

**National Foundation
for Educational Research**



**Evaluation of the East Midlands Broadband
Consortium**

**Connectivity in schools. Findings from an online
survey.**

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1 Introduction

1.1 Background

1.1.1 National broadband policy

In a keynote speech to the e-summit in November 2002, the Prime Minister announced that the Government would make funding available to provide a broadband connection to every school by 2006. Following this commitment, the government'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.

1.1.2 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 education authorities (LEAs) from the authorities which make up the East Midlands government region¹. The nine LEAs have signed an 'Agreement' to work together and operate by consensus. A Steering Group with representatives from all nine LEAs 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

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.

connection to the internet. A relatively small number of schools are connected to the embc service via an ISDN connection.

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 Webview.

In addition, once they are connected, schools are invited to training provided by their LEA.²

² The information for this section was summarised from a number of pages on the embc website at www.embc.org.uk (see References 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 initial 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 also draw attention to the complex nature of measuring causal effect (Pittard *et al.*, 2003), urging caution and additional research.

Increasingly, interest has focused on the potential offered by fast connectivity via broadband and the (government-led) drive to embed ICT with school activities, management, teaching and learning. Within this context there has been recent research, which was generally very positive about the potential for broadband to improve teaching and learning and about the actual impact of broadband in schools.

For instance, a recent report *Connecting with Broadband: Evidence from the Field* (Underwood *et al.*, 2004) concluded that:

- broadband had a positive effect on the capacity of staff to deliver effective learning
- there was a trend for more staff using ICT, with staff from more diverse subjects using ICT, after the installation of broadband
- broadband enabled staff, pupils and schools to undertake new activities as well as completing familiar activities in new and innovative ways.

The same report however, also draws attention to barriers that evaluators consider can get in the way of the successful adoption and maintenance of a broadband connection. These include: ‘... *the costs of implementing and maintaining effective broadband connectivity...*’, which the authors recognise ‘... *are not insignificant and have implications for school budgets.*’ Such costs would include the cost of connection, equipment upgrades and purchases and a potentially costly investment in human capital – with the need to develop appropriate strategies and professional development.

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...
(p. 2, embc *Invitation to Tender*, 2004)

With an interest in identifying the added value of connectivity³ via broadband/embc, the research focuses on exploring the following five areas:

- the perceived benefits of connectivity
- awareness of and understanding about connectivity, as well as 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 is 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.

Phase 2. Thirty case studies of embc schools with a broadband connection to help to further explore and explain the impact of embc services and connectivity on teachers and schools.

The findings from Phase 1 are reported here, and these will help to inform the focus of research in the case-study phase.

1.3.1 Respondents and response rates

The majority of schools in the embc area were connected to embc at the time of the survey (Autumn 2004), but a number of primary schools were not. Therefore, following consultation between NFER and embc, a decision was made to invite all schools (including special schools⁴) in the embc area to take part in the survey, so that the potential for comparative analysis (at least

³ Throughout the evaluation and this report, we use the terms 'connectivity' and 'external connectivity' to mean the various ways a computer (or computers) can link to external electronic resources or services, for example email, online learning resources, online information sources, online software or online learning/teaching communities.

⁴ For the purposes of analysis, special schools were included in the primary school sample.

between primary schools with different types of connection) was maximised. A group of non-schools settings⁵ (individually identified by embc) were also approached.

School categories

The research sought to contrast responses from schools belonging to embc with those who do not, and between schools with broadband and those who had other types of connection. From these categories of school, NFER developed four school categories, which are used throughout this report:

- non-embc schools (primary schools who were not in receipt of embc services)
- embc schools without broadband (primary schools who were in receipt of embc services, but who did not have a broadband connection)
- primary embc schools with broadband (primary schools who were in receipt of embc services and who had a broadband connection)
- secondary schools (all of which had an embc service with a broadband connection).

A note about respondent types and questionnaire design and development

The online questionnaire was developed by researchers and technical specialists at the NFER in close cooperation and consultation with embc members. The questionnaire was designed so that it could gather data about:

- respondents' perceptions of the impact of connectivity on their schools and themselves
- respondents' awareness of factual aspects of connectivity and its potential in relation to their particular role and institution
- respondents' awareness about the embc
- links between ICT resources and the use made of connectivity
- barriers to the effective use of connectivity
- barriers to achieving broadband connectivity.

As the online questionnaire applied to a wide range of potential respondents, including teachers, administrators and non-school based staff, it was necessary to ensure that the different respondents could access the questions that were relevant to them. To do this, the online questionnaire made use of routing which directed respondents to complete appropriate sections.

⁵ This refers to institutions (other than schools), used for education activities such as adult education. All these locations were in fact libraries.

Furthermore, routing allowed respondents to save their responses and return to the questionnaire at will. When returning to the survey, respondents re-entered at the start of the next uncompleted section.

Recruitment

In October 2004, the headteachers of 1,966 schools were invited to arrange for a fixed number and type of school staff to complete the online survey. In primary and special schools, up to three members of staff were invited to complete the survey. In secondary schools, four members of staff were invited. The members of staff were chosen at the discretion of the headteacher but a request was made that they include the following:

- an ICT subject leader (all schools)
- a core subject leader or SENCO (all schools)
- a non-core subject leader (in secondary schools only)
- the Bursar or another (preferably senior) member of the administrative staff (all schools).⁶

Each headteacher received information sheets to distribute to the selected staff. Each sheet detailed the instructions for completing the survey online and gave guidance about the information that respondents might need to collect before completing the survey. At the same time, letters were sent to named individuals, identified by embc, at non-school settings. Each individual received detailed instructions on how to access the questionnaire.

The deadline for completion of the questionnaire was set for the end of November 2004, but was extended by two weeks with the agreement of embc. About half way through the survey period, schools who had not returned any questionnaires and those who had returned just one response were contacted by letter to encourage further response. embc also arranged for member LEAs to distribute a general letter to all schools encouraging response. The survey period was extended by two weeks specifically to provide extra time for secondary schools to respond, with the aim of securing a minimum of one response each from at least 100 secondary schools.

⁶ For the purposes of reporting data ICT subject leaders are referred to as ICT teachers and all other teachers are referred to as non-ICT teachers.

Response rates

Our school sample was divided into three basic categories of institution: primary schools, secondary schools and non-school settings. The primary sample included all primary and special schools in the nine LEAs involved, and the secondary school sample included all secondary maintained schools in the embc area.⁷ The non-school settings contacts included 84 named individuals.

Of the 1,696 primary schools that were approached, at least one response was received from 554 schools, representing a 33 per cent response rate. Two hundred and seventy secondary schools were approached, eliciting at least one response from each of 108 schools, representing a 40 per cent response rate. However, of the 84 non-school setting approached, only 22 completed questionnaires were returned (see also Section 1.3 below).

Table 1.1 Number of respondents returning completed questionnaires

School category	ICT teachers	Non-ICT teachers	All teachers	Administrators	All staff
Primary non-embc	76	58	134	110	224
Primary embc without broadband	67	38	105	77	182
Primary embc with broadband	219	153	372	268	640
Secondary	75	106	181	82	263

Table 1.1 shows the number of individual respondents who returned completed questionnaires by school category and respondent type. Additional response tables (see Appendix A) show the number of responses to particular questions and/or a series of statements, and these are referenced as appropriate throughout the report. Tables detailing the analysis can also be found in Appendix A and are similarly referenced.

⁷ One LEA asked to withdraw half of their schools, because they had an agreed 'rota' for research activity with their schools and this evaluation would have breached the agreed rota and overburdened the schools involved.

1.4 Analysis of data

Unfortunately the small number of responses from non-school settings meant that findings from this group could not usefully be presented alongside those from schools and they have therefore been omitted from this analysis and report.

The data from school staff were analysed to explore responses according to school category and respondent type. Percentages mentioned in the report and reproduced in tables usually represent the most 'positive' responses. For example in Chapters 2 and 3, respondents indicated how much they agreed with a variety of statements ('strongly agree' to 'strongly disagree'), and the data presented focuses on the percentage of respondents who 'agreed' or 'strongly agreed' to these statements. However, a variety of question types were used and, where appropriate, an explanation of the analysis is provided (for example in Chapters 4 and 5). In Chapters 2,3,4,6 and 7, approximate percentages have been used (representing all respondents) as an indication of the overall response to a particular question or statement, although sub-groups may differ from these overall values. Please refer to the tables referenced in these chapters for the full range of responses.

1.5 The report

This report presents findings derived from the online questionnaire. The following Chapters, which closely correspond to the sections in the questionnaire (see Appendix B) are as follows.

Chapter 2. The impact of connectivity on ICT and non-ICT teachers. This chapter presents findings about teachers' perceptions of the impact of connectivity on their roles and duties.

Chapter 3. The impact of connectivity on administrators. This chapter presents findings about the perceptions of administrators of the impact of connectivity on their roles and duties.

Chapter 4. Making full use of connectivity. This chapter presents findings from both teachers and administrators about factors that may affect their ability to make full use of connectivity.

Chapter 5. Staff awareness about connectivity and embc. This chapter presents findings from teachers and administrators about their awareness of the type of connectivity they use and their awareness of, and knowledge about, embc.

Chapter 6. ICT resources and connectivity. This chapter presents findings, from ICT teachers only, about schools' ICT resources, particularly in relation to connectivity.

Chapter 7. Perceived barriers to having broadband. This chapter considers the reasons why some schools do not have broadband, and is based on responses only from ICT teachers in schools which did not have broadband.

Chapter 8. Conclusions. This chapter draws out and discusses some of the key findings presented in the previous chapters.

References

Appendix A. Tables

Appendix B. Questionnaire

2 The impact of connectivity on ICT and non-ICT teachers

In this chapter we present findings about teachers' perceptions of the impact of connectivity on their work. ICT and non-ICT teachers were given a series of statements describing impacts which connectivity could bring to their work and to their professional development. In response to each statement, respondents were asked to select one of six graded options, ranging from 'Strongly agree' to 'Strongly disagree' or 'Not applicable'. Findings reported in this chapter are based on the analysis of the percentage of respondents who selected 'Strongly agree' or 'Agree' and are reported by respondent type (ICT teachers and non-ICT teachers) and school category. Throughout this chapter approximate percentages have been used (representing all respondents) as an indication of the overall response to a particular question or statement. The data analysed in this chapter was derived from responses to questions in Section B of the online questionnaire (see Appendix B, Section B).

2.1 The impact of connectivity on the role of teachers

In this section, respondents were given a series of statements describing improvements which connectivity could bring to their role. The analysis is presented in Appendix A, Tables 2.1 – 2.13.

2.1.1 Findings for all respondents

The extent of agreement with the statements varied:

- connectivity improves access to curriculum support (about 85 per cent of respondents agreeing/strongly agreeing)
- connectivity provides a secure means of sharing confidential information (about 70 per cent)
- connectivity improves communication with the LEA (about 65 per cent)
- connectivity improves communication with colleagues (about 65 per cent)
- connectivity makes developing collaborative work with other schools/institutions easier (about 60 per cent)
- connectivity makes developing collaborative work within the school/institution easier (about 50 per cent)
- connectivity enables access to the connectivity service when the respondent is not at school (about 50 per cent)
- connectivity improves access to technical support (about 50 per cent)
- connectivity improves options for communication with governors (about 40 per cent)

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- connectivity improves options for communication with parents (about 40 per cent)
 - connectivity reduces the amount of paperwork respondents do (about 30 per cent)
 - connectivity reduces the time respondents spend on management and administrative tasks (about 25 per cent).

2.1.2 Findings by respondent type

Comparisons between respondent types showed that:

- ICT teachers were slightly more positive about the impact of connectivity on their role than non-ICT teachers. This was the case in all the school categories except embc schools without broadband, where non-ICT teachers were more positive than ICT teachers
- ICT teachers were markedly more positive about the impact of connectivity on developing collaboration with other schools, facilitating access to technical support and improving communication with the LEA, than non-ICT teachers.

2.1.3 Findings by school category

Comparisons between primary and secondary schools showed that:

- teachers in secondary schools were more likely to consider that connectivity made it easier to develop collaborative work within school and to improve communication with parents than teachers in primary schools
- ICT teachers in secondary schools were much more likely to consider that connectivity improved access to technical support than ICT teachers in primary schools
- non-ICT teachers in secondary schools were much less likely to consider that connectivity improved communication with the LEA and governors than non-ICT teachers in primary schools.

Comparisons between primary schools showed that:

- ICT teachers in embc primary schools without broadband were less positive about the impact of connectivity on their role than ICT teachers in other primary schools (i.e. embc primary schools with broadband and non-embc primary schools)
- ICT teachers in non-embc primary schools were less likely to report that they could access their school's connectivity service from outside school than ICT teachers in embc primary schools

- amongst non-ICT teachers there was no discernible pattern in responses between the different categories of schools.

Comparisons between schools with different types of connectivity showed that:

- in four out of the 12 statements in this group, teachers in schools with broadband (i.e. in both secondary schools and embc primary schools with broadband) were more positive about the impact of connectivity than teachers in schools without broadband
- there were no statements where the responses of teachers in schools with broadband were less positive than the responses of teachers in schools without broadband about the impact of connectivity
- in their responses to ten out of the 12 statements in this group, teachers in non-embc primary schools were more positive than teachers in embc primary schools about the impact of connectivity on their role.

2.2 The impact of connectivity on professional development

In this section, respondents were given a series of statements about how connectivity might improve the professional development of teachers and support staff. The analysis is presented in Appendix A, Tables 2.14 – 2.18.

2.2.1 Findings for all respondents

Teachers were more positive about the impact of connectivity on their professional development than they were about the impact of connectivity on the professional development of support staff. The extent of agreement with the statements varied:

- about 85 per cent of respondents agreed that connectivity improves access to resources to support the professional development of teaching staff
- about 70 per cent agreed that connectivity improves access to collaborative opportunities for the professional development of teaching staff
- about 65 per cent agreed that connectivity improves access to resources to support the professional development of support staff
- about 55 per cent agreed that connectivity improves access to collaborative opportunities to support the professional development of support staff.

2.2.2 Findings by respondent type

ICT teachers were slightly more positive about the impact of connectivity on the professional development of teachers and support staff than non-ICT teachers.

2.2.3 Findings by school category

Comparisons between primary and secondary schools showed that:

- teachers in secondary schools were less likely to consider that connectivity improved access to resources to support the professional development of teachers and support staff than teachers in primary schools
- ICT teachers in secondary schools were more likely to consider that connectivity improved access to collaborative opportunities for the professional development of teachers and support staff than ICT teachers in primary schools.

Comparisons between primary schools showed that:

- teachers in primary schools with broadband were more positive about the impact of connectivity on the professional development of teachers and support staff than teachers in primary schools without a broadband connection
- teachers in embc primary schools without broadband were less likely to consider that connectivity improved access to collaborative opportunities for the professional development of teachers and support staff than teachers in other primary schools.

Comparisons between schools with different types of connectivity showed that:

- in their responses to two out of the four statements in this group, ICT teachers and non-ICT teachers in schools with broadband (i.e. both secondary schools and primary schools with broadband) were more positive about the impact of connectivity than teachers in schools without broadband
- there were no statements about the impact of connectivity where the responses of ICT teachers and non-ICT teachers in schools with broadband were less positive than the responses of teachers in schools without broadband
- in their responses to three out of the four statements in this group, teachers in non-embc primary schools were more positive than teachers in embc primary schools about the impact of connectivity on professional development.

2.3 The impact of connectivity on teaching

In this section, teachers were given a series of statements describing how connectivity might make teaching easier. The analysis is presented in Appendix A, Tables 2.19 – 2.29.

2.3.1 Findings for all respondents

The extent of agreement with the statements varied:

- connectivity makes it easier to access resources for lessons (about 90 per cent of respondents replying strongly agree/agree)
- connectivity makes it easier to encourage the development of innovation in teaching and learning (about 75 per cent)
- connectivity makes it easier to share examples of good practice (about 75 per cent)
- connectivity makes it easier to plan schemes of work (about 75 per cent)
- connectivity makes it easier to prepare for lessons (about 70 per cent)
- connectivity makes it easier to analyse assessment results (about 65 per cent)
- connectivity makes it easier to access resources for use with interactive whiteboards (about 60 per cent)
- connectivity makes it easier to access resources for use with data projectors (about 60 per cent)
- connectivity makes it easier to develop teaching plans for individual students (about 50 per cent)
- connectivity makes it easier to monitor and evaluate the work of students (about 45 per cent).

2.3.2 Findings by respondent type

The responses to the statements varied by respondent type.

- ICT teachers were slightly more positive about the impact of connectivity on teaching than non-ICT teachers.
- ICT teachers were markedly more positive about the impact of connectivity on encouraging innovation and accessing resources for projectors and whiteboards than non-ICT teachers.
- ICT teachers were markedly less positive about the impact of connectivity on facilitating the analysis of assessment results than non-ICT teachers.

2.3.3 Findings by school category

Comparisons between primary and secondary schools showed that:

- teachers in secondary schools were more likely to consider that connectivity made it easier to access resources for data projectors and that it encouraged innovation than teachers in primary schools
- ICT teachers in secondary schools were more likely to consider that connectivity made it easier to monitor and evaluate students' work than ICT teachers in primary schools
- ICT teachers in secondary schools were less likely to consider that connectivity made it easier to develop individual teaching plans than ICT teachers in primary schools.

Comparisons between primary schools showed that:

- teachers in non-embc primary schools were less likely to consider that connectivity had an impact on their role than teachers in embc primary schools
- teachers in embc primary schools without broadband were more likely to consider that connectivity made it easier to plan schemes of work, share good practice and encourage innovation than teachers in embc primary schools with broadband
- teachers in embc primary schools with broadband were more likely to consider that connectivity made it easier to monitor and evaluate students' work, analyse assessment results and access resources for whiteboards than teachers in embc primary schools without broadband.

Comparisons between schools with different types of connectivity showed that:

- in their responses to four out of the ten statements in this group, teachers in schools with broadband (i.e. both secondary schools and embc primary schools with broadband) were more positive about the impact of connectivity than teachers in schools without broadband
- there were no statements where the responses of teachers in schools with broadband were less positive than the responses of teachers in schools without broadband about the impact of connectivity
- in their responses to seven out of the ten statements in this group, teachers in non-embc primary schools were more positive than teachers in embc primary schools about the impact of connectivity on teaching.

2.4 The impact of connectivity on students

In this section, teachers were given a series of statements describing possible benefits of connectivity for students. The analysis is presented in Appendix A, Tables 2.30 – 2.37.

2.4.1 Findings for all respondents

The extent of agreement with the statements varied:

- connectivity enables access to a greater range of digital resources (about 80 per cent)
- connectivity increases students' opportunities for independent learning (about 80 per cent)
- connectivity provides a faster way to access digital resources (about 75 per cent)
- connectivity encourages greater student involvement in lessons (about 70 per cent)
- connectivity increases the number of students who make use of computers (about 65 per cent)
- connectivity increases students' opportunities for collaborative learning within school (about 60 per cent)
- connectivity increases students' opportunities for collaborative learning between schools (about 45 per cent).

2.4.2 Findings by respondent type

ICT teachers were more positive about the impact of connectivity on students than non-ICT teachers.

2.4.3 Findings by school category

Comparisons between primary and secondary schools showed that:

- teachers in secondary schools were more likely than teachers in primary schools to consider that connectivity increases opportunities for independent learning
- ICT teachers in secondary schools were also more likely to consider that connectivity enables access to a greater range of digital resources than ICT teachers in primary schools.

Comparisons between primary schools showed that:

- teachers in embc primary schools with broadband were more positive about the impact of connectivity on students than teachers in primary schools without broadband
- teachers in embc primary schools without broadband were less likely than teachers in other primary schools to consider that connectivity increases opportunities for collaborative learning and provides both faster and more varied access to digital resources.

Comparisons between schools with different types of connectivity showed that:

- in their responses to five out of the seven statements in this group, teachers in schools with broadband (i.e. teachers in both secondary schools and embc primary schools with broadband) were more positive about the impact of connectivity than teachers in schools without broadband
- there were no statements where the responses of teachers in schools with broadband were less positive than the responses of teachers in schools without broadband about the impact of connectivity
- in their responses to six out of the seven statements in this group, teachers in non-embc primary schools were more positive than teachers in embc primary schools without broadband about the impact of connectivity on students.

3 The impact of connectivity on administrators

In this chapter we present findings about administrators' perceptions of the impact of connectivity on their work. As with teachers, administrators were given a series of statements and were able to select one of six graded options, ranging from 'Strongly agree' to 'Strongly disagree' or 'Not applicable'. Findings reported in this chapter are based on the analysis of the percentage of administrators who selected 'Strongly agree' or 'Agree' and are reported by school category. Throughout this chapter approximate percentages have been used (representing all respondents) as an indication of the overall response to a particular question or statement. The data analysed in this chapter was derived from responses to questions in Section C of the online questionnaire (see Appendix B, Section C).

3.1 The impact of connectivity on the role of administrators

Respondents were given a series of statements about the impact of connectivity on administration. The analysis is presented in Appendix A, Tables 3.1 – 3.19.

3.1.1 Findings for all respondents

The extent of agreement with the statements varied:

- connectivity makes it easier to manage and provide data required by the DfES (about 85 per cent of respondents strongly agreeing/agreeing)
- connectivity improves communication with the LEA (about 85 percent)
- connectivity makes it easier to manage and provide data required by the LEA (about 80 per cent)
- connectivity provides a secure means of sharing confidential information (about 80 per cent)
- connectivity improves communication with staff in other schools (about 70 per cent)
- connectivity improves access to administrative support (about 70 per cent)
- connectivity makes it easier to access useful information on administrative systems, processes and procedures (about 65 per cent)
- connectivity makes it easier to manage attendance data (about 65 percent)
- connectivity improves access to technical support (about 60 per cent)
- connectivity makes it easier to administer the accounts (about 60 per cent)
- connectivity improves communication with governors (about 60 per cent)

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- connectivity makes developing collaborative work with staff from other schools easier (about 55 per cent)
 - connectivity improves communication with parents (about 40 per cent)
 - the connectivity services can be accessed from outside the school (about 30 per cent)
 - connectivity makes it easier to purchase resources (about 30 per cent)
 - connectivity reduces the amount of paperwork respondents do (about 30 per cent)
 - connectivity makes it easier to administer examinations (about 20 per cent)
 - connectivity improves communication with students (about 30 per cent).

3.1.2 Findings by school category

Comparisons between primary and secondary schools showed that:

- administrators in secondary schools were more likely to consider that connectivity improved communication with parents and students and made it easier to administer examinations than administrators in primary schools
- administrators in secondary schools were less likely to consider that connectivity made it easier to administer accounts, manage attendance data, manage data required by the LEA and the DfES, and provide a secure means of sharing confidential information, than administrators in primary schools.

Comparisons between primary schools showed that:

- administrators in embc primary schools with broadband were more positive about the impact of connectivity on their role administrators in primary schools without broadband
- administrators in embc primary schools without broadband were more likely to agree that they could access their connectivity service when not in schools than administrators in other primary schools
- administrators in non-embc primary schools were less likely than administrators in other primary schools to agree that they could access their connectivity service when not in school.

Comparisons between schools with different types of connectivity showed that:

- in their responses to nine out of the 17 statements in this group, administrators in non-embc primary schools were more positive than administrators in embc primary schools without broadband about the impact of connectivity on their role.

3.2 The impact of connectivity on professional development

Administrators were given two statements about the impact of connectivity on their professional development. The analysis is presented in Appendix A, Tables 3.20 – 3.22.

3.2.1 Findings for all respondents

Administrators were more likely to consider that connectivity improved access to resources than they were to report that it improved access to collaborative opportunities for professional development.

3.2.2 Findings by school category

The ranking of schools, according to the percentage of administrators who agreed that connectivity improved access to resources to their support professional development, was:

- secondary schools (59 per cent)
- embc primary schools with broadband (55 per cent)
- embc primary schools without broadband (51 per cent)
- non-embc primary schools (47 per cent).

The same ranking was repeated for the percentage of administrators who agreed that connectivity improved access to collaborative opportunities for professional development:

- secondary schools (48 per cent)
- embc primary schools with broadband (44 per cent)
- embc primary schools without broadband (42 per cent)
- non-embc primary schools (35 per cent).

Comparisons between schools with different types of connectivity showed that:

- in their responses to both statements in this group, administrators in schools with broadband (i.e. administrators in both secondary schools and embc primary schools with broadband) were more positive about the impact of connectivity than administrators in schools without broadband
- in their responses to both statements in this group, administrators in embc primary schools were more positive than administrators in non-embc primary schools about the impact of connectivity on their professional development.

4 Making full use of connectivity

In this chapter we present findings about the barriers which can prevent full use of the connectivity service and about the problems which the loss of connectivity services causes for users. We also present analysis of data relating to the frequency and duration of service downtime. Findings reported in this chapter are derived from responses by all staff to questions in Section D of the online questionnaire (see Appendix B, Section D).

4.1 Barriers to making full use of connectivity

In this section respondents were given a list of 13 types of barrier and were asked to select all that applied to their school. Respondents could also describe 'other' barriers, which were not included in the list (see Appendix B, Section D, question 1). Responses were analysed by the percentage of respondents identifying each barrier. Approximate percentages have been used (representing all respondents) as an indication of the overall response to a particular question or statement. The analysis is presented in Appendix A, Tables 4.1 – 4.2.

4.1.1 Findings for all respondents

Lack of professional development was the barrier most frequently cited by respondents, with:

- about 65 per cent of respondents saying support staff need professional development to make the most effective use of connectivity
- about 60 per cent reporting that teachers need professional development
- about 50 per cent saying administrators need professional development.

Other barriers cited by respondents were:

- not being able to connect from a remote location outside working hours (about 40 per cent)
- that the service was not reliable enough (about 30 per cent)
- that staff had had a negative experience with connectivity (about 30 per cent)
- that staff do not appreciate the potential benefits of broadband (about 30 per cent)
- that the service was not fast enough (about 30 per cent)
- not being able to connect from a remote location in working hours (about 25 per cent)
- a lack of access to externally connected computers (about 25 per cent)

- senior management not actively promoting the full use of connectivity (about 25 per cent)
- that the service was not secure enough (about 5 per cent).

About 15 per cent of respondents specified other barriers. Most respondents identified from three to five barriers to making full use of connectivity.

4.1.2 Findings by school category

Comparisons between primary and secondary schools showed that:

- respondents in secondary schools were more likely than respondents in primary schools to cite as barriers staff not appreciating the benefits of broadband, senior management not promoting broadband, administrators needing training, teachers needing training, no connection from a remote location and a lack of access to externally connected computers.

Comparisons between primary schools showed that:

- respondents in primary schools without broadband were more likely than respondents in primary schools with broadband to cite 'Service not fast enough' or 'Service not reliable enough' as barriers
- respondents in embc primary schools without broadband were more likely than respondents in embc primary schools with broadband and non-embc schools to cite 'Service not fast enough', 'Service not reliable enough' or 'Negative experience' as barriers.

The nature of barriers cited by respondents in schools with broadband differed from those cited by respondent in schools without broadband. In schools with broadband, the barriers to making full use of connectivity were related to lack of training, lack of awareness or lack of promotion. In schools without broadband, the barriers were related to the slow speed or unreliability of the service.

Comparisons between schools without broadband showed that the speed and reliability of the service were more likely to be seen as barriers by respondents in embc schools than respondents in non-embc schools.

4.1.3 Other barriers described by respondents

The 'other' barriers mentioned by respondents also reflected the type of connection and also the phase of the school:

- in schools without broadband, not having a broadband connection was cited as a barrier to making full use of connectivity by about six per cent of respondents who provided a qualitative response
- in embc primary schools (with and without broadband), lack of teaching staff time was cited as a barrier to making full use of connectivity by about four per cent of respondents.

4.2 Frequency and duration of connectivity problems

In this section, respondents were asked to assess the frequency and the duration of the loss of the whole connectivity service, with the loss of email, filtering/security and the access to online resources being assessed separately. Respondents could select one option from six levels of frequency, ranging from 'Almost every day' to 'Hardly ever' or 'Not applicable'. Similarly they could select one option from six durations, ranging from 'Less than an hour' to 'More than a week' or 'Not applicable' (see Appendix B, Section D question 2). A grid was developed to combine the information on frequency and duration of service downtime so that analysis could quantify the loss of service experienced, which was rated as severe, moderate or minimal (see Appendix A, Table 4.3). The analysis in this section is based on the percentage of respondents assessed as experiencing a 'severe' loss of service, and is presented by respondent type and by category of school. Approximate percentages have been used (representing all respondents) as an indication of the overall response to a particular question or statement. The analysis is presented in Appendix A, Tables 4.4 – 4.8.

4.2.1 Findings for all respondents

The analysis showed the following percentages of respondents reporting severe loss of each service:

- email about 14 per cent
- connectivity as a whole about ten per cent
- access to online resources about ten per cent
- filtering/security about five per cent.

Only 51 respondents reported severe loss of filtering and so results have not been analysed by respondent type and by school category.

4.2.2 Findings by respondent type

Respondents' perceptions of service downtime will be affected by the use they make of a particular service and therefore the findings by respondent type are

likely to reflect different patterns of connectivity usage. The following differences by respondent type were noted:

- teachers (i.e. ICT teachers and non-ICT teachers) were more likely to report severe loss of all connectivity, including severe loss of access to online resources, than administrators
- administrators were more likely than teachers to report severe loss of email.

4.2.3 Findings by school category

The findings by school category are likely to reflect the availability of ICT technical support to resolve connectivity problems as they arise. Amongst teachers, comparisons between primary and secondary schools showed that:

- teachers in secondary schools were less likely than teachers in primary schools to report severe loss of all connectivity, including severe loss of access to online resources and severe loss of email.

Amongst teachers, comparisons between primary schools showed that:

- ICT teachers in primary schools with a broadband connection were less likely than ICT coordinators in schools without a broadband connection to report severe loss of all connectivity, including severe loss of access to online resources and severe loss of email
- ICT teachers in non-embc primary schools were more likely than ICT teachers in other primary schools to report severe loss of all connectivity, including severe loss of online resources and severe loss of email
- non-ICT teachers in embc primary schools without broadband were more likely than non-ICT teachers in other primary schools to report severe loss of email.

Amongst administrators comparisons between schools showed that:

- administrators in embc primary schools without broadband were more likely than administrators in other schools to report severe loss of all connectivity, including severe loss of access to online resources
- administrators staff in non-embc schools were more likely administrators in other schools to report severe loss of email.

Respondents in schools with broadband were less likely to report loss of all connectivity, including loss of access to online resources and loss of email than respondents in schools without broadband.

Comparisons between schools without broadband showed that respondents in embc schools were more likely to report loss of all connectivity, including loss of access to online resources and loss of email, than respondents in non-embc schools.

4.3 The impact of connectivity problems

In this section, all respondents were asked about loss of service which had caused problems for them. They were able to select one of six graded options, ranging from 'Strongly agree' to 'Strongly disagree' or 'Not applicable' (see Appendix B, Section D, question 3). Responses were analysed by school type, according to the percentage of respondents who selected 'Strongly agree' or 'Agree'. This analysis is presented in Appendix A, Tables 4.9 – 4.13.

4.3.1 Findings for all respondents

The percentage of respondents who considered that loss of service had caused them a problem varied according to the type of service:

- loss of all connectivity (about 70 per cent of respondents agreeing/strongly agreeing that loss of service had caused them problems)
- loss of online resources (about 55 per cent)
- loss of access to email (about 55 per cent)
- loss of filtering and security (about 25 per cent).

4.3.2 Findings by respondent type

The findings by respondent type are likely to reflect varying patterns of connectivity usage amongst teachers and administrators. Key differences between staff were that:

- loss of email was more likely to be a problem for administrators than for teachers (about 65 per cent of administrators compared to about 50 per cent of teachers who responded)
- loss of access to online resources was more likely to be a problem for teachers than for administrators (about 40 per cent of administrators compared to about 60 per cent of teachers who responded).

4.3.3 Findings by school category

The variation by school category was less marked than the variation by respondent type. Notable differences by school category were:

- administrators in embc primary schools without broadband were more likely than administrators in other schools to report problems due to loss of all connectivity (78 per cent of respondents in embc primary schools without broadband responded agree or strongly agree compared to about 70 per cent of respondents in other schools)

- ICT teachers in secondary schools were more likely than ICT teachers in other schools to report problems due to loss of email (59 per cent of respondents in secondary schools responded agree or strongly agree compared to about 50 percent of respondents in other schools).

5 Staff awareness about connectivity and embc

In this chapter, we explore staff awareness about the type of connectivity used at their school and their awareness of and knowledge about embc. Findings reported in this chapter are derived from responses by all staff to questions in Section E of the online questionnaire (see Appendix B).

5.1 Connectivity awareness

To help develop a picture of respondents' awareness about 'connectivity', all staff were asked what type of connectivity their school used (see Appendix B, Section E, question 1). Respondents were able to select up to four connection types or 'not sure'. Their responses were compared with information provided by embc, to identify which staff had correctly selected their institution's connection type.⁸ The analysis is presented in Appendix A, Tables 5.1 – 5.10.

5.1.1 Findings for all respondents

Most of the respondents correctly identified the type of connection used by their school.

5.1.2 Findings by respondent type and school category

Some groups of staff were more likely than others to select the correct option, for instance:

- ICT teachers in secondary schools were more likely than any other type of respondent to select the correct option (91 per cent)
- ICT teachers in primary embc schools without broadband were slightly less likely (84 per cent) to select the right option than administrators in the same school category (87 per cent)
- ICT teachers in all embc schools were more likely than ICT teachers in non-embc schools to select the right option (over 85 per cent compared to 55 per cent)
- except in embc primary schools without broadband, ICT teachers were more likely than administrators staff to select the correct option
- administrators (across all school categories) were more likely than non-ICT teachers to select the correct option

⁸ A small number of responses had to be excluded from the analysis because information on connection type was not available for their school.

- non-ICT teachers in all embc schools were more likely than similar staff in non-embc schools to selection the correct option
- non-ICT teachers in primary embc schools (with and without broadband) were more likely than non-ICT teachers in secondary schools to select the correction option
- administrators in all embc schools were more likely than administrators in non-embc schools to selection the correct option.

Staff in non-embc schools were more likely than staff in embc schools to provide an incorrect response.

There were also variations in the extent to which different groups of staff recorded a 'not sure' response:

- staff in non-embc schools were more likely than staff in embc schools (with the exception of non-ICT teachers in secondary schools) to be 'not sure' about the type of connection their school used
- non-ICT teachers in secondary schools were more likely than any other respondent type to be 'not sure' about the type of connection their school used
- non-ICT teachers in each school category were more likely than the ICT and administrators in corresponding categories to be 'not sure' about the type of connection their school used.

5.2 General awareness of embc

Staff were asked if they were aware of embc (see Appendix B, Section E, question 2), and in this section we present findings focusing on the proportions of staff who said that they were aware of embc. The analysis is presented in Appendix A, Tables 5.3 and 5.4.

5.2.1 Findings by respondent type and school category

- ICT teachers were more likely than non-ICT teachers to say they were aware of embc.
- ICT teachers in secondary schools were slightly more likely to be aware of embc than ICT teachers in either of the primary embc school categories.
- ICT teachers, non-ICT teachers and administrators in all embc schools were much more likely to say they were aware of embc than the corresponding types of respondent in primary non-embc schools.
- However, 75 per cent of ICT teachers, 40 per cent of administrators and 32 per cent of non-ICT teachers in non-embc schools said that they were aware of embc.

- Administrators in secondary schools were slightly more likely to say they were aware of embc than were administrators in the primary embc schools, with or without broadband (82 per cent compared to about 75 per cent).
- Non-ICT teachers in both primary embc categories were more likely than non-ICT teachers in secondary schools to say they were aware of embc.
- The level of awareness (at 53 per cent) amongst non-ICT teachers in secondary schools was considerably lower than that of any other type of respondent across the other embc school categories and all respondent types (other responses ranging from 68 to 97 per cent).

Unsurprisingly, our data suggests that staff from embc schools were more likely to be aware of embc than staff from non-embc schools. However, the findings here also suggest that there were many staff in non-embc schools who were aware of embc, and also highlight a comparative lack of awareness amongst non-ICT teachers in secondary schools.

5.3 Knowledge about the structure of embc

Staff awareness about embc was further explored by asking them to describe embc by selecting one of three descriptions (see Appendix B, Section E, question 3). In this section, we present data focusing on the percentage of staff who selected the correct response. The analysis is presented in Appendix A, Tables 5.5 – 5.6.

5.3.1 Findings for all respondents

- The majority of staff (in all respondent types) selected the correct option, the percentage giving the correct response ranged from 55 per cent to 91 per cent.

5.3.2 Findings by respondent type and school category

- ICT teachers were more likely to select the right option than administrators (although in primary embc schools without broadband this difference was slight).
- Non-ICT teachers in all types of school were more likely to select the right option than administrators (although in relation to secondary schools and primary embc schools without broadband this difference was slight).
- ICT teachers in secondary schools were more likely to select the correct option than any other group (91 per cent).
- ICT teachers in primary embc schools without broadband were less likely to selection the correct option than other ICT teachers.

- ICT teachers in secondary schools and from the primary embc schools with broadband were more likely to select the right option than ICT teachers in non-embc schools.
- Non-ICT teachers in primary embc schools with broadband were more likely to select the correct option than similar staff in non-embc schools.
- However, non-ICT teachers in non-embc schools were more likely to select the correct response than similar staff in secondary schools and in primary embc schools without broadband.
- Administrators in secondary schools were more likely to select the correction option than any other administrators.
- Administrators in primary embc schools were more slightly more likely to select the correct option than administrators from non-embc schools.

Unsurprisingly, these findings suggest that staff from embc schools with broadband were more likely to know what embc is than staff from non-embc schools. However, large proportions of staff at non-embc schools were able to select the correct option. Also, these findings suggest that awareness amongst staff from embc primary schools without broadband lags behind that of staff from other embc schools.

5.4 How staff first became aware of embc

In this final section, we present findings about how staff first became aware of embc. This was explored by providing staff with seven options (based on how embc inform schools about themselves) from which they were asked to select one (see Appendix B, Section E, question 4).

In contrast to staff responses to other questions about awareness, in this instance there was no ‘right/wrong’ or ‘yes/no’ response and therefore we have used three tables in Appendix A to present response data. Each table presents data from a particular type of respondent (e.g. ICT teachers) by school category and by method of information transfer (see Appendix A, Tables 5.8 – 5.10). Caution should be used when interpreting the data in these tables because the percentages are based on small numbers of responses. Consequently, this section explores how respondents became aware of embc by identifying the most and least mentioned methods and according to respondent type and school category.

5.4.1 Findings for all respondents

Responses to this question varied widely. In-school briefings attracted the highest percentage response for any information source.

- Fifty six per cent of ICT teachers in primary non-embc schools reported that they had first heard about embc from ‘in-school briefings’.

- Furthermore, between about fifth to a third of most types of respondent reported first hearing about the embc from in-school briefings, with the exception of 15 per cent of ICT and non-ICT teachers in secondary schools who mentioned first hearing about embc this way.

The second highest response related to hearing about embc from ‘colleagues in their school’.

- Forty eight per cent of non-ICT teachers said they heard about embc from ‘colleagues in their school’.
- Furthermore, between about fifth and a third of most types of respondent reported first hearing about the embc from other ‘colleagues in their school’.

In relation to electronic information from LEAs:

- just over a quarter (28 per cent) of administrators in primary embc schools without broadband and a fifth of ICT teachers in non-embc schools mentioned this as the way they first heard about embc
- between two and 17 per cent of all other respondent types mentioned that they had heard about embc this way.

In relation to hard copy information from LEAs as the way they had first heard about embc:

- between about fifth and a third of most types of respondent reported first hearing about the embc in this way
- with the noticeable exceptions of between six to nine per cent of non-ICT teachers in non-embc schools, primary embc schools with broadband and secondary schools reported first hearing about embc this way.

Finally:

- very few staff mentioned hearing about embc via ‘hard copy’ or ‘electronic information’ from embc or via information from ‘colleagues in other schools’.

It would seem that (at least in terms of what respondents could recall) information from LEAs, in-school briefings and information from colleagues (at their school) were the most usual ways in which staff first heard about embc.

6 ICT resources and connectivity

In this chapter we present information about the ICT resources within schools, looking at the number, age, location and external connectivity of computers. In addition, we explore the likelihood of members of the school community (teachers, support staff, administrators, students and parents) being able to access the connectivity service when not at the school. Findings reported in this chapter are derived from responses by ICT teachers only to questions in Section F of the online questionnaire (see Appendix B, Section F).

6.1 Number, age and external connectivity of computers in school

In this section, ICT teachers were asked for information relating to the total number of computers in their school, the number over three years old and the number that could be externally connected (see Appendix B, Section F, question 1). Separate data on the number, age and connectivity of management/administration computers were also collected. The number of computers purely for pupils' use, including the number externally connected and the number under three years old was then calculated. This data was matched with data on pupil numbers in each of the schools to calculate the average number of pupils per computer and the results were analysed in relation to school category. For management computers, the percentage less than three years old and the percentage externally connected were calculated and the data analysed in relation to school category. This analysis is presented in Appendix A, Tables 6.1 - 6.3.

6.1.1 Findings by school category – computers available to pupils

Comparisons between primary and secondary schools showed substantial differences in the provision of computers for pupil use:

- secondary schools had more computers per pupil than primary schools (five pupils per computer in secondary schools compared to more than seven pupils per computer in primary schools)
- secondary schools had more externally connected computers per pupil than primary schools (five pupils per externally connected computer in secondary schools compared to more than ten pupils per externally connected computer in primary schools)
- secondary schools had more computers under three years old per pupil than primary schools (15 pupils per computer under three years in secondary schools compared to more than 24 pupils per computer less than three years old in primary schools)

- secondary schools also had a higher percentage of computers which were externally connected than primary schools and a higher percentage of computers for pupils' use which were under three years old than primary schools.

Comparisons between primary schools showed that:

- embc primary schools without broadband had more computers per pupil than other primary schools (seven pupils per computer in embc schools without broadband compared to nine pupils per computer in both embc schools with broadband and non-embc schools)
- embc primary schools without broadband had more externally connected computers per pupil than other primary schools (ten pupils per externally connected computer compared to 14 pupils per externally connected computer in embc primary schools with broadband and 16 pupils per externally connected computer in non-embc schools)
- embc primary schools with broadband had a slightly higher percentage of computers which were externally connected than other primary schools (79 per cent of computers externally connected compared to about 74 per cent in other primary schools)
- embc primary schools without broadband had fewer computers for pupil use less than three years old than other primary schools (31 pupils per computer less than three years old compared to about 24 pupils per computer under three years old in other primary schools)
- embc primary schools without broadband also had a lower percentage of computers for pupil use which were under three years old than other primary schools (40 per cent of computers under three years old compared to about 55 per cent in other primary schools).

6.1.2 Findings by school category – computers available to managers and administrators

A higher percentage of the computers available to managers and administrators than computers available to pupils were externally connected and under three years old. The following differences by school category were noted:

- unsurprisingly, secondary schools (which are larger) had approximately ten times as many computers for management/administrative use as primary schools.
- non-embc primary schools had a slightly lower percentage of computers under three years old than other schools (66 per cent compared to about 75 per cent for other schools).

6.2 Areas of the school externally connected

In this section, ICT teachers were asked for information about the location of computers that could be externally connected (see Appendix B, Section F, question 2). The percentage of ICT coordinators responding that all computers in a given location could be externally connected was analysed by school category. Approximate percentages have been used (representing all respondents) as an indication of the overall response to a particular question or statement. The analysis is presented in Appendix A, Tables 6.4 and 6.5.

6.2.1 Findings for all school categories

The location within schools where all of the computers are externally connected is most likely to be:

- offices (about 80 per cent of respondents indicating that all computers were externally connected).

followed by:

- ICT suites (about 65 per cent)
- classrooms (about 55 per cent)
- library/study areas suites (about 35 per cent)
- staff rooms (about 30 per cent).

6.2.2 Findings by school category

Comparisons between primary and secondary schools showed that:

- secondary schools were much more likely than primary schools to have all the computers in library/study areas, ICT suites and staff rooms externally connected, but less likely to have all computers in classrooms and offices externally connected.

Comparisons between primary schools showed that:

- embc primary schools without broadband were more likely than other primary schools to have all their computers in offices and classrooms externally connected but less likely to have all computers in staff rooms and ICT suites externally connected
- primary schools with broadband were more likely to have all their computers in library/study areas, ICT suites and staff rooms externally connected than primary schools without broadband but less likely to have all computers in classrooms and offices externally connected.

6.3 Simultaneous connectivity

In this section, ICT teachers were asked about the proportion of computers which could be externally connected at the same time (see Appendix B, Section F, question 3). They were able to select one response from a list of four graded options, ranging from 'All/nearly all' to 'Less than a half' or 'Don't know'. The results were analysed according to the percentage of ICT teachers replying that 'All or nearly all' computers in their school could be externally connected at the same time and by school category. The analysis is presented in Appendix A, Tables 6.6 and 6.7.

6.3.1 Findings by school category

The schools most likely to be able to connect all or nearly all of their computers simultaneously were:

- secondary schools (88 per cent of respondents were able to connect all or nearly all their computers simultaneously).

followed by:

- embc primary schools with broadband (77 per cent)
- embc primary schools without broadband (70 per cent)
- non-embc primary schools (63 per cent).

6.3.2 Summary of findings by connectivity type

Schools with broadband were slightly more likely than schools without broadband to be able to connect all or nearly all of their computers simultaneously.

Comparisons between schools without broadband showed that:

- embc primary schools without broadband were more likely to be able to connect all or nearly all of their computers simultaneously than non-embc schools.

6.4 Access to connectivity service when not at school

In this section, ICT teachers were asked who, from a list of teaching staff, support staff, administrators, pupils or parents could access the connectivity service when not at the school. Respondents could answer either 'Yes', 'No' or 'Not sure' (see Appendix B, Section F, question 4) and the results were analysed by school category. The analysis is presented in Appendix A, Tables 6.8 and 6.9 and represents those respondents replying 'yes'.

6.4.1 Findings for all school categories

The people most likely to be able to access the connectivity service when not at school were:

- teaching staff (49 per cent)

followed by:

- administrators (34 per cent)
- support staff (32 per cent)
- pupils (19 per cent)
- parents (nine per cent).

6.4.2 Findings by school category

Comparisons between findings in primary and secondary schools will reflect different levels and patterns of connectivity usage between pupils in secondary schools and those in primary schools.

- ICT teachers in secondary schools were much more likely than ICT teachers in primary schools to report that pupils could access the service when not at school (43 per cent compared to about 12 per cent in primary schools).
- ICT teachers in secondary schools were also more likely than ICT teachers in primary schools to report that teachers and parents could access the service when not at school.

Comparisons between primary schools showed that:

- ICT teachers in embc primary schools without broadband were less likely than respondents in other primary schools to report that pupils and parents could access the service when not at school
- ICT teachers in non-embc primary schools were less likely than respondents in other primary schools to report that teachers and administrators could access the service when not at school
- ICT teachers in primary schools with broadband were more likely than schools without broadband to report that teachers, support staff, administrators, students and parents could access the service when not at school.

6.4.3 Summary of findings by connectivity type

In schools with broadband, a wider range of people were likely to be able to access the connectivity service when not at school than in schools without broadband.

7 Perceived barriers to having broadband

In this chapter, we present findings that explore the reasons why some schools do not have a broadband connection. Findings in this chapter are derived from responses by ICT coordinators in schools without broadband (i.e. ICT teachers in non-embc primary schools and embc primary schools without broadband) to the question in Section G of the online questionnaire (see Appendix B, Section G). For each statement they were able to select one option from a list of five graded options, ranging from 'Strongly agree' to 'Strongly disagree' or 'Not applicable' (see Appendix B, Section G). Responses were analysed by school category, according to the percentage of respondents who selected 'Strongly agree' or 'Agree'. The analysis is presented in Appendix A, Tables 7.1 and 7.2.

7.1 Findings for all respondents

The responses to the suggested reasons for not having broadband varied:

- awaiting connection (about 55 per cent of respondents replying strongly agree/agree)
- the cost of getting a broadband connection (about 30 per cent)
- not aware that it is available in the area (about 20 per cent)
- the ongoing costs of connection (about 20 per cent)
- the cost of upgrading ICT equipment (about 15 per cent)
- staff training implications of connection (about five per cent)
- the service is not reliable enough (less than five per cent)
- the service is not secure enough (less than five per cent)
- the service is not fast enough (less than five per cent)
- staff don't appreciate the potential benefits (less than five per cent).

7.2 Findings by school category

The following pattern was observed.

- ICT teachers in embc primary schools without broadband were more likely than ICT teachers in non-embc primary schools to respond that they were awaiting broadband connection or that they were not aware that broadband was available in their area.
- ICT teachers in non-embc primary schools were more likely than ICT teachers in embc primary schools without broadband to identify costs (including cost of getting a connection, cost of upgrading equipment and

ongoing costs of connection) as reasons for not having a broadband connection.

8. Conclusions

8.1 Respondents' perceptions of connectivity

Generally, teachers and administrators in schools with broadband (which include all secondary schools) were likely to report more positive perceptions of connectivity than staff in non-broadband schools. However, our findings also show a contrast in responses between staff from different primary school categories, with staff in embc schools without broadband reporting less positive perceptions of the impact of connectivity than staff in non-embc schools. Interestingly, these findings are consistent with those in another evaluation (Underwood *et al.*, 2004), in which the evaluators make two observations:

- broadband had a positive effect on the capacity of staff to deliver effective learning
- after the introduction of broadband into a school, there was a trend towards more (and more diverse) staff making use of ICT.

The second of these points (broadband as a multiplier of ICT utilisation) is especially important in helping to explain the contrast in our findings between embc schools without broadband and non-embc schools. For instance, one possible explanation could be that, because schools have joined the embc service, their staff's knowledge about, awareness of and expectations for the potential of connectivity have been increased, but the fact that they have yet to enjoy a broadband connection has in turn resulted in these staff reporting less positive perceptions about the impact of connectivity. Therefore, they are likely to report less positive perceptions of connectivity, compared to staff in schools that are not embc members and have not had their awareness and expectations raised in a similar way.

Unsurprisingly, most⁹ ICT teachers had more positive perceptions about the impact of connectivity than any other group of staff. However, this also provides a related finding; if the (hypothetically) better informed ICT teachers are more positive about the impacts of connectivity, this suggests that raising the skills levels of all staff could also result in more positive perceptions of connectivity.

⁹ Apart from ICT teachers from embc schools without broadband.

8.2 Barriers to making full use of connectivity

Findings about barriers to making full use connectivity centre mainly on the general area of resources and can be divided into two categories:

1. People (attitudes, skills/knowledge, time and management).
2. Systems (hardware, type of connection, reliability and accessibility).

For instance, in relation to ‘people’ the lack of professional development in ICT was the barrier to making full use of connectivity most frequently cited by respondents. This is in line with findings from other pieces of research which highlight the need to provide staff with the skills and confidence necessary to properly exploit the potential of connectivity (Underwood *et al.*, 2004).

In relation to ‘systems’ and the type of connectivity used, respondents in schools without broadband were much more likely to say the service was not fast enough to make full use of connectivity than respondents in schools with broadband.

In line with findings reported in Section 8.1, interesting contrasts in the responses from staff in embc schools without broadband and those from staff in non-embc schools were repeated in relation to barriers. For instance, respondents in primary embc schools without broadband were much more likely than respondents in all other schools to cite a negative experience with connectivity and lack of reliability as barriers to making full use of connectivity. While such findings also link to the hypothesis made in the previous section, about the potential impact on perceptions of failing to meet raised expectations, it could further be suggested that where embc offer services and activities that are best accessed and exploited using a broadband connection, then it is not unexpected that staff in schools with access to these services find their potential limited by the speed of their connection. However, it is possible that there are other contributory factors, such as the quality of a school’s ISDN connection.

Furthermore, respondents in schools with broadband were less likely than respondents in schools without broadband to report problems with the loss of all connectivity (including loss of access to online resources and loss of email), further emphasising the importance of broadband as a reliable resource, which is more likely to enable the fuller utilisation of connectivity.

8.3 Staff awareness about connectivity

To explore awareness about their school’s connectivity, all respondents were asked what type of connection their school used. Findings show that staff in embc schools were more likely than those in non-embc schools to know what

type of connection their school used. Assuming that we accept these data provide an indication of awareness, this ties into the hypothesis put forward in previous sections, namely that actually having the embc service may play a role in staff raising awareness about different aspects of connectivity.

Staff in embc schools demonstrated higher levels of awareness about embc than staff in non-embc schools. However, levels of awareness amongst different types of staff within embc schools also varied, with non-ICT teachers generally indicating lower levels of awareness than ICT teachers and administrators.

While this general finding could be seen as unsurprising, it could also raise an important question. Is the apparent lower level of general awareness amongst non-ICT teachers another indication of the need for professional development amongst non-ICT teaching staff generally? While it may not be necessary for teachers to know the provider in order for them to make full use of connectivity, if non-ICT teachers' awareness of embc is comparatively low, does this also suggest that their awareness about specific embc services, and the potential offered by embc and or connectivity, might also be comparatively low? While it is not possible to definitively answer these questions from our findings, they again point towards a consistent requirement for staff development.

8.4 Reasons for not being broadband connected

Amongst the schools that did not have a broadband connection, the two main reasons mentioned were that they were awaiting connection and or the cost of getting connected was a concern. However, embc schools without broadband were more likely than non-embc schools to say they thought that broadband was not available in their area, as a reason for not having a broadband connection.

8.5 In summary

A consistent message from our findings relates to the potential for professional development to enhance the ability of staff to make full use of connectivity. In short our hypothesis is that the more ICT knowledgeable and aware a members of staff are, the more likely they are to be able to utilise and therefore perceive the positive aspects and potential of connectivity.

Our findings also demonstrate generally more positive responses from staff in embc schools with broadband, especially in relation to comparisons between staff in embc primary schools without broadband and staff in embc primary schools with broadband. This suggests that the link between connectivity and

positive staff perceptions is related to the type of connection, namely those with broadband connections are more likely to report positive perceptions of connectivity. In fact the less positive perceptions (most notably among ICT teachers) measured in staff from embc schools without broadband tend to emphasise that a broadband connection may be a key ingredient to enabling better exploitation of embc services.

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Website

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?

Appendix A Tables

The following tables relate to Chapter 2.

Table 2.1 Section B, question 1. Number of responses

School category	ICT teachers	Non-ICT teachers	All teachers
Primary non-embc	75	54	129
Primary embc without broadband	65	38	103
Primary embc with broadband	211	148	359
Secondary	70	102	172

Table 2.2 Connectivity provides a secure way of sharing confidential information

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	75	63	70
Primary embc without broadband	65	71	67
Primary embc with broadband	73	73	73
Secondary	77	76	77

Table 2.3 Connectivity improves communication with colleagues

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	63	57	60
Primary embc without broadband	48	68	55
Primary embc with broadband	72	57	66
Secondary	73	65	68

Table 2.4 Connectivity improves communication with LEA's

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	77	61	71
Primary embc without broadband	65	68	66
Primary embc with broadband	74	69	72
Secondary	69	45	55

Table 2.5 Connectivity improves access to curriculum support

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	92	89	91
Primary embc without broadband	83	82	83
Primary embc with broadband	87	85	86
Secondary	80	79	80

Table 2.6 Connectivity improves access to technical support

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	51	44	48
Primary embc without broadband	51	42	48
Primary embc with broadband	47	40	44
Secondary	69	41	52

Table 2.7 Connectivity reduces the amount of paperwork done

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	35	28	32
Primary embc without broadband	17	34	23
Primary embc with broadband	29	30	30
Secondary	27	29	28

Table 2.8 Connectivity improves options for communication with parents

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	36	30	33
Primary embc without broadband	29	37	32
Primary embc with broadband	41	36	39
Secondary	51	40	45

Table 2.9 Connectivity improves options for communication with governors

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	41	37	40
Primary embc without broadband	55	47	52
Primary embc with broadband	45	50	47
Secondary	36	28	31

Table 2.10 Connectivity facilitates the development of collaborative work within their own school

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	48	50	49
Primary embc without broadband	37	42	39
Primary embc with broadband	52	45	49
Secondary	60	60	60

Table 2.11 Connectivity facilitates the development of collaborative work between schools

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	64	63	64
Primary embc without broadband	58	47	54
Primary embc with broadband	65	50	59
Secondary	64	50	56

Table 2.12 Connectivity reduces the time spent on management and administrative tasks

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	29	33	31
Primary embc without broadband	12	29	18
Primary embc with broadband	25	26	25
Secondary	26	19	22

Table 2.13 Access to the connectivity service from outside school

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	37	39	38
Primary embc without broadband	54	50	52
Primary embc with broadband	56	51	54
Secondary	47	40	43

Table 2.14 Section B, question 2. Number of responses

School category	ICT teachers	Non-ICT teachers	All teachers
Primary non-embc	74	54	128
Primary embc without broadband	64	38	102
Primary embc with broadband	210	147	357
Secondary	70	102	172

Table 2.15 Connectivity improves access to resources to support the professional development of teaching staff

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	86	85	86
Primary embc without broadband	88	87	87
Primary embc with broadband	88	84	87
Secondary	81	77	79

Table 2.16 Connectivity improves access to resources to support the professional development of support staff

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	66	63	65
Primary embc without broadband	64	58	62
Primary embc with broadband	71	67	69
Secondary	67	52	58

Table 2.17 Connectivity improves access to collaborative opportunities for the professional development of teaching staff

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	68	67	67
Primary embc without broadband	64	55	61
Primary embc with broadband	73	68	71
Secondary	77	60	67

Table 2.18 Connectivity improves access to collaborative opportunities for the professional development of support staff

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	54	56	55
Primary embc without broadband	44	37	41
Primary embc with broadband	57	57	57
Secondary	67	49	56

Table 2.19 Section B, question 3. Number of responses

School category	ICT teachers	Non-ICT teachers	All teachers
Primary non-embc	74	54	128
Primary embc without broadband	65	38	103
Primary embc with broadband	209	147	356
Secondary	70	100	170

Table 2.20 Connectivity makes it easier to access resources for lessons

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	92	87	90
Primary embc without broadband	91	84	88
Primary embc with broadband	87	86	87
Secondary	91	90	91

Table 2.21 Connectivity makes it easier to access resources for use with interactive whiteboards

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	62	52	58
Primary embc without broadband	60	47	55
Primary embc with broadband	66	61	64
Secondary	70	53	60

Table 2.22 Connectivity makes it easier to access resources for use with data projectors

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	55	52	54
Primary embc without broadband	60	50	56
Primary embc with broadband	66	50	59
Secondary	77	57	65

Table 2.23 Connectivity makes it easier to plan schemes of work

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	77	70	74
Primary embc without broadband	83	82	83
Primary embc with broadband	78	72	76
Secondary	61	70	66

Table 2.24 Connectivity makes it easier to develop teaching plans for individual students

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	45	50	47
Primary embc without broadband	62	47	56
Primary embc with broadband	53	56	54
Secondary	44	44	44

Table 2.25 Connectivity makes it easier to prepare lessons

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	64	67	65
Primary embc without broadband	74	68	72
Primary embc with broadband	75	69	73
Secondary	73	66	69

Table 2.26 Connectivity makes it easier to encourage the development of innovation in teaching and learning

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	77	65	72
Primary embc without broadband	80	76	79
Primary embc with broadband	81	67	75
Secondary	84	81	82

Table 2.27 Connectivity makes it easier to share examples of good practice

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	72	57	66
Primary embc without broadband	75	79	77
Primary embc with broadband	78	71	75
Secondary	84	77	80

Table 2.28 Connectivity makes it easier to record and analyse assessment results

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	53	65	58
Primary embc without broadband	58	71	63
Primary embc with broadband	67	73	69
Secondary	67	65	66

Table 2.29 Connectivity makes it easier to monitor and evaluate the work of students

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	41	41	41
Primary embc without broadband	37	37	37
Primary embc with broadband	46	52	49
Secondary	56	44	49

Table 2.30 Section B, question 4. Number of responses

School category	ICT teachers	Non-ICT teachers	All teachers
Primary non-embc	75	54	129
Primary embc without broadband	65	37	102
Primary embc with broadband	209	147	356
Secondary	70	101	171

Table 2.31 Connectivity encourages greater involvement in lessons

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	80	59	71
Primary embc without broadband	74	57	68
Primary embc with broadband	77	71	75
Secondary	74	59	65

Table 2.32 Connectivity increases students' opportunities for independent learning

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	76	65	71
Primary embc without broadband	74	76	75
Primary embc with broadband	79	78	79
Secondary	90	82	85

Table 2.33 Connectivity increases the number of students who make use of computers

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	60	70	64
Primary embc without broadband	55	68	60
Primary embc with broadband	66	64	65
Secondary	76	69	72

Table 2.34 Connectivity enables students to access a greater range of digital resources

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	81	72	78
Primary embc without broadband	75	59	70
Primary embc with broadband	86	74	81
Secondary	93	76	83

Table 2.35 Connectivity provides a faster way for students to access digital resources

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	76	67	72
Primary embc without broadband	62	57	60
Primary embc with broadband	82	67	76
Secondary	87	68	76

Table 2.36 Connectivity increases students' opportunities for collaborative learning within school

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	56	44	51
Primary embc without broadband	48	49	48
Primary embc with broadband	67	61	64
Secondary	66	53	58

Table 2.37 Connectivity increases students' opportunities for collaborative learning with students from other schools

School category	% of staff responding strongly agree/agree:		
	ICT teachers	non-ICT teachers	all teachers
Primary non-embc	49	44	47
Primary embc without broadband	38	46	41
Primary embc with broadband	51	44	48
Secondary	53	37	43

The following tables relate to Chapter 3.

Note: All tables corresponding to the findings reported in Chapter 3 show findings for administrators only.

Table 3.1 Section C, question 1. Number of responses

School category	Total number of administrator responses
Primary non-embc	99
Primary embc without broadband	74
Primary embc with broadband	259
Secondary	74

Table 3.2 Connectivity provides a secure means of sharing confidential information

School category	% of administrators replying strongly agree/agree
Primary non- embc	82
Primary embc without broadband	81
Primary embc with broadband	85
Secondary	72

Table 3.3 Connectivity improves communication with staff in other schools

School category	% of administrators replying strongly agree/agree
Primary non- embc	69
Primary embc without broadband	70
Primary embc with broadband	74
Secondary	74

Table 3.4 Connectivity improves communication with students

School category	% of administrators replying strongly agree/agree
Primary non- embc	22
Primary embc without broadband	14
Primary embc with broadband	20
Secondary	37

Table 3.5 Connectivity improves options for communication with parents/carers

School category	% of administrators replying strongly agree/agree
Primary non- embc	37
Primary embc without broadband	44
Primary embc with broadband	40
Secondary	50

Table 3.6 Connectivity improves options for communication with governors

School category	% of administrators replying strongly agree/agree
Primary non- embc	56
Primary embc without broadband	51
Primary embc with broadband	58
Secondary	55

Table 3.7 Connectivity improves communication with the LEA's

School category	% of administrators replying strongly agree/agree
Primary non- embc	83
Primary embc without broadband	79
Primary embc with broadband	86
Secondary	77

Table 3.8 Connectivity improves access to administrative support

School category	% of administrators replying strongly agree/agree
Primary non- embc	73
Primary embc without broadband	66
Primary embc with broadband	70
Secondary	65

Table 3.9 Connectivity improves access to technical support

School category	% of administrators replying strongly agree/agree
Primary non- embc	62
Primary embc without broadband	53
Primary embc with broadband	62
Secondary	66

Table 3.10 Connectivity facilitates developing collaborative work with staff from other schools

School category	% of administrators replying strongly agree/agree
Primary non- embc	56
Primary embc without broadband	49
Primary embc with broadband	55
Secondary	60

Table 3.11 Connectivity reduces the amount of paperwork done

School category	% of administrators replying strongly agree/agree
Primary non- embc	28
Primary embc without broadband	23
Primary embc with broadband	27
Secondary	34

Table 3.12 Connectivity makes it easier to purchase resources

School category	% of administrators replying strongly agree/agree
Primary non- embc	38
Primary embc without broadband	43
Primary embc with broadband	39
Secondary	38

Table 3.13 Connectivity makes it easier to administer school accounts

School category	% of administrators replying strongly agree/agree
Primary non- embc	53
Primary embc without broadband	58
Primary embc with broadband	62
Secondary	49

Table 3.14 Connectivity makes it easier to administer examinations

School category	% of administrators replying strongly agree/agree
Primary non- embc	22
Primary embc without broadband	21
Primary embc with broadband	21
Secondary	51

Table 3.15 Connectivity makes it easier to manage and analyse student attendance data

School category	% of administrators replying strongly agree/agree
Primary non- embc	60
Primary embc without broadband	75
Primary embc with broadband	69
Secondary	57

Table 3.16 Connectivity makes it easier to access useful information about administrative systems

School category	% of administrators replying strongly agree/agree
Primary non- embc	61
Primary embc without broadband	75
Primary embc with broadband	67
Secondary	63

Table 3.17 Connectivity makes it easier to manage and provide data required by the LEA

School category	% of administrators replying strongly agree/agree
Primary non- embc	82
Primary embc without broadband	81
Primary embc with broadband	84
Secondary	74

Table 3.18 Connectivity makes it easier to manage and provide data required by the DfES

School category	% of administrators replying strongly agree/agree
Primary non- embc	79
Primary embc without broadband	86
Primary embc with broadband	87
Secondary	72

Table 3.19 Access to the connectivity service from outside school

School category	% of administrators replying strongly agree/agree
Primary non- embc	20
Primary embc without broadband	42
Primary embc with broadband	32
Secondary	27

Table 3.20 Section C, question 2. Number of responses

School category	% of administrators replying strongly agree/agree
Primary non- embc	98
Primary embc without broadband	73
Primary embc with broadband	254
Secondary	73

Table 3.21 Connectivity improves access to resources to support the professional development of administrators

School category	% of administrators replying strongly agree/agree
Primary non- embc	47
Primary embc without broadband	51
Primary embc with broadband	55
Secondary	59

Table 3.22 Connectivity improves access to collaborative opportunities for the professional development of administrators

School category	% of administrators replying strongly agree/agree
Primary non- embc	35
Primary embc without broadband	42
Primary embc with broadband	44
Secondary	48

The following tables relate to Chapter 4.

Table 4.1 Section D, question 1. The number of barriers ticked

	Number of respondents in:			
	primary non-embc	primary embc without broadband	primary embc with broadband	secondary embc
1 – 2 barriers ticked	43	28	116	32
3 – 5 barriers ticked	97	76	263	95
6 – 8 barriers ticked	65	47	151	89
9 - 13 barriers ticked	13	21	38	22
N (making at least one response)	244	182	642	263

Table 4.2 Types of barrier to making full use of connectivity and the percentage responding by school type

Type of barrier	% responding from:			
	primary non-embc	primary embc without broadband	primary embc with broadband	secondary embc
Lack of access to externally connected computers	20	22	21	30
Unable to connect from remote location in working hours	24	23	24	30
Unable to connect from remote location outside working hours	38	35	37	45
Service not reliable enough	35	50	29	32
Service not secure enough	8	8	6	8
Service not fast enough	38	56	20	26
Teachers need training	57	60	58	73
Support staff need training	62	63	69	66
Administrators need training	44	47	48	55
Senior management do not promoted it	18	19	22	34
Staff do not appreciate benefits	32	26	32	39
Negative experience with connectivity	28	46	30	36
Other	18	24	14	14
N	244	182	642	263

Multiple response question: Respondents were able to select more than one barrier so percentages, for each school type, do not sum to 100.

Table 4.3 Analysis grid to rate the severity of interruptions to connectivity

	Hardly ever	Less than once a month	Few times a month	1-2 times a week	Almost every day	Not applicable
Less than an hour	Minimal	Minimal	Minimal	Moderate	Moderate	Minimal
Part of a day	Minimal	Minimal	Moderate	Moderate	Severe	Minimal
A day	Minimal	Moderate	Moderate	Severe	Severe	Moderate
More than a day	Moderate	Moderate	Severe	Severe	Severe	Moderate
More than a week	Moderate	Severe	Severe	Severe	Severe	Severe
Not applicable	Minimal	Minimal	Moderate	Moderate	Severe	Not mentioned

Table 4.4 Section D, question 2. Number of responses

School category	ICT teachers	Non-ICT teachers	All teachers	Administrators
Primary non-embc	72	52	124	96
Primary embc without broadband	65	37	102	74
Primary embc with broadband	207	144	351	247
Secondary	70	100	170	71

Table 4.5 Loss of all connectivity

School category	% of staff reporting 'severe' interruptions:			
	ICT teachers	non-ICT teachers	all teachers	administrators
Primary non-embc	19	17	19	8
Primary embc without broadband	15	19	17	18
Primary embc with broadband	12	19	15	9
Secondary	4	4	4	7

Table 4.6 Loss of email

School category	% of staff reporting 'severe' interruptions:			
	ICT teachers	non-ICT teachers	all teachers	administrators
Primary non-embc	21	12	17	19
Primary embc without broadband	17	22	19	14
Primary embc with broadband	10	13	11	16
Secondary	10	6	8	15

Table 4.7 Loss of filtering/security

School category	% of staff reporting 'severe' interruptions:			
	ICT teachers	non-ICT teachers	all teachers	administrators
Primary non-embc	10	6	8	2
Primary embc without broadband	2	0	1	1
Primary embc with broadband	5	6	6	3
Secondary	6	1	3	7

Table 4.8 Loss of access to online resources

School category	% of staff reporting 'severe' interruptions:			
	ICT teachers	non-ICT teachers	all teachers	administrators
Primary non-embc	22	19	21	7
Primary embc without broadband	18	19	19	14
Primary embc with broadband	11	19	14	7
Secondary	4	5	5	7

Table 4.9 Section D, question 3. Number of responses

School category	ICT teachers	Non-ICT teachers	All teachers	Administrators
Primary non-embc	73	52	125	95
Primary embc without broadband	65	36	101	74
Primary embc with broadband	206	146	352	249
Secondary	70	101	171	71

Table 4.10 Loss of all connectivity has caused problems

School category	% of staff responding strongly agree/agree:			
	ICT teachers	non-ICT teachers	all teachers	administrators
Primary non-embc	77	60	70	69
Primary embc without broadband	74	72	73	78
Primary embc with broadband	72	67	70	70
Secondary	79	62	69	70

Table 4.11 Loss of access to email has caused problems

School category	% of staff responding strongly agree/agree:			
	ICT teachers	non-ICT teachers	all teachers	administrators
Primary non-embc	49	38	45	61
Primary embc without broadband	51	50	50	69
Primary embc with broadband	46	47	46	63
Secondary	59	33	43	73

Table 4.12 Loss of filtering and security safeguards has caused problems

School category	% of staff responding strongly agree/agree:			
	ICT teachers	non-ICT teachers	all teachers	administrators
Primary non-embc	37	19	30	19
Primary embc without broadband	11	14	12	23
Primary embc with broadband	33	25	30	21
Secondary	40	13	24	21

Table 4.13 Loss of online resources has caused problems

School category	% of staff responding strongly agree/agree:			
	ICT teachers	non-ICT teachers	all teachers	administrators
Primary non-embc	66	63	65	41
Primary embc without broadband	65	58	62	43
Primary embc with broadband	64	62	63	40
Secondary	63	57	60	45

The following tables relate to Chapter 5.

Table 5.1 Question 1, Section E. Number of responses

School category	ICT teachers	Non-ICT teachers	All teachers	Administrators
Primary non-embc	76	58	134	110
Primary embc without broadband	67	38	105	77
Primary embc with broadband	219	153	372	268
Secondary	75	106	181	82

Table 5.2 Staff correctly identifying their school's type of connection

School category	% of staff correctly identifying their school's type of connection:			
	ICT teachers	non-ICT teachers	all teachers	administrators
Primary non-embc	55	36	47	49
Primary embc without broadband	84	58	74	87
Primary embc with broadband	84	59	74	76
Secondary	91	42	62	74

Table 5.3 Section E, question 2. Number of responses

School category	ICT teachers	Non-ICT teachers	All teachers	Administrators
Primary non-embc	73	53	126	96
Primary embc without broadband	64	36	100	74
Primary embc with broadband	212	148	360	252
Secondary	72	101	173	74

Table 5.4 Staff who said they were aware of embc

School category	% of staff responding who said they were aware of embc:			
	ICT teachers	non-ICT teachers	all teachers	administrators
Primary non-embc	75	32	57	40
Primary embc without broadband	95	72	87	78
Primary embc with broadband	91	68	81	75
Secondary	97	53	72	82

Table 5.5 Section E, question 3. Number of responses

School category	ICT teachers	Non-ICT teachers	All teachers	Administrators
Primary non-embc	56	14	70	31
Primary embc without broadband	59	25	84	52
Primary embc with broadband	187	95	282	161
Secondary	66	50	116	51

Table 5.6 Staff selecting the correct description of embc

School category	% of staff responding who said embc was a 'regional group of LEAs providing online and connectivity services':			
	ICT teachers	non-ICT teachers	all teachers	administrators
Primary non-embc	71	79	73	55
Primary embc without broadband	63	64	63	62
Primary embc with broadband	79	87	82	61
Secondary	91	76	84	71

Table 5.7 Section E, question 4. Number of responses

School category	ICT teachers	Non-ICT teachers	All teachers	Administrators
Primary non-embc	55	16	71	33
Primary embc without broadband	61	26	87	57
Primary embc with broadband	190	98	268	180
Secondary	67	54	121	55

Table 5.8 How ICT teachers first became aware of embc

How aware	% of ICT teachers responding from:			
	primary non-embc	primary embc without broadband	primary embc with broadband	secondary
Electronic information from LEA	20	8	12	12
Hardcopy information from LEA	20	38	32	37
In school briefings	22	28	27	15
Hardcopy information from embc	9	2	7	1
Colleagues in school	18	20	14	22
Colleagues in other schools	11	3	7	10
Electronic information from embc	0	2	1	1

Table 5.9 How non-ICT teachers first became aware of embc

How aware	% of non-ICT teachers responding from:			
	primary non-embc	primary embc without broadband	primary embc with broadband	secondary
Electronic information from LEA	6	8	8	2
Hardcopy information from LEA	6	38	9	9
In school briefings	56	31	39	30
Hardcopy information from embc	0	0	6	2
Colleagues in school	19	23	34	48
Colleagues in other schools	13	4	4	6
Electronic information from embc	0	0	0	4

Table 5.10 How administrators first became aware of embc

How aware	% of administrators responding from:			
	primary non-embc	primary embc without broadband	primary embc with broadband	secondary
Electronic information from LEA	3	28	17	9
Hardcopy information from LEA	33	32	28	33
In school briefings	33	19	26	15
Hardcopy information from embc	3	0	2	2
Colleagues in school	15	18	26	31
Colleagues in other schools	12	2	1	9
Electronic information from embc	0	4	1	2

The following tables relate to Chapter 6.

Table 6.1 Section F, question 1. Number of responses

School category	Number of ICT teachers responding
Primary non-embc	76
Primary embc without broadband	67
Primary embc with broadband	219
Secondary	75

Table 6.2 Computer provision for pupils

School category	Average number of pupils:			% of computers:	
	per computer	per externally connected computer	per computer under three years	externally connected	under three years old
Primary non-embc	8.8	16.0	24.0	75	56
Primary embc without broadband	7.1	10.3	30.9	74	40
Primary embc with broadband	9.1	13.6	24.8	79	55
Secondary	5.1	5.4	15.7	94	60

Table 6.3 Computer provision for management and administration

School category	Average number per school	% externally connected	% under three years old
Primary non-embc	2.9	92	66
Primary embc without broadband	2.4	88	75
Primary embc with broadband	3.7	93	76
Secondary	27.0	91	75

Table 6.4 Section F, question 2. Number of responses

School category	Number of ICT teachers responding
Primary non-embc	73
Primary embc without broadband	64
Primary embc with broadband	208
Secondary	72

Table 6.5 Areas of school with externally connected computers

School category	% of ICT teachers replying that there were externally connected computers in all/nearly all:				
	class-rooms	ICT suites	staff rooms	library/ study areas	offices
Primary non-embc	58	55	21	17	84
Primary embc without broadband	61	39	13	18	91
Primary embc with broadband	55	69	25	32	83
Secondary	33	89	65	80	68

Table 6.6 Section F, question 3. Number of responses

School category	Number of ICT teachers responding
Primary non-embc	73
Primary embc without broadband	64
Primary embc with broadband	206
Secondary	72

Table 6.7 Computers that can be externally connected at the same time

School category	% of ICT teachers replying all/ nearly all
Primary non-embc	63
Primary embc without broadband	70
Primary embc with broadband	77
Secondary	87

Table 6.8 Section F, question 4. Number of responses

School category	Number of ICT teachers responding
Primary non-embc	73
Primary embc without broadband	64
Primary embc with broadband	208
Secondary	72

Table 6.9 People who can access the connectivity service when not at the school

School category	% of ICT teachers replying that their service could be accessed from outside schools by:				
	teachers	support staff	administrators	students	parents
Primary non-embc	40	22	26	13	5
Primary embc without broadband	45	21	31	3	3
Primary embc with broadband	52	37	36	18	9
Secondary	55	39	36	43	17

The following tables relate to Chapter 7.

Table 7.1 Section G, Number of responses

School category	Number of ICT teachers responding
Primary non- embc	64
Primary embc without broadband	61

Table 7.2 Reasons for not being broadband connected

	% of ICT teachers replying strongly agree/agree in:	
	primary non-embc schools	primary embc schools without broadband
Broadband not available	9	30
Awaiting connection	47	61
Cost of getting connected	36	19
Cost of upgrading equipment	17	10
Ongoing costs of connection	25	12
Cost of staff training	5	5
Service not reliable enough	1	5
Service not secure enough	0	2
Service not fast enough	0	2
Potential benefits not appreciated	3	3

Appendix B Questionnaire

Section A: Respondent's roles

1

Which of the following most closely describes your role?

(Please tick one box only)

Administrative staff	<input type="checkbox"/>
Coordinator / subject leader	<input type="checkbox"/>

2

If you ticked coordinator / subject leader, please tell us which areas/s or subject/s you coordinate / lead in

(Please tick all that apply)

Art and Design	<input type="checkbox"/>
Business	<input type="checkbox"/>
Citizenship	<input type="checkbox"/>
Design and Technology	<input type="checkbox"/>
Engineering	<input type="checkbox"/>
English	<input type="checkbox"/>
Geography	<input type="checkbox"/>
Health and Social Care	<input type="checkbox"/>
History	<input type="checkbox"/>
ICT	<input type="checkbox"/>
Leisure and Tourism	<input type="checkbox"/>
Manufacturing	<input type="checkbox"/>
Mathematics	<input type="checkbox"/>
Modern Foreign Languages	<input type="checkbox"/>
Music	<input type="checkbox"/>

Performing Arts	<input type="checkbox"/>
Physical Education	<input type="checkbox"/>
PSHE	<input type="checkbox"/>
Religious Education	<input type="checkbox"/>
SENCO	<input type="checkbox"/>
Science	<input type="checkbox"/>

Section A: Respondent's roles

1

Does your role include specific responsibility for ICT in your organisation (including teaching ICT)?

(Please tick one box only)

Yes	<input type="checkbox"/>
No	<input type="checkbox"/>

2

Which of the following best describes your role?

(Please tick one box only)

Administrative	<input type="checkbox"/>
Teaching	<input type="checkbox"/>
Both	<input type="checkbox"/>

3

Please give your role or job title into the box below

<input type="text"/>

Section E: Connectivity and embc

1

What type/s of **Connectivity** does your school / institution use?

(Please tick all that apply)

A MODEM	<input type="checkbox"/>
An ISDN2 line	<input type="checkbox"/>
A broadband connection (2Mbps or faster)	<input type="checkbox"/>
ADSL, cable modem, satellite or other connections up to 2Mbps	<input type="checkbox"/>
Don't know / not sure	<input type="checkbox"/>

A **MODEM** (MOdulator/DEModulator) connects at a speed of up to 56Kb via a telephone line.

An **ISDN2** line (Integrated Services Digital Network) connects using two telephone lines, each operating at a speed of 64Kb. Both lines can be combined to give a 128Kb connection.

Broadband connects at a speed of 2Mbps or faster and is the general term used for a high speed internet connection.

ADSL (Asymmetric Digital Subscriber Line) connects at a speed of up to 512Kb, using a standard telephone line.

Cable connects via an optical cable and requires a special 'cable modem' as opposed to a normal telephone modem.

Satellite connects at a speed in excess of 1Mb, and is often used in isolated locations.

2

Are you aware of embc (the East Midlands Broadband Consortium)?

(Please tick one box only)

Yes	<input type="checkbox"/>
No	<input type="checkbox"/>

3

Which of these best describes embc?**(Please tick one box only)**

- | | |
|--|--------------------------|
| A private local organisation providing online and connectivity services | <input type="checkbox"/> |
| A private national organisation providing online and connectivity services | <input type="checkbox"/> |
| A regional group of LEAs providing online and connectivity services | <input type="checkbox"/> |

4

How did you first become aware of embc?**(Please tick one box only)**

- | | |
|--|--------------------------|
| Electronic information from my LEA | <input type="checkbox"/> |
| Hardcopy information from my LEA | <input type="checkbox"/> |
| School briefings | <input type="checkbox"/> |
| Electronic information from embc | <input type="checkbox"/> |
| Hardcopy information from embc | <input type="checkbox"/> |
| Colleagues in my school / institution | <input type="checkbox"/> |
| Colleagues in other schools / institutions | <input type="checkbox"/> |

Section F: ICT resources

1

Approximately how many computers does your school / institution have?

(Please enter the relevant number in each of the boxes below)

	Total number	Over three years old	Externally connected
In school	<input type="text"/>	<input type="text"/>	<input type="text"/>
Management / administration use only	<input type="text"/>	<input type="text"/>	<input type="text"/>

2

Which areas of your school / institution have computers that can be [externally connected](#)?

(Please tick one box in each row)

	All	Some	None	Not applicable
Classrooms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICT suite/s	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Staff room/s	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Library / study area/s	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Office/s	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3

How many of your computers can be [externally connected](#) at the same time?

(Please tick one box only)

All / nearly all	<input type="checkbox"/>
Over half	<input type="checkbox"/>
About half	<input type="checkbox"/>
Less than half	<input type="checkbox"/>
Don't know	<input type="checkbox"/>

4

Which of the following can access your [Connectivity](#) service when they are not at your school/institution?

(Please tick one box in each row)

	Yes	No	Not sure
Teaching staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Support staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Administration staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Parents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

