National Foundation for Educational Research

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Evaluation of the East Midlands Broadband Consortium

Final Report

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Contents

Acknowledgements

Glossary

Assimilate A commercially-available learning platform which embc used before July 2005

Audio Network music library Content available through the embc service

AST Advanced Skills Teacher

Becta British Educational and Communications Technology Agency

British Pathe Archive Content available through the embc service

CG Community Gateway
A portal, launched by embc in April 2005, users can access it from anywhere with an internet connection. Every user has: an online workspace, an area to publish work for other users to access, access to email, a content library for locally created and third party content, a search engine that searches across the community gateway and specified internet resources

Connectivity The various ways a computer (or computers) can link to <u>external</u> electronic resources or services, for example email, online learning resources, online information sources, online software or online learning/teaching communities

CTC City Technology College

DfES Department for Education and Skills

Embc East Midlands Broadband Consortium

Fsm Free school meals

ICT Information and communications technology

ISDN Integrated Services Digital Network. A slower form of internet connection that was used in some embc schools but is now being replaced by the faster broadband connection

LA Local Authority

Learning Platform Describes a broad range of ICT systems used to deliver and support learning

MAXqda	A software package designed to systematically analyse qualitative data.
Mirapoint	An email security appliance
NFER	National Foundation for Education Research
Ofsted	Office for Standards in Education
RBI	Regional Broadband Initiative
SEF	Self Evaluation Forms
SEN	Special educational needs
SLICT	The Strategic Leadership of ICT programme run by the National College for School Leadership

1 Introduction

1.1 Background

In a keynote speech to the e-summit in November 2002, the Prime Minister announced that the Her Majesty's Government (HMG) would make funding available to provide a broadband connection to every school by 2006. Following this commitment, HMG's key advisory group, the Broadband Stakeholder Group, identified five areas in which broadband can impact on educational experience, namely:

- enhancing the learning experience
- improving cooperation between educational institutions
- delivering new potentialities, such as delivering real-time images into the classroom
- improving efficiencies in existing educational provision
- widening access to education with significant impact on life-learning.

1.1.1 The Regional Broadband Initiative and the East Midlands Broadband Consortium

To help address and meet these key policy objectives, the Department for Education and Skills (DfES) launched the Regional Broadband Initiative (RBI). Through the RBI, the DfES required local authorities to come together and form consortia which, using Standards Fund monies, were targeted to develop regional 2-megabit symmetrical broadband services for schools.

As a result of the RBI, the East Midlands Broadband Consortium (embc) was formed. The embc is a collaboration between nine Local Authorities (LAs) which make up the East Midlands government region.[1] The nine authorities have signed an 'Agreement' to work together and operate by consensus. A Steering Group with representatives from all nine authorities oversees the project with the support of working groups and a small project team.

The embc provides institutions (schools and other locations such as adult education centres) in the East Midlands with (usually) a minimum of a 2-megabit symmetrical bandwidth connection to the embc network and a connection to the internet. A relatively small number of schools are connected to this network via an ISDN connection.

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[1] Derbyshire County Council, Lincolnshire County Council, Nottingham County Council, City of Nottingham Education Department, Derby City Council, Leicestershire County Council, Leicester City Council, Rutland County Council and Northamptonshire County Council.

The embc has established a series of learning and access objectives, which are to:

- raise educational achievement in relation to schools, learning communities and individuals
- encourage all institutional and community partners to establish educational achievement targets from their access to broadband content and services in a connected learning community
- increase access to and the development of learning content and opportunities accessible by broadband
- support staff development by the use of targets for all members of connected learning communities
- encourage pedagogical innovation
- seek to establish opportunities for innovation.

The embc aims to provide each school or other location with a service that supports the delivery of broadband content and streamed video, as well as high speed internet access. The service includes:

- internet filtering
- email and email filtering
- security
- web hosting
- a Regional Learning Platform
- a video conferencing bureau
- a helpdesk and tools to enable schools to manage their connection.

In addition, once they are connected, schools are invited to training provided by their local authority.[2]

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[2] The information for this section was summarised from a number of pages on the embc website at www.embc.org.uk (see References section for a list of the relevant pages).

1.2 Evaluating broadband

1.2.1 Current broadband research

As can be seen from the policy developments outlined in the previous section, interest in the potential of ICT in education has been developing for some time. While previous research and reviews suggested that ICT has the potential to motivate students, enhance learning and even raise standards (DfES, 2003; Passey *et al*., 2003), researchers have also drawn attention to the complex nature of measuring causal effect (for example, Pittard *et al*., 2003), urging caution and additional research.

The Becta Review 2005 (Becta, 2005) summarised their view of the overall situation as follows:

> *The deployment and use of technology is now central to educational change. However, the effective implementation of ICT to personalise learning and improve learner choice presents challenges at all levels in the system.* (p. 5)

The Becta Review also states that only 16 per cent of schools have ICT 'sustainably embedded' in school provision and planning, while a further 76 per cent have yet to embed ICT provision 'fully' in their school's ICT provision and activity.

Another recent report, *The impact of broadband in schools* (Underwood *et al.*, 2005) relays a generally positive message about the improving adoption of ICT activity across schools in England. However, the authors also highlight barriers to the effective use of ICT and exploitation of broadband in schools, such as:

- a lack of strategic direction and school policy
- low levels of staff skills and confidence
- lack of investment in infrastructure and hardware
- a potential lack of coordination in ICT development and use.

1.2.2 The objectives of this evaluation

The embc has commissioned the National Foundation for Educational Research (NFER) to undertake an evaluation of the development of embc to date, with a view to helping to implement a rolling programme of monitoring and evaluation which embc will use to inform their future development. Specifically, embc stated that the evaluation would be used to:

> […] *understand the impacts of embc's work on schools and other stakeholders in order to support the identification and sharing of good practice and that areas for development can be identified so that appropriate action can be taken....*
>
> (embc, 2004, p. 2)

With an interest in identifying the added value of connectivity via broadband/embc, the research focuses on exploring the following five areas:

- the perceived benefits of connectivity
- awareness of and understanding about connectivity, and of the overall aims of embc
- the impact of connectivity on teaching, learning, management and other activities
- barriers to the effective use of connectivity
- barriers to achieving a broadband connection.

1.3 Methodology

The evaluation was divided into two phases.

Phase 1. An online survey of staff in schools and non-school settings to explore the impact of embc services and connectivity on staff and institutions, which was completed in Autumn 2004 and reported in March 2005.

Phase 2. Case studies of embc schools with a broadband connection, which were completed in Autumn 2005, to help to further explore and explain the impact of embc services and connectivity on teachers and schools.

The findings from Phase 2 are reported here, and represent the final report.

1.3.1 School selection

The specific aims of the case studies were to explore the impacts of broadband and embc on schools by asking interviewees about:

- the impact of broadband on school and classroom planning
- the impact of broadband on teaching and learning
- barriers to making full use of broadband
- resources and practice
- the importance and contributions of systems, people, time, funding and leadership.

NFER and embc decided that the best way of achieving these key aims was to select schools that belonged to embc and enjoyed a broadband connection, because it was thought that data from these schools would provide the most relevant and useful findings to meet the overall aims of the research.

Schools selected for case-study involvement were drawn from those which had provided at least two responses from teaching staff (one had to have been the ICT coordinator) to the online questionnaire from Phase 1.[3] This approach was adopted because the research team and embc hoped that such schools would be more likely to have staff who would be willing to provide relevant and useful data.

Schools were also selected to reflect,[4] all those in the East Midlands region in terms of:

- size (school roll)
- type of school (secondary, primary or special)
- the percentage of pupils known to be entitled to free school meals
- the percentage of pupils with English as an additional language
- overall level of attainment (Key Stage 2 for primary schools and Key Stage 4 for secondary schools).

1.3.2 School and interviewee recruitment

Overall, it was decided to attempt to achieve a sample of 30 schools (18 secondary, nine primary and three special schools) for case-study involvement. Embc and NFER agreed to cooperate in both the recruitment and interview stages of the case-study phase.

NFER selected the sample of schools to be invited to participate (including reserve lists to replace schools declining the invitation and those that dropped out) and embc wrote to schools, inviting them to participate. Embc also agreed to use LA embc staff to conduct 27 of the intended 30 school visits, the remaining three schools to be visited by NFER.

It was intended that case studies be conduced in the latter part of the summer term of 2005 and therefore it was planned to contact schools in late April 2005. However, due to the pressure on schools at this time of year, many of those selected declined to participate before the summer break. Therefore, embc and NFER agreed to extend the case study phase to the end of October

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[3] In Phase 1, headteachers of schools invited to participate had been asked to select four (primary schools) or five (secondary schools) members of staff to complete the online survey.
[4] It should be noted that such a method of selection is not the same as saying the sample of schools is statistically representative of all schools in the region.

2005. Even with this extended period of research, embc found that many schools still declined to participate. Nearly all of the schools that declined to take part did so citing concerns over burdens on staff time and disruption to school activity.

To help with school recruitment NFER agreed to write a second invitation letter to schools in September 2005, which stressed that the research was being independently conducted by NFER and that all data collected would be treated in the strictest confidence. While this letter did encourage some schools to agree to participate, it did not result in the research achieving the intended number of schools.

In all, 15 schools were visited (ten primary, five secondary and one special school), representing a broad spectrum of background factors, as intended in terms of the selection criteria employed. Six of the nine LAs in the East Midlands Region were represented by the schools agreeing to participate. While it is disappointing that the intended sample of school was not achieved, it is also worth noting that visits were made to a broad range of schools in the majority of LAs concerned. This has meant that data does reflect a wide variety of schools in the East Midlands Region.

Interviewee recruitment

In the invitation letters to schools, the research team asked to interview teaching staff only, because the aim of this phase of research was to gather data primarily about the impact of broadband and embc on teaching and learning. Wherever possible headteachers were asked to agree for the following teaching staff to be interviewed:

- the headteacher
- the ICT subject leader
- another subject leader
- one or two class teachers
- a teaching assistant.

Once schools had agreed to take part, NFER or embc contacted the schools to confirm arrangements to interview respondents for the visits, arrangements which were then confirmed in writing.

In all, 50 interviews were conducted in the 15 schools visited (see Table 1.1 for a breakdown by interviewee and school category). The data gathered therefore achieved the intended outcome of producing findings based on the perspectives of a wide variety of staff.

Table 1.1   Number and type of interviewees by school category

School category	Headteachers or senior management*	ICT subject leaders**	Non-ICT subject leaders	Class teachers	Teaching assistants	Total
Primary***	11	9	3	6	8	**37**
Secondary	4	4	3	0	2	**13**
Total	**15**	**13**	**6**	**6**	**10**	**50**

* In two primary schools the headteacher was also the ICT subject leader.
** Includes one ICT teacher and one ICT technician who were substituted for the ICT subject leader.
*** Includes one special school.

1.3.3 Conducting the interviews

Interview schedules

NFER designed interview schedules (question sheets) appropriate to different types of respondent, i.e. one for headteachers, one for ICT subject leader, one for class teachers/subject leaders and another for teaching assistants (see Appendix A). Although different schedules were employed, each schedule explored the issues outlined in Section 1.3.1.

Interviews lasted between 30 to 40 minutes and were, wherever possible, conducted to ensure privacy and confidentiality. Responses were recorded by electronic means and/or written notes. These notes were then written up in templates designed by the research team.

Preparing for and conducting interviews

As previously noted, embc agreed to provide LA staff to cover all but three of the case-study visits. In preparation for these visits, NFER staged a 'briefing' day for LA staff with a view to:

- confirming the aims for the case-study phase
- making LA staff aware of good practice in terms of conducting research visits
- addressing questions LA staff had about their role and/or the visits they would be conducting
- introducing the research documents, such as the interview schedules and the note templates, that were to be used for writing up interview notes
- discussing and agreeing appropriate methods of recording interviewee responses
- confirming how LA staff were to manage data once it had been collected.

Once visits had been completed, LA staff returned interview notes electronically to NFER, ensuring that confidentiality and anonymity were respected.

1.4 Analysing and reporting interview responses

Interview responses were imported into an electronic software package designed to systematically analyse qualitative data. The findings from the interviews are reported in subsequent chapters, under the following headings:

- the impact of broadband connectivity in schools (Chapter 2)
- factors influencing the use of connectivity by staff (Chapter 3)
- embc (Chapter 4)
- conclusions and recommendations (Chapter 5).

2 The impact of broadband connectivity in schools

In this chapter we present findings from the case studies based on interviewees' perceptions about the use of broadband connectivity in schools and its impact on:

- teaching and learning
- the management and administration of schools.

Also in this chapter we highlight the scope for the further use of broadband connectivity in schools, by identifying:

- reasons why some embc services are under-utilised in schools
- subject areas or stages that are making comparatively less use of broadband connectivity than others within schools.

2.1 Broadband connectivity in teaching and learning

This section identifies the broadband services that were used in teaching and learning and discusses how they were being used by teachers and pupils and the impact they were having on these two groups.

2.1.1 The broadband services that were used in teaching and learning

The case studies indicated that the following broadband services were used in teaching and learning.

- The world wide web (including intranet and extranet sites) was the predominant service used in all schools.
- Use of email by teaching staff and pupils was limited, with a general perception that the service was under-utilised in teaching and learning. Not all staff and pupils used the embc email service.
- A minority of schools made use of video conferencing and learning platforms.

2.1.2 How broadband services were used in teaching and learning

Teachers' use of the world wide web (including intranet and extranet sites)

The world wide web was being used by teachers in a variety of ways and in connection with many facets of teaching. One key area was in lesson planning and resource development, where the web was being used for guidance and as a planning resource. Teachers reported that they used the web to access sites, for example DfES and examination board websites and local authority intranets, for curriculum and policy guidance. It was also used extensively for background research by teachers when preparing to deliver new topics. The web was also serving as a resource bank of worksheets and other materials for use in lessons. Teaching assistants in primary schools reported that they used the web to help them prepare new resources such as visual prompts or cue cards. Teachers were also using the web to locate sites that their pupils could use in lessons.

The overwhelming majority of teachers commented on the variety, breadth and quality of the resources available on the web to enrich the delivery of the curriculum. Interactive whiteboards have enabled teachers to bring this variety and breadth of resources into whole-class teaching. They highlighted the visual, dynamic and interactive advantages of web-based content over more traditional and less accessible resources used in lessons. For example, several teachers mentioned how they used web-based simulations of the solar system with their classes and how virtual tours enhanced the teaching of geography. They were also making use of web cam sites to view live events and of downloadable video and audio in topic work. One secondary teacher highlighted the particular benefits of having web access when delivering vocational courses, as it was not always possible to arrange external visits for pupils.

Teachers of pupils with special educational needs (SEN) also commented on the range of SEN resources available for use with their pupils. In primary schools, teachers and teaching assistants mentioned the use of online games as a learning medium, which was particularly successful with younger pupils. Teachers described using a mix of free and subscription-based sites.

Various examples were cited of online resources being used for summative and formative assessment. Key Stage 3 ICT assessments were being delivered online, and online reading tests were also being administered. Several teachers commented on the benefits to their pupils of immediate feedback available with resources such as *BBC bitesize*.

One theme running through the interviews was that teachers were in control of the technology, adapting materials to suit their needs and using the resources to facilitate differentiated learning. As one non-ICT subject leader observed:

> *It gives me easy access to quality materials that can be adapted to my needs. It also allows me to develop differentiated resources as well as giving me choices about how they are presented.*

Teachers were also rewarding good behaviour by allowing pupils to access the web.

Outside the classroom teachers were using the web to facilitate their continuing professional development, either by enabling them to keep up to date with developments in their subject areas or by giving them access to online training, principally online ICT training. Amongst secondary teachers, some were making use of web-based or email forums to share ideas with other teachers. The two fora mentioned were for ICT subject leaders and for teachers interested in gifted and talented pupils.

Pupils' use of the world wide web (including intranet and extranet sites)

Interviewees generally reported that pupils used the web for research. In primary schools, the majority of teaching assistants reported that they supervised small groups of pupils who had been set research work by their class teachers. Staff in secondary schools highlighted the importance of encouraging structured and discriminating use of the web by pupils. A few secondary teachers noted that pupils made use of the web to access careers advice. In school, pupils also used the connection for recreational purposes, either at lunchtime or outside of normal school hours for clubs.

Pupils also used home internet connections, libraries or cyber cafés to complete homework assignments.

Email

Several interviewees commented that they and their pupils used web-based email, in preference to the embc service (the reasons for this are discussed in section 2.3.1). The following examples therefore relate to the use of email generally in teaching and learning and not specifically to the use of embc's email service. Teaching staff reported that they had used email to establish links/communicate with other schools (particularly in modern foreign languages) or to maintain contact with former pupils. Within the school community, email had been used to communicate with students (mainly years 12 and 13) and other members of staff. Teachers also reported that they used email for administrative tasks including communicating with suppliers, external agencies and with parents.

Video conferencing

Interviewees in five schools reported that they had used video conferencing, although in some of these schools this had been on a trial basis. Two primary schools mentioned that they had participated in a conference with their local secondary school. A secondary school described a 'space day' that had taken place with pupils from year 8, combining mathematics, science and technology. A link up with the National Space Centre had formed part of that day.

One secondary school was delivering A-level law and government and politics using video conferencing and, in another school, the headteacher mentioned that they were interested in developing video conferencing to deliver courses that might otherwise not be viable owing to low pupil numbers.

Learning platforms

Several schools had used the commercially available Assimilate learning platform, which was replaced by embc's Community Gateway (CG) portal in 2005. A few interviewees had some knowledge of the tools that were available in CG, although there was no evidence that the portal was being used routinely in any of the schools visited. Levels of awareness about learning platforms varied considerably and six groups of respondent were identified. Excluding interviewees from Lincolnshire and Nottinghamshire,[5] the categories were staff:

- with no prior knowledge of the term 'learning platform'
- who had heard the term but had little knowledge of what learning platforms offered
- who had used Assimilate previously and were generally critical of the service
- who had used Assimilate previously and were satisfied with the service
- with some awareness of what CG offered who were optimistic about the possibilities for use
- with some awareness of what CG offered who were critical of elements of the package, notably the inclusion of Mirapoint for emailing.

None of the case-study schools had fully exploited the potential of learning platforms and the overall picture was of a lack of awareness, some limited use and a history of negative previous experience.

Content that is supplied within the embc broadband service

Two teachers reported that they found the British Pathe Archive useful.

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[5] For schools in Lincolnshire and Nottinghamshire, where the authorities have made separate provision for a learning platform, some respondents were making regular use of the platform, but only to access resources. Other staff were not using the platform.

2.1.3 The impact of broadband connectivity on teachers and teaching

The majority of staff commented on the positive impact of broadband connectivity (principally referring to use of the web) on teaching.

In the classroom connectivity had:

- opened up new possibilities for teaching
- enriched the curriculum and made it more interactive
- encouraged staff to be more creative with the curriculum
- 'transformed' delivery of the curriculum
- 're-engineered' the way some staff teach
- raised teachers' expectations
- extended the range of teaching strategies available to staff, enabling them to cater for all learning styles
- enabled staff to respond to incidental research needs that arise in class
- transformed whole class teaching
- introduced movement into teaching (replacing static diagrams)
- increased the quality and range of resources used in lessons.

Outside the classroom, connectivity had:

- made it easier and quicker for teachers to find resources
- provided the facility to share experiences and resources with teachers from other schools
- made lesson planning more enjoyable
- helped teachers to keep up to date in their subject areas.

Some staff felt that the benefits were only just starting to be realized, and only a few felt that connectivity was having a marginal impact on teachers.

2.1.4 The impact of broadband connectivity on pupils and learning

Teachers considered that broadband connectivity has impacted on learning by:

- increasing pupil motivation, although some staff felt that the motivating effect was waning as the technology became fully embedded
- raising pupils' expectations
- making the curriculum more interesting and fun for pupils

- promoting visual and kinaesthetic learning
- promoting individual learning and encouraging pupils to become independent learners
- providing more opportunities for pupils to develop research skills
- raising attainment in mainstream and special needs education
- raising the quality of work produced by pupils
- developing pupils' ICT skills
- providing immediate feedback
- increasing the depth of understanding.

2.2 Broadband connectivity in the management of schools

This section identifies the broadband services that were used in the management of schools and discusses how they were being used by headteachers and the impact these services were having on them.

2.2.1 The broadband services that were used in the management of schools

In the case study schools, the broadband services used in management and also in administration were email and the world wide web (including intranet or extranet sites).

2.2.2 How broadband services were used in the management of schools

Email

Headteachers reported that they used email in external communications with parents, governors, the local authority, staff in other schools and other agencies. They also used it to share documents, to facilitate networking between headteachers and for internal communication with colleagues.

The world wide web (including intranet and extranet sites)

Headteachers were accessing the web to obtain information and to download files from external agencies such as the local authority, examination boards or DfES. They also cited several examples of forms that were now completed online, including the Electronically Moderated School Self-Evaluation Forms (SEF) for Ofsted and some funding applications. Online data checking with the DfES was also mentioned.

2.2.3 The impact of broadband connectivity on school management

It was reported that broadband connectivity had brought some advantages and also some disadvantages for headteachers. In general headteachers considered that connectivity had:

- increased the workload of headteachers
- raised expectation amongst stakeholders of a quicker response from schools
- eroded delegation
- made headteachers more accessible to all stakeholders
- expedited access to management information.

Headteachers generally noted that connectivity had made the administration of examinations easier.

2.3 The scope for the further use of broadband connectivity

The interview data suggested there was substantial scope for further use of broadband connectivity through increased use of existing services supplied by embc.

2.3.1 Reasons for the limited use of some embc broadband services in schools

One non-ICT subject leader felt that the web was successful in schools because it, 'is more mainstream, people are more comfortable with it, they know how it works'. The evidence from the case studies suggests that this comfort zone does not extend to the other services embc provides. Staff know what the web can deliver but this is not the case with the other services. Again a non-ICT subject leader explained, 'The relevance of the facilities is not as great as the internet; I would not want to use video conferencing just for the sake of it.' This lack of confidence and awareness of potential are two factors that help to explain why some of the other services do not share the success of the web in schools.

Email – reasons for limited utilisation in schools

As noted in section 2.1.1, teachers made limited use of email with their classes. In some cases this was simply because staff and pupil user names had not been set-up. Teachers also commented that they lacked confidence about

using email with classes owing to concerns that the service might be misused by pupils. Outside the classroom, teachers were reluctant to see email develop as a means of communication between staff as this might jeopardise effective communication that existed between colleagues. Similarly, some staff felt that they were already too accessible to parents and that email would make them even more so. In some schools texting was seen as a more efficient means of communicating with parents.

As noted in section 2.1.2, some staff and pupils in schools accessed web-based email accounts in preference to using embc email. One explanation was that individual user names and passwords had not been set-up and as a consequence problems had occurred when changes to the embc service were implemented. However, the evidence suggests that staff and pupils had more fundamental concerns about the embc service. Pupils were thought to be uneasy about the privacy of 'school' email and staff reported ongoing problems logging on to their email accounts. The embc service was described by one ICT subject leader as, 'temperamental, slow and unreliable'.

Video conferencing – reasons for limited utilisation in schools

As noted in section 2.1.2, a minority of school made use of the video conferencing service. Staff in schools who were not using video conferencing cited the following reasons for this:

- a lack of knowledge generally about video conferencing
- dissatisfaction with the embc service
- a lack of funds
- not knowing where to locate partners with whom a video link could be established.

One school was using an ISDN2 line in preference to broadband to deliver courses via video conferencing. More recently they had held a successful conference with the National Space Centre using their broadband connection, but stressed the importance of having a reliable link when this was the medium for course delivery. The ISDN2 line had given them a reliable service for three years whereas communication through the broadband connection was subject to blocking by the embc firewall. Embc was felt to have been unhelpful in its dealings with the school to resolve the problem.

Learning platforms – reasons for limited utilisation in schools

Interviewees reported that their initial experience of the Assimilate learning platform (available before the introduction of CG portal) had been disappointing. They identified the following issues:

- a lack of support from embc
- the service was difficult to access

- the service was difficult to use
- the service was slow
- the learning content was poor and better resources were available through the web
- initial training was poor
- cascading of training within schools was poor.

As well as the service-related factors, interviewees also highlighted a number of factors within schools that were militating against the uptake and exploitation of learning platforms, namely:

- staff who were unclear about the facility to share resources or to access resources from home through the learning platform
- schools which were inward-looking in terms of sharing and developing resources
- schools which were developing alternative ICT strategies to enable home access to resources: one school had purchased a commercial product to facilitate home access to resources, other schools were looking to develop their web sites as a learning resource.

Website hosting – reasons for lack of uptake

Some non-ICT staff did not know what this service entailed. None of the case study schools were using embc's website hosting service and the reasons given by interviewees for this were:

- the school did not have a website or one was being developed
- the school's website was being hosted elsewhere: one headteacher deemed embc to be 'too inflexible'.

2.3.2 Identification of stakeholders who make less use of the connectivity service than others

Headteachers identified governors and parents as the two groups of stakeholders who could be making greater use of the connectivity service.

2.4 Chapter Summary

Broadband connectivity has brought major benefits to teaching and learning by giving schools access to the wide variety of resources available on the world wide web. Embc's other connectivity services, such as email, learning platforms, video conferencing and website hosting have been less well received in schools. Staff generally considered these services to be unreliable and difficult to use. Other factors within the school, such as lack of awareness, were also affecting the use of these services.

3 Factors influencing the use of connectivity by staff

The interview data highlighted a number of characteristics that were pivotal in promoting and developing the use of connectivity by staff, namely:

- confidence
- motivation and commitment
- awareness of the services available and their potential for use in teaching and learning.

This chapter explores the personal factors, leadership and ICT resources in schools that foster the development of these characteristics.

3.1 Personal factors influencing the use of broadband connectivity

The personal factors that influenced the use of broadband connectivity by staff were their:

- level of ICT skills
- availability of ICT training and support
- previous ICT training
- experience of connectivity in other schools
- availability of time to develop skills
- age
- teaching role.

3.1.1 ICT skills

The majority of teaching staff who were interviewed rated their ICT skills as good or at least adequate for their current usage of connectivity. Whilst confidence in their own skills was generally good, several ICT subject leaders and also some non-ICT subject leaders noted that the required skill levels and confidence amongst some of their colleagues were lacking. Headteachers generally rated their skills as good, but a mixed picture emerged when they were asked about the skills level of their staff. In two schools, headteachers felt that ICT skills and confidence were low. In one City Technology College (CTC) the headteacher felt that all staff were confident users. The majority of headteachers who commented felt that, overall, skills were good but identified a few staff who lacked skills and confidence. Several teaching assistants acknowledged that their skills were limited.

The interview data suggested that skill levels amongst ICT subject leaders may be variable. A few primary ICT coordinators had been appointed having had little previous experience or interest in ICT, either to secure promotion or because the headteacher needed to fill the post.

3.1.2 Availability of training

Generally teachers commented favourably on the availability and encouragement of ICT training within their schools, through formal and informal routes.

The data indicated that basic ICT training needs relevant to connectivity had, in most cases, been met. Some headteachers felt that ICT training had been addressed and that other factors, relating to commitment and motivation, were underlying the reluctance of some staff to use the connectivity services.

The data highlighted two groups of staff whose training needs had apparently been overlooked.

- Staff in the only special school visited had received little or no relevant training. One interviewee had received some training five years ago, another had not received any. When the authority upgraded services, no training or documentation had been provided.

- In several schools, the training of teaching assistants had not been appropriately addressed. In these schools, assistants commented that they were dependent on skills learnt in previous (non-school) employment or help from family members. Some teaching assistants were critical of the lack of training available and one commented that she felt 'de-skilled and undervalued'. In other schools, continuing professional development for ICT was in place or being implemented for teaching assistants.

In many schools, interviewees who rated their skills as good or adequate for their current usage felt that lack of training was a barrier to full exploitation of connectivity. The training needs identified by teaching staff focussed on their awareness of the technology and the services available to them and the possibilities for utilisation. As one ICT subject leader noted, 'Sometimes there is a lack of training - people come into school and ask if you are using this or that and you don't even know it's available.'

At one end of the spectrum, one headteacher spoke about the role of training in 'communicating a vision' and 'broadening the potential' of connectivity usage within her school. At the other end, one interviewee wanted training that focused on what staff needed to know on a daily basis and was critical when trainers ventured outside these parameters.

The experience of one primary ICT subject leaders underlined the critical importance of training that took into account differing levels of expertise amongst participants. The course she had attended on the use of learning platforms had been demotivating and counter productive, 'I went on a course which I just didn't understand, I came back confused and left it [the learning platform] to get on with teaching.'

3.1.3 Formal training received by staff

The majority of teaching staff had received some general ICT training and some specific training in the use of ICT in the subject(s) they taught. The most commonly cited programme was the New Opportunities Fund ICT training. Three headteachers said that they had attended the Strategic Leadership of ICT (SLICT) programme run by the National College for School Leadership (NCSL) and they rated the course highly.

The majority of teaching staff had also received training when major new hardware or software projects had been implemented in schools, such as the introduction of interactive whiteboards. Several interviewees mentioned that training had been delivered by the suppliers.

A few ICT subject leaders commented that they had attended training courses on the use of their connectivity services, for example learning platforms. Some uncertainty was expressed about what training would be available for CG portal and whether embc would be providing training. Teachers also noted that they would need training if their school acquired video conferencing equipment.

Although some external training relevant to the use of connectivity was available to all staff, in many cases external training was limited to selected members, usually the ICT subject leader, who was then expected to cascade the training back to colleagues. Interviewees provided some examples of training related to embc services (e.g. learning platforms) that had been delivered by these means. In a few schools, doubts were expressed about the effectiveness of cascaded training and whether knowledge and expertise was being disseminated.

Formal training was also delivered by Advanced Skills Teachers (AST), other teaching staff and in some cases by technicians. Headteachers also highlighted the value of networks of schools as a source of training. For example, in one network of schools a secondary teacher (with expertise in the use of whiteboards) had delivered training in the feeder primary schools.

3.1.4 Informal training and support available within schools

The majority of staff praised the informal training available in their schools and the willingness of colleagues to support them in their use of connectivity. The sources of informal training and support included:

- ICT subject leaders
- technical staff and teaching assistants
- mentors assigned to support staff in their use of ICT
- ICT champions in each department
- pupils.

3.1.5 Experience of connectivity in other schools

Several interviewees described how the positive experience of connectivity in a previous school had given them an awareness of the potential of services such as learning platforms and video conferencing. For one headteacher, this had inspired them to develop these services in her current school and she was arranging for members of staff to visit her former school. Another headteacher was similarly encouraging staff to observe good practice in other schools.

3.1.6 Lack of time

The majority of staff identified lack of time as a factor limiting the development of connectivity usage in schools. This was seen in two ways.

- For those with responsibility for coordinating ICT within schools, lack of time had meant that, in some instances, access to services had not been set-up or systems configured.
- For teachers, lack of time meant that they had not been able to explore what was available to them or to familiarise themselves with new services, both of which were critical in developing awareness and the confidence to use of connectivity in lessons.

The introduction of planning, preparation and assessment time was mentioned by several interviewees as helping to give them some time for exploration.

3.1.7 Age of staff

Interviewees had differing views about what they saw as the attitude of older staff towards using connectivity. Some interviewees identified reluctance amongst older colleagues to develop ICT skills: with approaching retirement

and having managed their careers without ICT, older staff were thought to have less incentive to re-skill. Other interviewees noted an apparent lack of confidence amongst older colleagues. However, some interviewees did not associate differences in usage patterns with the age of colleagues and one ICT subject leader noted that older teachers were sometimes more confident in their use of connectivity than their younger counterparts.

3.1.8 Role of staff

In primary schools greater use of the service was made by staff and pupils in Key Stage 2 than in Key Stage 1 or Foundation stage.

In secondary schools comparatively less use was made of the connectivity service by music and Physical Education departments. Staff singled out the Key Stage 3 ICT National Strategy and course work related to public examinations as being instrumental in promoting the use of connectivity by pupils and staff.

3.2 Leadership and ethos in schools as a factor influencing the use of connectivity

The majority of primary schools in the sample were small schools, outside the major cities in the region. Headteachers in two of these schools were also acting as the ICT subject leader and were engaged with the strategic direction of ICT in school, as well as supporting staff with ICT on a daily basis. However, primary headteachers also acknowledged the responsibilities of all subject leaders to deliver ICT across the curriculum. From the comments made by staff it was evident that the two primary headteachers who had attended the SLICT programme were driving forward the development of connectivity in their schools.

The headteacher of one of the CTCs commented that being a technology college established the expectation amongst staff that ICT was an integral part of teaching and learning across the school. Generally, teachers noted that the expectations of pupils were a factor in promoting the use of ICT across the curriculum.

Headteachers and staff cited several examples of initiatives in their schools that they felt were important in the promotion of ICT/connectivity:

- making all staff in a primary school responsible for teaching ICT skills
- appointing an ICT subject leader capable of motivating all staff
- including ICT in individual performance targets and observing ICT content in lessons

- investing in highly-skilled technical management and support in a secondary school
- fostering a supportive environment within which teachers could utilise ICT/connectivity in their teaching
- including the integration of ICT across all subject areas as a focus of the school development plans.

3.3 ICT resources in schools as a factor influencing the use of connectivity

This section discusses the provision of connected computers within schools and the availability of connected computers during lessons. The reliability of the connectivity service and associated hardware is also considered, as well as the availability of technical support and funds to improve the existing provision.

3.3.1 Availability of funds

Lack of equipment was cited by several headteachers and ICT subject leaders as inhibiting their use of connectivity. They identified a lack of funds to purchase new equipment, for example to enable video conferencing, and a lack of funds to upgrade and replace hardware. In some schools, the introduction of interactive whiteboards and upgrading of hardware were dependent on funding from donations, fundraising and savings made elsewhere in the school budget. One headteacher commented on their perceptions of inequity in the funding of ICT facilities:

> *Because we are not in a deprived area or anything like that you don't attract the extra funds. When you are a successful school you don't attract the additional funding. […] our children deserve the up-to-date IT facilities as much as children in deprived areas.*

3.3.2 Access to connected computers

Across all schools the pattern of access to connected computers in lessons was similar. The majority of teachers had access to an ICT suite that enabled each pupil to use a connected computer. However, access to the ICT suite was limited, with staff having timetabled slots or having to book the suite in advance. Most classrooms had one or more computers, although not all of these computers were connected to the embc service. Where connectivity was available in the classroom, the additional computers enabled small groups of pupils or teachers to make use of connectivity during lessons.

A major development that has helped to bridge some of the gaps in access for whole-class teaching has been the introduction of interactive whiteboards. Every member of staff with access to a whiteboard described the synergistic benefits flowing from the combination of whiteboards and broadband and the impact this has had on teaching (see section 2.1.2) and connectivity usage. They also mentioned the introduction of wireless connectivity and wireless-enabled laptops as increasing the opportunities for pupils to access connectivity. In many schools further whiteboards were due to be introduced, and teachers generally felt that more whiteboards, more points of access and extending connectivity to other parts of the premises would facilitate their use of connectivity.

Many staff made use of their home connection when preparing lessons. Staff without internet access at home generally felt that they were able to get the access they needed either at lunch times or at the end of the school day. In some schools, security of ICT equipment restricted teachers' access to connectivity and to the whiteboards. A further issue for staff was that some laptops supplied to teachers were not network enabled and could not access the embc service. In some schools, the provision of laptops was being extended to teaching assistants.

3.3.3 Speed and reliability of the connection

For the majority of interviewees, their expectations of broadband connectivity were in relation to the speed and the reliability of the connection in comparison to non-broadband connectivity. These expectations have largely been met. One teacher commented that before broadband she had an awareness of how connectivity might transform her teaching: the introduction of broadband had enabled her to realise this transformation. Interviewees generally felt that the reliability of their school connection had improved with the introduction of broadband but some problems had occurred and teachers commented that they still maintained a backup plan, in case something went wrong when they accessed the service.

Interviewees in many schools stressed that the impact of a failed connection on teachers' confidence in connectivity was more profound and longer term than just the disruption of lessons. One headteacher felt that staff who used broadband regularly had a realistic perception of its reliability. He added that staff who had a bad experience of pre-broadband connectivity needed to use broadband many times to gain confidence in using connectivity in lessons.

A few interviewees highlighted problems with the filtering settings: in one primary school this had blocked access to *Google* and the ICT subject leader felt that they had been poorly briefed about the service. In a secondary school the filtering had allowed access to unsuitable material and the ICT subject

leader felt that the settings were not flexible enough. In the special school additional non-embc filtering was in place, and this appeared to be causing problems for users of the connectivity service.

3.3.4 Reliability of associated hardware that was not the responsibility of embc

Staff also highlighted instances of connectivity problems within schools that were not the responsibility of embc, including:

- malfunctioning hardware (e.g. old computers or uncharged laptop batteries)
- problems associated with the school network (e.g. 'slow' computers on some parts of the network)
- problems associated with wireless connectivity (e.g. dead spaces in the building).

3.3.5 Availability of technical support

In primary schools, a support technician was normally available on a part-time basis only. In many instances, therefore, teaching staff were involved in troubleshooting technical problems. Resolving technical problems was a major issue for a number of schools and staff complained of being passed backwards and forwards between helpdesks of hardware and service providers. Several interviewees were critical of the service they had received from embc's helpdesk and felt that helpdesk staff were too ready to assume that connectivity problems lay within the school.

3.4 Chapter Summary

Lack of awareness about what connectivity services were available and their potential for use in teaching and learning was a major theme emerging from the interview data. Staff identified this as a factor limiting their use of the connectivity service. A second major factor was the confidence of staff to use connectivity in lessons. This could be undermined by a previous experience when connectivity had failed during a lesson. Staff who use broadband regularly were thought to have a realistic expectation of its reliability in comparison with non-broadband connectivity. Other factors identified by staff as limiting their use of the connectivity were a lack of time to explore the service and, in primary schools, accessing technical support in the event of a system failure was an issue.

4   embc

In this Chapter we report findings about the:

- level of awareness about embc and embc services
- expectations for the broadband service specifically linked to embc
- supporting the use of connectivity through local authorities and embc.

In essence, this Chapter builds on evidence previously presented as to 'capacity'. By this we mean the capacity of schools, teachers, staff and pupils to exploit the opportunities provided by broadband connection in relation to embc services, as well as the capacity of the embc service to effectively meet the needs of staff and pupils.

4.1   Awareness of embc

Findings from the first phase of this evaluation (Lewis *et al.,* 2005) suggested generally low levels of awareness among respondents about:

- who or what embc were
- what kind/type of internet connection their school used.

However, the analysis of survey data was unable to explore what the impacts of low awareness might be. Therefore, the opportunity was taken to explore interviewees' awareness of embc in more detail. To do this, interviews explored staff awareness of:

- embc (i.e. what embc is)
- the services offered through embc
- the ways in which embc could offer professional and technical support.

Responses showed interviewees were generally unaware about the role of, and the range of services provided by, embc. Some interviewees were aware that embc provided their broadband connection, but usually they were not aware of linked services. For instance, a small number of staff knew that embc provided the CG portal, but interviewee responses suggested that few of these staff demonstrated comprehensive awareness of the potential scope of the CG.

Generally, interviewee responses suggest that schools are focusing on developing their internal ICT capacity. For instance, one interviewee explained the developing use of ICT, in relation to the potential capacity of broadband services, by reporting that their school had an '*eyes down*' approach. Schools' focus on development was largely directed towards

internal matters, set within a framework of un-answered questions about the wider potential of connectivity generally and embc specifically.

In general, evidence showed schools were concentrating on developing internal ICT capacity before having the time to turn their attention outward. Encouragingly, evidence also shows that, while internal capacity development is for many schools the general focus of effort, most schools expect or aspire to make more use of ICT or embc services as their internal capacity develops.

4.2   Expectations for embc services

Evidence presented in Chapters 2 and 3 demonstrates a lack of clarity amongst many interviewees about what the embc service can offer participating schools. As a result, many staff would seem to be lacking:

- comprehensive conceptual awareness about what potential the embc services have in terms of teaching and learning
- an understanding about how the embc services can fit with overall school planning and lesson delivery
- confidence in the use of existing connectivity-related services, embc or otherwise.

Within this context, when asked about their expectations for embc services, interviewees unsurprisingly tended towards providing data about what they perceived as potential benefits of connectivity in general, as well as (or rather than) expectations for embc services specifically. As a result, responses generally fell into two categories: questions and statements that demonstrated a lack of awareness and expressions of need for more information, such as:

- 'Can we upload and download files through the Community Gateway?'
- 'I haven't received training yet, so I don't know how to access the private folder on CG.'
- 'Do embc run training?'
- 'What does home access offer to pupils and staff?'

More specifically, interview responses demonstrated a lack of:

- knowledge or understanding of CG and video conferencing
- understanding about what website hosting was
- awareness about British Pathe Archive.

Most interviewees mentioned that they had expected a 'speedier' connection via broadband, although again this expectation had more do with a perceived

potential benefit of broadband, rather than an informed expectation relating to embc.

4.2.1 Expectations for embc which had been met

Interviewees were also asked about the extent to which their expectations regarding embc had been met. Here it is important to bear in mind the previously mentioned low levels of awareness about embc and its services. Within this context, responses tended to repeat the issues described in the previous section, namely respondents reflected on the potential benefits of broadband and/or ICT in general, rather than being able to describe the extent to which informed expectations linked explicitly to embc had been met. The following points summarise the benefits which, according to some interviewees had been observed or experienced as a consequence of having a broadband connection.

- Increased reliability. One interview commented, '[…] you take it [broadband] for granted, its there and it works'.
- Easier (quicker) access to resources. For example, because of the increased connection speed, finding, accessing and downloading had become easier.
- The motivation of pupils and staff. For example, use of and access to 'novel' sources had been seen to excite and motivate pupils' interest and work and that of staff in what can perhaps be described as a virtuous cycle of innovation.
- Providing efficient access to a greater variety of resources. For example, the speed of connection has enabled access to a greater variety of resources.
- Being able to use a variety of associated technology. For example, whiteboards and video conferencing.
- Driving standards up. For example, reliable and fast connections had motivated and enhanced ICT skill development amongst staff and pupils, which in turn was driving standards up in this regard.
- Facilitating independent learning. For example, increasing use of ICT and various programmes enhanced the development of independent learning skills amongst pupils.
- Enabling greater benefit from others' work and ideas/sharing. For example, broadband had enhanced and increased users' ability to access other users' work.
- More efficient communications (internal and external).
- Facilitating/motivating increased use of ICT by pupils and staff.
- Facilitating cross-curricular use of ICT.
- Providing an out-of-school access portal.
- Providing up-to-date virus protection.
- Providing filtering.

4.2.2 Expectations which were not met

Interviewees were also asked what expectations had not been met. A few interviewees reported that expectations relating to speed, reliability and ease of broadband access had not been met. However, such examples were isolated and usually related to the immediate period after they became broadband connected. Only in a few instances had (perceived) reliability issues continued to be the cause of problems in the interviewees' schools.

As recognised by some interviewees, reliability issues and/or speed of access problems may not have been the result of embc's service, but instead certain websites may have been experiencing slow response speeds due to other factors, like high volumes of traffic. Furthermore, it may be the case that the quality or specifications of hardware had an impact here.

In addition, interviewees mentioned other examples of the embc service not meeting expectations or having, in their perception, inherent potential disadvantages.

- There had been a need to change email systems and this had resulted in some confusion and set-up difficulties, although those interviewees mentioning this also recognised that these had been set-up problems and, as such, these had been ironed out and were a once-only event. Ultimately, these difficulties could be attributable to a lack of appropriate support, resulting in difficulties during set-up.
- Some interviewees were aware of CG, but a few were unclear about how they could make best use of it.
- One interviewee had concerns about the time taken to establish CG, that technical document storage was not up to date, that the help desk was not effective and that overall, the system was poor and caused disruption to teaching and learning. However, while other interviews agreed with elements of these perceptions, this person was the only interviewee who mentioned all of them.
- Interviewees had, on occasion, been frustrated by the filtering system, which they thought unnecessarily blocked access to suitable sites and therefore interrupted or caused delay to users. However, those mentioning difficulties with the filtering system also said that they were able to switch off the filtering, although it was unclear whether they had meant being able to reconfigure settings or simply switch off the filtering application.
- Several interviewees mentioned that the video conferencing application was not always available, causing disruption to planned activity and disappointment to staff and pupils and, perhaps, making it less likely that staff would develop its use across curriculum subjects.
- Some interviewees had experienced problems with the learning platform (Assimilate) and this had resulted in a deficit of trust or confidence in the potential of learning platforms, amongst a minority of staff.

Many interviewees commented on the need for more training. In many cases, this was linked to specific applications, such as CG. Overall, interviewee data

indicates a lack of awareness about what training is available and this is linked to interviewees' perceptions that the training support they had perhaps expected from embc had not been forthcoming, or information had not been effectively disseminated.

Among interviewees, who were aware of embc services, many pointed towards the potential confusion caused by the plethora of other applications and services available and, in some cases, applications that provided alternatives to embc services.

4.3 Additional support needs

Staff were also asked what they thought could be done to provide further support and development in relation to the embc service, in terms of that which could be provided by:

- local authorities
- embc
- other capacity building opportunities, such as those within and or between schools.

Many interviewees wanted more information about the applications and services available to them, about their potential and about how to make best use of them. Interviewees had differing views both about who should provide information and training, and about their preferred methods for receiving it. For instance, many interviewees, concerned about costs and staff coverage, wanted individual and expert support in school, either via face-to-face training or in the form of downloadable information packages. Others preferred, and had been impressed by, the usefulness of conferences and workshops; several interviewees referred to positive outcomes from such events.

Furthermore, many interviewees wanted improved and more responsive help desks, preferably ones that did not close during break and lunch times.

Interviewees were often confused as to the role of the various support points available to them. For instance, many schools have the following support available to them:

- LA training
- LA and/or school initiated coordinated development with other local schools
- embc training, conferences and workshops
- LA IT support, usually a technician who visits the school infrequently or in emergencies and who can sometimes provide telephone support

- support from a hardware provider from whom the school has sourced their IT equipment
- the embc help desk.

In general, interview data suggests that schools would benefit from guidance as to which support to access in particular circumstances. Furthermore, for schools to usefully contribute to the process of capacity building (to LAs, embc or other service providers) it would first be necessary for them to acquire clarity as to the role and responsibilities of the various support providers. In general, interviewees wanted two main types of support:

- preparatory and ongoing awareness raising, characterised by succinct information about what was available, what contribution it could make and how it could be used
- supplementary and supportive, characterised by information sources to help with problems, help inform ongoing development and be responsive to immediate need.

4.4 Chapter summary

At the heart of the data gathered about interviewees' awareness of (and expectations for) embc and its services is a lack of awareness about what embc is and about what services embc offers, which was, to a large extent, a consequence of a general lack of awareness about connectivity. It is likely that this has made, and will continue to make, it very difficult for embc to effectively disseminate useful information to staff without addressing key capacity building needs first.

5 Conclusions and recommendations

5.1 Summary of findings

Chapter 2 of this report is a positive endorsement of broadband connectivity in schools and of the difference that broadband is making to teaching and learning. The low uptake of the ancillary services, such as learning platforms, was largely due to end-users who lacked awareness about their potential and who considered these services to be difficult to use and unreliable. In Section 5.3 we make recommendations intended to enable embc to develop their service and the use of broadband regionally, based on an understanding of the context in which ICT/connectivity is developing in schools.

5.2 Setting the context for recommendations

It is useful to highlight the wider context within which consideration of embc development and provision may be set and appropriate recommendations made, as to how embc should develop to meet the needs of service users.

Strategically, the policy agenda is increasingly moving towards transferring choice and responsibility to individual schools, within a broad needs-based framework of coordinated provision for the child, witnessed by the Children Act (England and Wales. Statutes, 2004) and *Every Child Matters: Change for Children* (HM Government, 2004). Individual DfES policy initiatives and strategic foci are unsurprisingly consistent with these developments, and include:

- personalised learning (which includes learning to learn, school improvement, collaboration, Assessment for Learning, pupil and parental voice and choice)
- workforce remodelling (including an emphasis on the development of school leadership)
- the developing use of ICT in education.

These various factors have implications, and provide a significant challenges to and opportunities, for how embc might benefit from consideration of the findings reported here. Perhaps, the overarching challenge for embc is how to develop a service, which meets the needs of its users in an environment demanding diversity, flexibility and needs-based responsiveness.

In the next section, we make a series of recommendations based on our findings, but rooted in and reflective of the context briefly described above. In doing so, we address the key challenge noted above by identifying potential opportunities for embc's service development arising from it.

5.3 Recommendations

Our findings show that there are wide variations between and within schools as to how far they have been able to develop their capacity and consequently embed the use of connectivity (and ICT generally) in school planning, provision and development. The development of capacity in this area is challenging in itself, as ICT is constantly the subject of innovation and change. Therefore, while our recommendations are structured to reflect the stated aims of embc and the developmental needs of embc, they also highlight key challenges for embc to consider so that embc can contribute to ensuring that service users are in a position to:

- understand the potential offered by broadband through an increased and common awareness of ICT, broadband, related applications, services and associated technology, so that embc can engage in meaningful two-way dialogue with its users
- understand where support can be accessed so that users achieve clarity and a sense of informed security in relation to various general categories of support (such as hardware, broadband connectivity and related applications and services)
- understand the potential offered by ICT and broadband to their schools and in relation to their individual tasks and responsibilities, so that the relevance and importance of ICT can be understood through applied examples and sharing of good practice
- accommodate, react to and exploit ongoing ICT innovation and service development.

We consider that embc's contribution to information or awareness-raising is central to embc being able to enter an informed dialogue with service users, in which embc would be able to share information about their services and enjoy comprehensive engagement in return from service users. To enable embc to achieve this, we suggest that embc consider to what extent they need to develop further as a 'centre of excellence and best practice' and as an organisation schools and others choose to work with, thus attracting the attention of users to their core services and service-provider role. We suggest that the development of such a profile would enhance embc's ability to provide services that are needs-based and are the subject of effective and ongoing development and change.

5.3.1 Raising awareness about ICT support

We recommend that embc consider enhancing their role as a general source of information aimed at raising general ICT/connectivity awareness by providing users with:

(i) clarity about the minimum specifications for ICT hardware (and related technology) necessary to maximise the potential offered by broadband connection

(ii) clarity about the support that can be accessed according to the whether the support requirement relates to hardware, connectivity service or separate application/software packages – perhaps by providing relevant links through a 'support' page on their website

(iii)information in a way that reflects users' diversity of understanding and/or capacity

(iv)updates about ICT research and technical innovation, in a way that reflects relevance to the users involved.

5.3.2 Raising awareness about the potential of ICT

A central challenge to motivating and encouraging staff to make best use of connectivity (and ICT generally) is relating its potential to the realties and contexts of users' daily tasks and responsibilities. Therefore, within the strategic context presented in section 5.2, we recommend that embc consider what opportunities there are to disseminate information about ICT, and specifically the potential offered by broadband connection, by:

(i) providing applied examples of how embc's service can be used in relation to individual key areas such as personalised learning

(ii) making such examples accessible to users whose ICT capacity would vary considerably, by designing examples in such a way to reflect this capacity diversity

(iii)where possible identifying exemplars of practice within the region or identifying champions who are willing to mentor other users

(iv)supporting and informing a programme of locally facilitated workshops, to deliver face-to-face information

(v) demonstrating how broadband services relate to cross-curricular provision

(vi)demonstrating how broadband services relate to all categories of staff

(vii) demonstrating the potential broadband offers to inter-school and other stakeholder collaboration

(viii) demonstrating the potential broadband offers to home-school communication.

We also recommend that embc should consider how they can offer further support for school staff who cascade information about connectivity (and ICT) potential through their schools, for example by providing:

(i)   up-date-research to ICT subject leaders, such as that relating to the development of learning communities, relevant to school phase

(ii)   identifying and/or developing and disseminating consistent and clear support materials that these staff could use with colleagues.

5.3.3 Supporting current broadband use

Above we have made recommendations in relation to the development of capacity. Here we suggest ways in which embc might wish to consider improving its ongoing day-to-day support for users by:

- **reviewing the role and operation of embc's help desk**

for instance, so that:

(i)   embc ensures that the help desk is accessible to schools at times when teachers (and other staff) are likely to look for support, for example. lunch times, break times and for some period before and after school

(ii)   it provides a 'further information and resources' function via the embc website – perhaps focused on issues that have been raised by callers to the help desk, but also with easy links to other useful and relevant information sources, such as Becta

(iii)   users are fully informed as to the specific areas of support covered by the help desk

(iv)   if requests outside the competence of the help desk are made, callers are, wherever possible, referred to alternative support services

(v)   the help desk is staffed by individuals who are fully trained so as to deal with any call within the help desk's stated remit.

- **reviewing the approach currently taken to staff training and information**

for instance, by:

(i)   accurately identifying the diversity of needs of users in the region in terms of ensuring that the information required is disseminated in a way that reflects this diversity

(ii)   accurately identifying users' preferred methods for receiving and delivering information.

5.4 Concluding remarks

This report has shone a spotlight on many challenges facing embc's service delivery, but in its core activity of delivering a fast internet connection to schools, embc has much to celebrate. Furthermore, while it is clear that staff lack awareness about the full potential offered by connectivity and, in particular, broadband it is also the case that most of those interviewed aspire to being able to exploit and benefit from broadband and connectivity generally. Such aspirations (and schools' determination) provide a positive environment in which capacity development can be further supported. Hence, the challenges and opportunities for embc centre on how, and to what extent, they are able to engage with generally willing users to address low levels of awareness, so that embc services can become increasingly central to the daily lives of their service users.

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Websites

The following pages were used for background information in Chapter 1 and can be found on the embc website http://www.embc.org.uk/home/

Achievements to date
Advantages to joining
Aims and objectives
DfES Broadband Policy
ELC's: Electronic Learning Credits
Member LEAs

Mission
Services available
Structure
The Value of broadband
Uses of embc broadband
Welcome to the embc website
What is embc?
What are RBCs?

The following website was used for background information in Chapter 1:
http://www.embc.org.uk/national_policies/dfes.asp.

Appendix A.   Question schedules

Headteacher's schedule

Name of interviewee	
Name of institution	
Type of institution	*** Primary School/Secondary School/Special School**
LEA	
Interviewee's role/position	
Name of interviewer	
Date of interview	

* Circle the relevant school type

Thank you very much for agreeing to be interviewed today.

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During the interview we shall use the term connectivity by which we mean the ways in which **external** connectivity can be used by you and your school. This would include 'services' such as email and access to the internet and on-line resources.

Your responses are confidential in that neither you nor your institution will be individually named in any reports.

It would be really helpful if we could record the interview for later analysis. Would that be OK?

Do you have any questions before we make a start?

Section A. Interviewee background

1. **How long have you been headteacher at this school?**

   Probes: What was your previous post?
   How would you describe the level of your ICT skills?
   Have you attended SLICT? (Strategic Leadership in ICT offered by NCSL)
   When did the school receive a broadband connection?

Section B. Overview

2. **What would you say are the main ways connectivity has impacted on your role as headteacher?**

3. **How have you integrated the use of your connectivity service with your school's development plan?**

4. **What did you expect your school community to gain from the use of ICT and connectivity?**

   Prompts: Teaching staff
   Administration staff
   Pupils
   Parents
   Governors

5. **How would you like to see the use of connectivity developing in your school?**

Section C. Connectivity in teaching and learning

6. **Please could you outline the ways in which connectivity contributes to the teaching and learning of pupils in your school?**

7. **To what extent has connectivity changed the way in which the curriculum is delivered in your school?**

   Probe: Are teachers delivering the same product by a different means or is connectivity enabling them to do things which were not possible previously?

8. **Which elements of the connectivity service are most used in your school?**

   Prompts: video conferencing
   email
   document sharing
   the learning platform
   access to resources
   web site hosting

   Probe: Why are some aspects more used than others?

   Prompts: Lack of time to develop
   Not relevant to school's needs
   No learning opportunities identified
   Lack of equipment
   Lack of expertise

9. **Do you think that there are any particular curriculum areas or key stages where greater use is made of the connectivity service than in others?**

   If 'Yes' Probes: What are the reasons for this?
   What encourages non-ICT staff to make use of the connectivity?

   If 'No' Probe: Why?

   Prompts: Staff reticence
   Curriculum presents fewer opportunities

10. Has your school used connectivity to undertake or develop collaborative work?

Prompts: Between classes/pupils in other schools or within your school
Between staff from other schools or within your own school
(for training/professional development)
Between your school and parents

11. In what ways have you encouraged your staff to make the best use of your connectivity service?

Section D. Exploring the barriers to making full use of connectivity

12. What training have your staff received regarding the use of your connectivity service?

Prompts: Formal and informal training that encourages the use of connectivity
Training regarding specific software and online resources like file savers
Training for the use of hardware like whiteboards

13. How confident do you think that your staff are in making full use of your connectivity service?

Probe: If staff are not confident what are the reasons for this*?*

Prompts: Lack of training
Lack of technical support
Limited access to connected computers and hardware
Poor reliability
Lack of practice

14. What in-school support exists to help staff use connectivity in their lessons?

> *Prompt:*   Formal and or informal

15. In relation to teaching and learning, what aspects of the embc service do you find most rewarding and what do you find most frustrating?

16. Would you like staff to be able to access embc services from home?

Section E. Role of embc and LEA

17. Were you in your current position in the lead up to joining the embc service?

18. What were your expectations of the service which embc could provide?

19. How have your expectations been met by the service which you have received from embc?

> *Probes:*   In what areas have your expectations not been met?
> In what areas have your expectations been exceeded?

20. How do you think you could be best supported in promoting and developing the use of connectivity in teaching and learning by:

a) embc?

b) the LEA?

> *Prompt:*   embc/LEA training and Help Desk

21. Is there anything else you would like to add?

Thank you for your time

ICT subject leader's schedule

Name of interviewee	
Name of institution	
Type of institution	*** Primary School/Secondary School/Special School**
LEA	
Interviewee's role/position	
Name of interviewer	
Date of interview	

* Circle the relevant school type

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It would be really helpful if we could record the interview for later analysis. Would that be OK?

Do you have any questions before we make a start?

Section A. Interviewee background

1. **Please could you say how long you have worked at this school?**

2. **How long have you held your position as an ICT subject leader in this school?**

   Probes: What prompted you to take on this role?
   Have you held a similar position previously?
   Do you have easy access to a 'connected' computer?
   Prompt: LfT
   When did the school receive a broadband connection?

Section B. Overview

3. **What do you expect your school community to gain from the use of broadband connectivity?**

   Prompts: Teaching staff
   Administration staff
   Pupils
   Parents
   Governors

4. **How would you like to see the use of connectivity developing in your school?**

   Probes: What factors do you think may help in this development?
   What factors do you think may be barriers to development?

5. Does your school provide access to 'connected' computers for lessons?

If **Yes** *Probes:*   Where are they located?   *Prompt:* In classroom, ICT suite, etc
Are teaching staff able to access these computers whenever
they would like to make use of them?
Are pupils able to access these computers whenever you would
like to make use of them?

If **No** *Probe***:**   Please try and quantify how much more access you think staff
would like.   *Prompt*:   Number of lessons/time

What feedback, if any, have you had from your pupils about
accessibility to connected computers?

Section C. Connectivity in teaching and learning

6. Please could you outline the ways in which connectivity contributes to the teaching and learning of pupils in your school?

7. To what extent has connectivity changed the way in which the curriculum is delivered in your school?

Probe: Are teachers delivering the same product by a different
means or is connectivity enabling them to do things which were
not possible previously?

8. Which elements of the connectivity service are most used in your school?

Prompts: video conferencing
email
document sharing
the learning platform
access to resources
web site hosting

Probe: Why are some aspects more used than others?

Prompts: Lack of time to develop
Not relevant to school's needs
No learning opportunities identified
Lack of equipment
Lack of expertise

9. **Are there any curriculum areas/key stages where the connectivity service is less well used than in others?**

If **Yes**, *Probe:*   What are the reasons for this?

     Prompts: Staff reticence
                   Curriculum presents fewer opportunities

10. **In relation to teaching at your school, what factors do you think:**

   a) **help make full use of connectivity?**

   b) **are barriers to making full use of connectivity**

(**For both a and b**)   Prompts: Hardware/equipment
                                       Staff skills
                                       Available software
                                       Available time

11. **Has your school used connectivity to undertake or develop collaborative work?**

     Prompts: Between classes/pupils in other schools or within your school
                   Between staff from other schools or within your own school (for training/professional development)
                   Between your school and parents

Section D. Exploring the barriers to making full use of connectivity

12. **What training have teaching staff received regarding the use of your connectivity service?**

     Prompts: Formal and informal training
                   Training regarding specific software and online resources like file savers
                   Training for the use of hardware like whiteboards

13. How confident do you think that your teaching staff are in making full use of your connectivity service?

Probe: If staff are not confident what are the reasons for this?

Prompts: Lack of training
Lack of technical support
Limited access to connected computers and hardware
Poor reliability
Lack of practice

14. What in-school support exists to help teaching staff use (or make use of) connectivity in   their lessons?

Prompt: Formal and informal

15. What do you find most rewarding about the connectivity service and what do you find most frustrating?

16. What scope exists to make further use of the connectivity service in your school's classes?

Probes: What barriers need to be overcome to make this happen?
Can the school deliver 'connectivity' down to the desktop or do the school's ICT infrastructure and computers need upgrading?

Section E. Role of embc and LEA

17. What were your expectations of the service which embc could provide?

Probe: Would you like to be able to access embc services from home?

18. Have your expectations been met?

Probes: *In what areas have your expectations not been met?*
                     In what areas have your expectations been exceeded?

19. How do you think you could be best supported in promoting and developing the use of connectivity in teaching and learning by:
]
c) embc?

d) the LEA?

Prompt: embc/LEA training and Help Desk

20. Is there anything else you would like to add?

Thank you for your time

Non-ICT subject leader's and class teacher's schedule

Name of interviewee	
Name of institution	
Type of institution	*** Primary School/Secondary School/Special School**
LEA	
Interviewee's role/position	
Name of interviewer	
Date of interview	

* Circle the relevant school type

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It would be really helpful if we could record the interview for later analysis. Would that be OK?

Do you have any questions before we make a start?

Section A. Interviewee background

1. **Please could you say how long you have worked at this school?**

2. **Please could you describe your current role?**

   Prompt: Subject/s responsibility

   Probes: How would you describe the level of your ICT skills?
                      Do you have easy access to a connected computer? *Prompt***:**
                      LfT

Section B. Overview

3. **Do you have access to 'connected' computers for lessons?**

If **Yes** *Probes:*   Where are they located?   *Prompt:* In classroom, ICT suite, etc
                         Are you able to access these computers whenever you would
                         like to make use of them?
                         Are pupils able to access these computers whenever you would
                         like to make use of them?

If **No** *Probe***:**   Please try and quantify how much more access you would
                         like.?   *Prompt*:   Number of lessons/time

                         What feedback, if any, have you had from your pupils about
                         accessibility to connected computers?

4. **As a teacher, what did you expect to gain from the use of connectivity?**

5. **What would you say are the main ways connectivity has impacted on your role as a teacher?**

6. **At your school, what factors do you think:**

   c) **help make full use of connectivity?**

   d) **are barriers to making full use of connectivity**

(**For both a and b**)   *Prompts*:   Hardware/equipment
                                        Staff skills
                                        Available software
                                        Available time

Section C. Connectivity in teaching and learning

7. **Please could you outline the ways in which connectivity enhances your teaching and the learning of the pupils you teach?**

   Probe: Where do you see the main impact of connectivity?

   Prompts: Raising standards / levels of attainment?
                   Increasing motivation?
                   Facilitating learning how to learn?
                   Improving attendance?

8. **To what extent do you consider that connectivity has changed the way in which you deliver the curriculum?**

   Probe: Are teachers delivering the same product by a different means or is connectivity enabling them to do things which were not possible previously?

9.   **Which elements of the connectivity service do:**

a) **you use most?**

b) **your pupils use most?**

Prompts   :   video conferencing
                            email
                            document sharing
                            the learning platform
                            access to resources
                            web site hosting

Probe: Why do you think are some aspects more used than others?

Prompts: Lack of time to develop
                 Not relevant to school's needs
                 No learning opportunities identified
                 Lack of equipment
                 Lack of expertise

10. **Has your school used connectivity to undertake or develop collaborative work?**

Prompts: Between classes/pupils in other schools or within your school
                 Between staff from other schools or within your own school
                 (for training/professional development)
                 Between your school and parents

Section D. Exploring the barriers to making full use of connectivity

11. **What training have you received regarding the use of your connectivity service?**

Prompts: Formal and informal training
                 Training regarding specific software and online resources like
                 file savers
                 Training for the use of hardware like whiteboards

12. How confident do you think teaching staff are in using the connectivity service?

Probe: If staff are not confident, what are the reasons for this?

Prompts: Lack of training
Lack of technical support
Limited access to connected computers and hardware
Poor reliability
Lack of practice

13. What in-school support exists to help you use connectivity in lessons?

14. What do you find most rewarding about the connectivity service and what do you find most frustrating?

Probe: Would you like to be able to access embc services from home?

15. What scope exists to make further use of the connectivity service in your classes?

Probe: *What barriers need to be overcome to make this happen?*

Section E. Role of embc and LEA

16. How do you think you could be best supported in promoting and developing the use of connectivity in teaching and learning by:

e) embc?

f) the LEA?

Prompt: embc/LEA training and Help Desk

17. Is there anything else you would like to add?

Thank you for your time

Teaching assistant's schedule

Name of interviewee	
Name of institution	
Type of institution	*** Primary School/Secondary School/Special School**
LEA	
Interviewee's role/position	
Name of interviewer	
Date of interview	

* Circle the relevant school type

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Do you have any questions before we make a start?

Section A. Interviewee background

1. **Please could you say how long you have worked at this school?**

2. **Please could you describe your role?**

    Probes: Which year groups or classes are you supporting?

How would you describe the level of your ICT skills?
Do you have easy access to a computer? *Prompt*:   LfT

Section B. Overview

3. Is the connectivity service used by all the teachers you support?

If **No,** *Probe:*   What do you think are the possible reasons for the differences?

Section C Connectivity in teaching and learning

4. Please could you describe the range of circumstances in which you use the connectivity service?

5. Do you use the connectivity service by choice?

If **Yes** *Probe:*   What motivates you to use it?

If **No** *Probe:*   Why?

6. Which elements of the connectivity service do you/your pupils use the most?

Prompts: video conferencing
email
document sharing
the learning platform
access to resources
web site hosting

7. Please could you describe any collaborative learning projects which you have been involved in?

Prompts: Between classes/pupils in other schools or within your school
Between staff from other schools or within your own school
(for training/professional development)
Between your school and parents

8. **Which elements of the connectivity service do you think have most impact on pupils and their learning?**

Section D. Exploring the barriers to making full use of connectivity

9. **How confident do you feel in utilising the connectivity service?**

   Prompt: Confidence in relation to different factors/elements of broadband and embc services, as well as hardware such as video conferencing

If **Not confident**, *Probe:* What are the reasons for this?

   Prompts: Lack of training
   Lack of technical support
   Limited access to connected computers and hardware
   Poor reliability
   Lack of practice

10. **What training have you received in the use of the connectivity service (This would include using broadband and the associated services and programmes)?**

   Prompts: Formal and informal training
   Training regarding specific software and online resources like file savers
   Training for the use of hardware like whiteboards

11. **What in-school support exists to help you make use of connectivity in lessons?**

12. **What do you find most rewarding and what do you find most frustrating about the connectivity service?**

   Probe: Would you like to be able to access embc services from home?

13. **Is there anything else you would like to add?**

Thank you for your time