

Cambridgeshire Schools Broadband Project
Impact Evaluation Survey – November/December 2002

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Summary

This report summarises visits to 40 Cambridgeshire schools in late 2002. The purpose was to produce a snapshot of the situation in broadband schools and to register any evidence of early impact on teaching and learning. It is necessary to take account of other parallel ICT developments in schools.

The reliability of an always-on internet service has had a rapid effect in many schools, particularly on teachers' confidence. There has been an impact on whole-class teaching and internet use has become embedded into curriculum planning.

Pupils are keen to use the enhanced facilities in their schools and broadband is allowing many pupils to achieve more in the time available.

Using websites to obtain educational content is currently the most common use of broadband. This has boosted the role of ICT to support learning across the curriculum. There is interest in using other services such as videoconferencing and on-line learning environments.

Broadband allows teachers to raise the level of the learning activity by setting more challenging tasks and focussing on evaluation.

Schools are mostly using free websites rather than on-line subscription services at present. There is some decline in the use of CD-ROMs.

Broadband has made some professional development more effective, but there are management issues to resolve before on-line learning becomes a regular part of in-service training.

The work of the broadband clusters was undermined by the delay in the roll-out, but some schools are still collaborating effectively.

Technical support is an ongoing issue as systems become more complex and extensive and teachers and pupils require access routinely.

A few schools are using their networks to make management information more widely available to teachers.

Community access is a challenge for many schools.

Background

This report summarises the results of visits to 40 Cambridgeshire schools in the late autumn term 2002. Primary, secondary and special schools were included. All the schools visited have been connected via a broadband link to the East of England Broadband Network (E2BN) and to the internet. They have all benefited from extensions and upgrades to their cabling infrastructure to enable computers in all classroom and offices to take full advantage of broadband connectivity. The earliest connections took place in November 2001; one or two of the schools had their connections completed only a month before the visit.

Connecting schools to a regional broadband network is a national initiative, partly financed by the government through the Standards Fund, and similar developments are taking place in most local authorities. However, it is unusual to find this broadband initiative twinned with local funding to improve the networking infrastructure in schools, and Cambridgeshire deserves recognition for making this imaginative investment.

The purpose of the visits was to produce a snapshot of the situation in Cambridgeshire broadband schools and to register any evidence of early impact on teaching and learning. Future progress can be measured against the current situation, and emerging themes can be shared with schools to assist in their implementation of broadband.

The visits took the form of an interview with one or more members of staff identified by the school, using a survey form distributed in advance as a framework for the discussion. In many cases, school staff found that the survey provided a useful focus for considering aspects of ICT they wished to develop. In most primary schools, the visit involved the head teacher and often the ICT co-ordinator. In secondary and special schools, it was more usual to meet the ICT co-ordinator and/or a member of the senior management team. Most visits lasted approximately 60 minutes.

In the 12 months preceding the visits, there were significant other ICT developments in many of the schools. The creation of new ICT suites or the purchase of sets of laptops in some primary schools, the increasing use of data projectors in classrooms, sometimes accompanied by interactive whiteboards, and the implementation of the Laptops for Teachers scheme are all examples of the changing landscape. This means that it is unrealistic to assess the impact of the broadband and networking projects in complete isolation from the other factors. Often, school staff drew attention to the link between their use of new equipment and the improved connectivity which they now enjoy.

Teaching

One word probably characterises the most common and significant change in teachers' approach to ICT as a result of the broadband developments: confidence. Time and time again interviewees described the great boost in their colleagues' willingness to use ICT generally, and on-line facilities in particular, since the migration to broadband took place. The reliability of an always-on internet service has had a very rapid effect in many schools, not only in whole-class lessons in an ICT suite or with a data projector, but also when used with smaller groups of pupils in the classroom. Knowing that they can depend upon instant delivery of pages from key educational websites encourages many teachers to plan activities in which

information is collected from the internet or in which interactive on-line material is used live.

With a few notable exceptions, the capacity of broadband to carry material with a large file-size is currently less significant for teachers than the reliability factor. There are schools making much more use of graphics-rich or video resources, but at present the main benefits of increased bandwidth are perceived as the ability to have many more pupils using the internet at the same time, and the speed of response on interactive sites. Because of the near-instant response times, teachers who have access to a data projector are becoming confident about using live internet resources in whole-class teaching. There were telling comments from several schools that teachers are becoming more adventurous and willing to take risks since having broadband in their ICT suites and classrooms. At the same time, some teachers who previously were reluctant to access the internet, now regularly use interactive websites with whole classes.

In many of the schools, use of internet sites has become embedded into teachers' planning surprisingly quickly. Both schemes of work and short term plans increasingly include references to websites or on-line activities. In some schools there is less dependence on the ICT co-ordinator to provide details of websites which support particular topics or subjects. It is becoming common to find that subject leaders and teachers doing research for lessons have identified the websites contained in planning documents. In schools where broadband has arrived since medium-term plans were written, many teachers record websites which they have used opportunistically so that in future years they will become a regular part of the scheme of work. Some schools speed access to these chosen sites by providing ready-made links from their intranet or from their website. In many schools there were comments about the enthusiastic way in which colleagues share their discoveries of effective websites. Timely classroom and staffroom access to the internet makes this kind of sharing much easier and more productive, and teachers also appreciate it when researching and preparing lessons. Seeing teachers using ICT as an everyday work tool has an impact upon their pupils too.

Learning

It is commonplace to refer to the motivating effect of ICT on children and young people, but it is dangerous to rely upon the technology per se to encourage them to learn. The task and the content have to be appropriate. Having said that, there is little doubt that pupils are keen to use the enhanced facilities in their schools. They value the improvement in both the speed and availability of the on-line facilities. There were many reports that pupils of all ages are now proactively asking to use the internet to find out information, and that classroom access can make a real difference to the learning experience. A secondary school noted that students' private lunchtime use of its ICT suite is now far more purposeful, and that demand for places outstrips availability. Even for the very youngest children, some teachers are finding lively interactive sites which function well at broadband speed.

According to teachers, broadband is allowing many pupils to achieve more in the time available. They can often complete more work in lessons because the delay in waiting for webpages to download has been largely eliminated. A primary school used to on-line work recognised a striking difference between what their pupils were achieving now, compared with similar pupils a year ago. It is now feasible for teachers to use the internet for a five-minute starter activity, and a secondary school reported making good use of websites during twenty-minute tutor times. In another

example, a class was able to plan travel details for a business trip to Australia in the space of a single lesson. Some teachers observed improvements in children's confidence and self-esteem, particularly as their problem-solving strategies bore fruit more rapidly. Some boys showed increased tenacity in reading, when seeking information from the internet. In one school, the response of children to the range and impact of the material suddenly available was even described in terms of "awe and wonder".

The widespread use of websites for research work in topics in most subjects has significantly boosted the role of ICT to support learning across the curriculum. In primary schools, it is usual to provide guided access to relevant websites, though some pupils learn to use on-line search engines. At both primary and secondary level, pupils have generally benefited most from increased web access in schools with well-established programmes of information skills.

Using websites to obtain educational content is easily the most common use of broadband currently, at both primary and secondary level. There is some pupil use of communication tools such as e-mail, and many schools display pupils' work on their website, or have plans to do so. Some participate in on-line events such as Superhighway Patrol. It will be interesting to observe the extent to which the range of activities broadens as the schools gain experience.

Many schools expressed interest in two key development areas which are likely to widen the range of learning activities for pupils. First, the growth of on-line services offered to schools through E2BN, such as videoconferencing, will provide a comparatively easy means of raising awareness of and then exploiting more of the features of broadband. Some schools are already beginning to plan on this basis. Second, the growth of so-called on-line learning environments or portal systems will provide more manageable opportunities for meaningful communication activities and for anytime anywhere learning. Several of the broadband schools already have experience in this area, and improved on-line access in classrooms is allowing them to consider extending the way these systems are used by teachers and pupils.

Potentially the most significant educational benefit of broadband is the opportunity for teachers to raise the level of the learning activity by setting more challenging tasks and focussing on the evaluation of pupils' work. Activities which were previously time-consuming, such as retrieving a picture or locating some information on a website, now require much less effort, allowing teacher and pupil time to discuss the process, review the results and, if necessary, revisit the task. Several schools reported that teachers' expectations are rising as they appreciate how on-line work can prompt higher-level thinking. It will be interesting to observe how quickly this change of emphasis will affect planning and practice in all our schools, so that the improved performance of their ICT systems is matched by the performance of their pupils.

Resources

Teachers have been quick to locate websites with relevant educational content and, as noted above, at present these form the principal learning resource used via the broadband network. The great majority of websites currently used by schools are those which are freely available, though a small number of schools subscribe to on-line services or are trialling them. Among the primary schools, the most popular of these subscription services are those providing literacy and numeracy material such as Spark Island, Easiteach and Oxford Learning Tree. Many schools expect to investigate such services further before deciding how to spend their e-Learning

Credits, and some are planning to assess them at the BETT exhibition. This will be an area for tracking in future as schools' experience of these services grows.

Many schools reported that use of CD-ROMs has declined significantly since broadband has become available. This occurs partly because using CD-ROMs in a networked environment can involve technical and licensing complications and those responsible for management are pleased to be free of that burden. At the same time, many teachers prefer the fact that websites can provide up-to-date information from a wider range of sources than many CD-ROMs provide. Where CD-ROMs remain popular, they are often quite specialised, such as those produced for Careers Education. Questions remain about the quality of the content available from websites; once again, pupils who are taught information skills are best placed to use the web site material effectively.

Professional Development

When the NOF training schemes for ICT were launched, it was assumed that there would be a significant on-line dimension, but for many teachers access difficulties made this unrealistic. In most of the schools, training was well underway or completed before the advent of broadband. In a few schools where NOF began later, it is possible to link the effectiveness of the training with the improvement in online access. In one secondary school the completion rate rose rapidly from 32% to 82% once broadband was implemented. Another school deliberately waited for broadband before beginning their NOF training.

There is an increasing expectation that professional development for school staff will include on-line components, whether formalised within in-service courses or through less formal peer-group networks. Many senior staff have some experience of this approach through the work of the Leadership College. Most of those interviewed felt that their new facilities would make this kind of professional development more likely, though the proportion of school staff who would feel comfortable with it varies enormously, even in schools where teachers are confident and regular users of the internet. For many schools, there will be key management issues before e-learning becomes an embedded element in professional development. Unless staff can be guaranteed some uninterrupted time (which traditional training events provide), their engagement will suffer, or they will resort to seeking on-line access in their own homes. This will be another theme to explore in due course as the broadband network expands.

Clusters

In order to determine which schools should join the broadband network first, schools were invited to form clusters and submit proposals suggesting how they would use the increased bandwidth if it was provided. The intention was to make the broadband development learning-driven rather than technology-driven and to emphasise the importance of partnership. On the basis of their proposals, five clusters of varying sizes comprising approximately fifty schools in total were selected. The complexity and cost of the development resulted in a lengthy gap between the formulation of the cluster proposals and the arrival of broadband. In some cases, it was not even possible to connect all schools in the same cluster within a reasonably compact timespan.

These delays have had an unfortunate impact on the work of all the clusters, and some plans have had to undergo major revision. Turnover of staff during the waiting period has undermined the feasibility of some of the original proposals. The clusters which have maintained their sense of purpose most comprehensively are probably those with a clear geographical focus and with input at headteacher level. In some cases, the broadband project has strengthened links between schools.

The new portal system which E2BN and Cambridgeshire will bring on-stream during 2003 will provide a platform where some of the completed or projected work from cluster schools can be showcased. Any support which can be provided through this and other mechanisms will be important in order to help the clusters exploit their new facilities and share their experiences of broadband for the benefit of all our schools.

Technical Issues

The visits to broadband school were primarily concerned with teaching and learning. Nevertheless, they provided an opportunity to discuss some technical issues which can affect the work of teachers and pupils in significant ways.

In some schools, the upgrading of networking facilities to broadband capacity and the increased demand for media-rich on-line learning resources has put pressure on aging equipment such as servers and workstations. In some cases, there has been disruption to teaching and learning while these issues were addressed. Particularly in secondary schools, the complexity of existing network systems and the need for customised local solutions have also added to the disruption involved in upgrading and migration. There are some lessons here about the implications for schools pursuing individual pathways when designing and implementing learning networks.

In most schools, provision of technical support for ICT is already an issue. The growth of broadband and networking complicates the challenges faced by schools. In some situations, improved equipment reduces the need for running repairs but adds significantly to the scale and sophistication of the systems which have to be maintained. In other schools, technicians have to work harder to maintain older equipment. As more and more teachers expect to use the network and the internet routinely in whole-class lessons, there is a greater than ever need to guarantee that everything is working.

Information Management

An additional benefit of the networking project is the opportunity for schools to make management information available in locations outside the school office without compromising security. Some schools are taking advantage of this already, either by connecting teachers' laptops to the administrative network, or by enabling computers in classrooms and staffrooms to run Assessment Manager and similar applications. Giving teachers access to up-to-date performance data is intended to inform target-setting, differentiation and planning generally. For many schools, this development is not a priority, though it is worth noting the clear expectation from DfES that "all schools should give teachers and relevant support staff access to secure, networked management information systems by August 2003".

While there is limited growth in the number of teachers using their network to update, analyse or exploit performance data, it is increasingly common for them to acquire other kinds of information in an electronic format. In one of the secondary schools,

the staff bulletin is circulated exclusively via e-mail, and in many schools teachers now instinctively refer to DfES and other official websites, cutting down dramatically on the volume of paper publications which are ordered.

Some staff referred specifically to County Council systems such as IMPULSE and FAMIS, which they are beginning to use regularly, now that they have a fast and reliable link.

Community

It is a condition of DfES funding that schools “allow community access to their ICT facilities where practical” and CCN, Cambridgeshire’s own countywide broadband network is conceived in part as a community asset. This is an aspect of development which many schools find challenging, whether or not they have facilities (such as ICT suites) which lend themselves fairly readily to community access. Some schools are installing at least one on-line computer in their entrance halls, while others make facilities available to out-of-school clubs or community organisations. Nevertheless, mainly schools will need considerable help if the substantial investment which has been made in bringing broadband to them is to have an impact on life-long learning.

Acknowledgements

I would like to express my thanks to all the staff in the broadband schools who gave generously of their time and shared their experience while the material for this survey was being collected. When the broadband project was originally launched to Cambridgeshire heads, we emphasised that this venture would involve all of us learning together about the implications of broadband for our schools. This report demonstrates that much is being learned already, that there is certainly more to be learned, and that it is as important as ever that we continue to share while we learn.

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