With this idea, there is no intrusion of a second teacher.

Using in-house television as an innovative approach to teacher training

Greensward College has developed an interesting training idea, called the Teaching Heads' Project, working with industry to support their ideas. They have set up specific classrooms with television recording equipment in which to deliver demonstration lessons. An advanced skills teacher (AST) has been detailed to draw together learning materials, and to work with the company to write online materials, thereby making a marketable series of lessons.

Schools can buy into the package at three different levels. At level one, a school could buy the materials for a series of lessons. Level two involves an experienced teacher teaching the lessons, recorded in the TV studio (the adapted classroom) and the video sold for other schools to use according to their need. At level three, the video is sold alongside an inset commentary from an experienced teacher talking through the important points for the trainee teacher to note. For instance, the 'teaching head' could be saying, "Look at the board at the start of the lesson, there are my objectives – watch how I go through them so that the students know where the lesson is going". Or, "Here are some questions and answers with some real zip to them – now rewind the tape and look again".

This training idea was developed in order to counteract the shortage of teachers and the need to train them in schools. Instructors, returners, newly qualified teachers, teachers whose expertise in the content area is not secure and ITT students can all benefit from using the technology in this way.

Examples of staff development programmes

Some schools have advanced staff development programmes. Brooke Western College has 10 training weekends booked into its annual schedule for teachers and it also runs training sessions after lessons finish; teachers are contracted to be on site from 8.30am till 5.00pm. It has a two-week induction of staff before the year starts in August, and when teachers are new, they are teamed up with an experienced teacher so that they

can pick up the traditions of the way the school works. For instance, students are expected to use the computers as a tool, so will organise their work accordingly, which might mean that they go to a computer at any time in the lesson. Teachers are expected to use technology in the delivery of their lessons; this expectation is part of the culture of the school, and students would raise questions if the teacher consistently failed to use the available technology to make the lessons exciting.

King Edward VII School has established a staff development suite, separate from the rest of the school, and has built up a tradition of training all its personnel – teaching and otherwise, to fulfil the role to which they have been appointed. The headteacher decided that, in order to make possible the initiatives that the school wanted, new recruits would need to be specifically trained to do the job required. Much of this training is in ICT, and the budget takes account of the need for the training organisation to be led and managed by an experienced member of staff.

Freeing up teacher time

The main thrust of these e-learning schools was to develop teaching and learning with a view to improving learning, so the idea of freeing teachers to do the teaching came across strongly.

This was seen in the deployment of technical staff, learning support assistants and software writing staff (see section on non-teaching staff at p19).

But it was also seen in the use of software for administration. For example, Greensward College was aiming to receive applications for pupil places online from Autumn 2002. Greensward was also keen to use software which enabled teachers to assess students' work for the development of learning rather than assessing it to see if it is right or wrong. For instance, software can analyse a class's response to a test, enabling the teacher to see whether particular areas of the curriculum have been well learnt or might need revisiting.

Brooke Western College was also working at developing online assessment. Here they were keen to offer parents the option of receiving information about a child's progress over the internet, and to send standard letters to parents online rather than as hard copies. These developments could have significant implications for freeing up teacher time, but the corollary might be that they would be likely to increase the work/time of administrators.

Eggbuckland College has been working on collation and analysis of data on key skills. They have been identifying the key skills of each subject, and once the key skills have been assessed, teachers can record them in a specially constructed database. Reports can then be printed off and distributed. The school has found that collation, reporting and printing time are all less than for previous methods.

Consistent with the schools' aims to improve pupils' learning, these ideas on assessment and recording were not just technological exercises in data collection. All the schools were working on individual student target setting and particularly on ways of mentoring and supporting students to achieve their goals.

Other time saving developments for teachers in e-learning schools have been seen in the provision of laptops for teachers.

Changing teaching styles

All the schools had been working on the development of teaching. The most succinct way of describing this is that the teachers were moving from the role of pedagogue to that of facilitator, or as one headteacher put it, from “the sage on the stage to the guide on the side!”

This is mainly coming about because students have access to a rich source of information, and can present information in a variety of different ways. They are able to be more in control of their learning, and can explore the technology creatively to find solutions to problems.

Teachers are able to present information in lessons differently through the use of their laptops and data projectors. They are able to explore learning through the different applications on the computer, through digital media and through many software programmes and the internet.

Thus the technology revolution benefits teachers and students alike.

It comes at a time when there has been a lot of interest in the development of teaching through the accelerated learning movement. Teachers understand more about the development of the right and left sides of the brain and the need to engage both sides for all round learning. They are more aware of recent brain research which highlights people’s multiple intelligences. Accelerated learning strongly advocates the need to promote learning through visual, auditory and kinaesthetic means. Using new technologies to achieve this is an ideal way of changing teaching so that it offers a range of learning styles for students.

For instance, lessons can begin with a quick revision session – auditory (listening to instructions), visual (seeing what has to be done) or kinaesthetic (interpersonal discussion in pairs). The lesson moves on to the presentation of new material through digital media (visual and auditory), followed by a range of different responses which could involve students using the computer to explore ideas, find information and present their findings. The presentation can be through PowerPoint, or emailed to the teacher, or a hard copy.

Some of the schools have shown particular interest in using the laptops for students to teach one another through PowerPoint presentations, using laptops to project the ideas to the rest of the class using a data projector and screen.

Schools are also experimenting with a lecture approach to learning. This has been seen to be appropriate in Greensward College in whole year group presentations of SATs revision materials.

School-wide monitoring of ICT use

Most schools had put in place a system of monitoring how extensive and effective the use of ICT facilities was in departments.

Most leadership groups monitored the use of new technologies within departments. In order to encourage the use of ICT, some schools required departments to outline their expectation of use in their development plans. Sometimes targets were set for departments, and sometimes departments which didn't use the technology sufficiently incurred the penalty of seeing it removed and given to another curriculum area. However, most departments used what facilities they had avidly. In some schools there were requests for more, but in others, the resources seemed to satisfy the needs.

Most schools had set up an audit system whereby heads of department were expected to inform the leadership team about their ICT use for the previous year and their planning for the following year, either in written form or as a formal presentation.

Developing teaching and learning

SUMMARY

All the schools were concerned to develop teaching and learning, and saw e-learning as a significant way of doing this.

In most cases, headteachers talked about teaching and learning before they explained where they were in terms of e-learning. The philosophy of the school in relation to teaching and learning was more important than the description of infrastructure and how many computers and other technology they possessed and how it was used.

However, it is also true that the changes to teaching are intricately bound into the developments of the technology and to separate them is difficult.

The schools at the forefront of e-learning try out new ways of teaching and are open in discussions in order to decide on the ways forward. They were not afraid of acknowledging when something didn't work. As one school said, "If it doesn't work, we will try a different model".

One headteacher says that since introducing many ICT initiatives he has already seen enormous improvements in pupils' learning, behaviour and technical proficiency. Other schools report similar progress.

A review

All the schools were concerned to develop teaching and learning, and saw e-learning as a significant way of doing this. Evidence of commitment to teaching and learning was often heard in the articulation of the vision by the headteachers.

For instance, the vision for the head of Greensward College is about the crucial importance of engaging students in their learning so that they want to learn. He talks about giving students better life chances and producing "world class student outcomes". The head of Eggbuckland College has the vision of new technologies transforming education and changing schools as we see them now. She raises questions about the purpose of schooling – after all, if people can use the internet to find all the information they need, why come to school? In common with other heads, she believes that students need to be prepared for working in groups and teams, and that they need to learn the interpersonal skills that would be impossible to learn in an environment where the main communication was between child and computer only. She believes students should be part of the leadership learning community, and have a career structure within the school, so that they are learning and living the skills they will need for adult life.

The Broadclyst School head talks of the need for students to become highly communicative, empathetic and socially adept. Brooke Weston College's philosophy is consistent with this view also, believing that personal relationships are very important. The school believes in egalitarianism and structures classroom learning into four levels,

which the students are taught to understand and to use appropriately (See 'Fast Forward' in *Ldr* (July 2002, p11) for more detail, or www.ncsl.org.uk/ldr)

In most cases, headteachers talked about teaching and learning before they explained where they were in terms of e-learning. The philosophy of the school in relation to teaching and learning was more important than the description of infrastructure and how many computers and other technology they possessed and how it was used.

But the changes to teaching are intricately bound into the developments of the technology and to separate them is difficult. I have already given examples of how teaching has developed in previous sections of this report. Examples include

- use of laptops
- web sites
- electronic whiteboards
- networking and sharing ideas
- teacher training
- changing teaching styles

In this section I shall select two further examples of the development of teaching and learning through the use of ICT. These are:

1. the setting up of a laptop class of Year 8 students at Egguckland College, and
2. the development of 'the future classroom' at Broadclyst School

A laptop class of Year 8 students

The laptop class is different from all other classes in the school, in that:

- it is a mixed ability group
- each member of the group has a laptop of his or her own
- the group stays in the same classroom for most of its lessons
- the students have structured meetings with their teachers to discuss the way in which the class is being taught
- the parents are invited into school to discuss the teaching and learning of this group

The group of 32 pupils was selected from about 68 parents who volunteered to lease purchase a laptop for their child (see www.microsoft.com/uk/education).

The pupils were selected because the school wanted, and said so at the outset, a mixed ability group, the 'right' proportion of girls and boys, and either wanting all to study French or all to study Spanish, to avoid clashes of the timetable. It was felt that the quality of the internet sites was good enough to provide for appropriate differentiation to cope with the mixture of ability.

The school talked with parents about a number of teaching and learning models which the class might follow, and I watched a lesson in which students were teaching each other about the anatomy and physiology of the ear. They used their laptops, the data projector and screen, and diagrams and notes made from internet sites they had visited.

In a previous lesson they had been class taught about frequency and wave length, so the teaching methods included a mix of encouraging students to explore information for themselves and discuss it in groups, and the delivery of information to them by the teacher.

They worked in groups of three and had designated a certain role to each person within the group, for instance researching internet sites, recording notes for a presentation, checking the presentation or being the lead person in making it. Each group was given a different aspect of the topic to research and present, so each presentation would be giving different information. Questions were asked at the end of the presentation and the group had to be able to answer, thereby deepening their own knowledge and helping others to understand.

They would be assessed on certain key skills, rather than on the knowledge they had gained. The idea of students teaching other students was thought to be an effective way of developing students' learning, and was used in other schools also. The students had had quite a lot of help in coping with this model of learning. Each department was asked to try out this idea of peer teaching once and evaluate how effective they thought it was. Discussions would take place with parents as well and with a researcher from the University of Plymouth who attended the lessons and was interested in the approach Egguckland College was used to trying out new ways of teaching. Egguckland was open in its discussions with students and staff in order to decide on the ways forward. They were not afraid of running pilot projects and watching the outcomes. They were not afraid of acknowledging when something didn't work – "If it doesn't work, we will try a different model".

The future classroom

I visited Broadclyst School and observed the Year 6 classroom. There were 48 pupils in a multimedia classroom, following a total interactive multimedia system, in which each child has a computer and uses it as and when required during the day. A teacher and classroom assistant work together with the pupils. Tasks are assigned to pupils who can email their response on completion. The software enables the child to draw up a task list which shows learning objectives and potential outcomes. The pupil can then manage his or her own learning throughout the day, from time to time interacting with the teacher or other pupils.

This was described in the year 2001 as 'the classroom of the future' by the Government's Learning and Technology Minister, Michael Wills, who visited the school to see for himself the initiatives taking place there. The headteacher, Peter Hicks writes:

The classroom of the future has children, teachers and teaching assistants. It is a truly dynamic place where natural curiosity abounds and learning is an enjoyable and valued experience involving intellectual rigour and extension. This learning has a real bearing upon real life and is centred upon bringing about opportunities for each and every student, whatever their innate capabilities, to reach out and to aspire to the highest with the professional support and determination of teachers.

The teaching staff in the classroom of the future are respected and recognised not because of their position but by their substance, the actuality of how they are able to lift up their students, by the capabilities that abound within and around them...their energy, their excitement about learning and their genuine engagement with their pupils.

The school is using the web site www.the.educator.co.uk to track pupils' assessments and set up targets for them, thereby enabling an individual education plan to be organised for each one. Microsoft Class Server (<http://classserver.msn.com>) is then used as a web-based curriculum management tool, allowing teachers to set up their own curriculum content and plan their lessons. (For a description of how this works in practice see 'Fast Forward' in Ldr, July 2002, p13, or www.ncsl.org.uk/ldr)

This school is using Microsoft's class server to establish a home/school link, which is a revolutionary and exciting development, ensuring a seamless connection between work completed at home and at school. A press release dated 21 March 2002, introducing a visit of Russian Spacemen to the school, states:

And the Russian pair will not only be giving pupils and parents two fully illustrated talks on manned space flight during the day, but also formally switching on the school's new ground-breaking Home School Learning (HSL) computer initiative – the very first of its kind in the UK, and described by Alexander Martynov as 'simply out of this world'.

Pioneered by Headteacher Peter Hicks and Deputy Head Jonathan Bishop, the HSL initiative gives every Broadclyst pupil the chance to be able to continue with their school work from home at any time of the day, and even during weekends and holidays, via personal computers (PCs) linked directly and securely with the school.

The press release goes on to say:

Since introducing the many ICT initiatives at Broadclyst Community Primary School, Headteacher Peter Hicks says he has already seen enormous improvements in pupils' learning, behaviour and technical proficiency, and comments:

'Staff and parents are all very much aware of the tremendous progress our children are now making. Our new Home School Learning initiative, the first of its kind in the country, will make the education process fun and something in which pupils can participate with their whole family and in their own homes. It's safe, secure and makes learning fun for all.'

So how is e-learning different from traditional teaching and learning?

For e-learning to take place, teaching has to change, schools have to be equipped with the technology to open out learning, and students need to approach learning in a different way. From exploring the data of this study, I suggest that the following important differences can be observed in e-learning schools.

How does e-learning work for students?

- Lesson content is presented in more exciting ways, using new technologies such as laptop computers, interactive whiteboards, digital media, software and the internet. These stimulate the learner, using a combination of visual, auditory and kinaesthetic learning styles.
- Students are guided to find things out for themselves, or to solve problems using the technology, rather than seeing the teacher as the fount of all knowledge and waiting to be fed the information they need. There is a shift from passive, maybe rote learning, to an active searching for knowledge.
- Students accept that their peers and adults other than teachers give effective help to enable them to move forward. Learning isn't mediated only through the teacher.
- Students can be in control of their learning – they can plan a day's work around the targets set through software programmes such as Microsoft's Class Server, or set by the teacher.
- Students do not need to rely solely on the teacher for feedback on their work – computer systems are being developed which either mark work for them or enable them to self-mark. Immediate feedback is therefore possible, and this is very motivating.
- Students can work at their own pace and follow areas of their own interest.
- They can access sources of information independently and do not need the teacher's instructions in order to do this.
- Students can present their learning in varied formats. It can be colourful, neat, spell-checked, exciting and with audio or visual accompaniments.
- Presentation of work gives good opportunities to develop oral skills in the presenter, and listening skills in the recipients.
- Students can work in groups to solve problems or to explore information, so learn to accommodate to each other, to allocate and share roles, and to develop work related interpersonal skills.
- Assessment systems are in place which can record and report on students' progress every few weeks (eg 6 or 8 weeks). These reports form the basis of discussion and target setting with students. The form tutor takes on an important role here.
- The curriculum can move from a content base to a skills base.

How does e-learning work for teachers?

- Teachers relinquish ideas of controlling students' learning – they need to enable students to set their own learning agendas within specified aims and objectives.
- Teachers can save and share good lessons through the intranet, thereby reducing workloads, and increasing versatility.
- Teachers can download lesson plans and materials to support them.
- Teachers can access a large range of materials from a single source – their computer, instead of having to go from filing cabinet to cupboard in the search for good resources.
- Teachers can track, record and report on students' progress more easily using the technology and software available.
- Teachers can take advantage of the managed learning environment which, when fully developed in their schools, could reduce work load significantly, and enable both teacher and students to understand better the 'big picture' of learning.
- Teachers will have more time to spend working with students and will be less bogged down with administration, marking, and preparation of lessons.

Conclusion

So is the rhetoric that e-learning will transform learning stronger than the reality? Is it happening?

It is clear that some schools have understood the challenge of e-learning and are well down the route, but there is a range of schools behind them. How will they catch up?

Pouring money into schools which are not at the stage of e-learning reported on here will not of itself transform schools and learning. So many other factors have to be understood and in place, and these have been seen throughout this study. Inspirational leadership, good management, support for teachers, developing teaching and learning all have their place, but it is salutary perhaps to reflect on the concluding paragraph of the recent NFER/TC Trust report, *High Performing Specialist Schools: What makes the difference?*

It must be stressed once more, however... that there are no easy solutions, no 'quick fixes' and no instant recipes for success even for schools of this quality. One of the main ingredients of success in any school is the continued hard work of staff and students, and the interconnectedness of all these activities. Without these key ingredients, the other factors are unlikely to make any significant impact.

However, it is to be hoped that hearing how others schools have achieved the e-learning state will encourage and inspire others to follow. E-learning certainly has the potential to transform schools, teaching and learning. But it is more than an initiative; it is the future school, capable of producing, as one headteacher said, "world class student outcomes".

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School web site addresses

Broadclyst County Primary School
www.bcps.org.uk

Callington Community College
www.callingtoncommunitycollege.co.uk

Eggbuckland College
www.eggbuckland.plym.sch.uk

Fulham Cross School
www.lbhf.gov.uk/council_services/education/schools/secondary/fc.htm

Greensward College
www.greensward.essex.sch.uk

King Edward VII School
www.ke7.org.uk

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