Laptops for Teachers

An Evaluation of the First Year of the Initiative

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Background

The development of information and communication technology (ICT) is an integral strand of the Government's programme to raise standards in schools by increasing teachers' and students' access to, and skills and knowledge in new technologies. The Government has introduced a number of initiatives to promote the wider use of ICT in schools and the communities supporting them, and through these, headteachers and teachers are gaining a greater understanding of the place of ICT in the curriculum.

The Laptops for Teachers initiative (LfT) launched by the Department for Education and Skills in Spring 2002, aimed to increase teachers' and headteachers' access to computers. In the first two years of the initiative (2002–2004), the Government provided £120 million, allocated directly to Local Education Authorities (LEAs) for the purchase of laptops. Minimum technical specifications for the first year were specified by the DfES to ensure that laptops of an acceptable standard were supplied to headteachers and teachers. LEAs allocated the laptops to their schools, which then owned the laptops and allocated them to selected teachers on long term loan. The evaluation focuses on the first year of the Initiative and thus the impact of later changes, including increased Government investment and introduction of the teachers' National Agreement[1] for workload are not accounted for.

Aims and objectives

This evaluation of the Laptops for Teachers initiative aimed to:

- assess the impact of laptop ownership on recipients' teaching and administration practices and use of resources

- assess the impact of laptop ownership on recipients' ICT competence, confidence and motivation

- explore recipients' perceptions of the value of ICT in teaching and learning

- assess the impact of laptop ownership on student motivation and attainment

- assess the impact of the laptops on teacher workload and that of other staff in the school

- assess the impact of portability including the benefits and issues related to security, health and safety and insurance

- assess the impact on communication and sharing of information with colleagues, students, parents, governors and others inside and outside school.

Methods

The research involved a combination of quantitative and qualitative data collection methods. A multi-strand approach was adopted which reflected the research objectives. The strands were as follows:

Strand 1: LEA survey (111 LEAs responded)

Strand 2: Headteacher survey (408 headteachers responded)

Strand 3: Participant headteachers and teachers survey, which included:

- participant baseline and follow-up online survey of teachers and headteachers (1910 and 958 responses respectively)

- participant telephone interviews (60 teachers)

- case studies in 20 schools – including interviews with 48 headteachers, participant teachers and ICT coordinators[2]

Key findings from the evaluation are listed below. A fuller discussion of each of these findings is contained in the body of the report.

Research findings

Impact on teaching and learning

The findings in this section report on some of the ways that headteachers and teachers have used laptops to enhance the quality of teaching and learning in the classroom. In particular, the section examines what materials and resources were used by teachers in the classroom, how the laptops have been used in order to teach specific skills, the increased confidence and competence in using ICT in the classroom experienced by recipients, student and teacher motivation and visions of ICT use for the future. The key findings were as follows:

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[1] http://www.askatl.org.uk/pdfs/150103a.pdf

[2] In this report the term ICT coordinator is used to indicate responsibility for ICT in primary and secondary schools

- one of the most frequently cited benefits of having a laptop was that it had provided respondents with access to a greater range of resources than ever before. These benefits included: improved access to the internet, extension of the software which respondents were able to use (e.g. DVDs) and the ability to produce better quality resources themselves

- fifty-five per cent of respondents to the follow-up survey said they were using a wider range of sources to prepare lessons, since receiving LfT laptops. Twenty per cent of these respondents also rated their ability to find relevant websites more highly after receiving laptops

- the use of laptops to facilitate the teaching of specific skills to pupils was highly commended by respondents. In particular, respondents valued the use of laptops as a demonstrational tool for developing students' literacy skills at all key stages

- respondents widely reported that since receiving their laptops they had become more confident and competent in their ICT use. They were more willing to use ICT resources in lessons and to supervise students' ICT use. Most notably, teachers who were previously reluctant and inexperienced users of ICT had become more confident and competent with ICT as a whole since receiving their laptop

- the proportion of respondents who reported themselves to be confident users of ICT increased from 65 per cent before they received laptops to 74 per cent after they received their laptops

- teachers commonly viewed their laptops as a means through which they could become familiar with new software packages before having to introduce them to their students

- since receiving their laptops, many teachers had become more motivated to use ICT in their teaching. In addition, teachers widely reported that when laptops were used in lessons, students were also more motivated to learn and spent more time on-task. This was particularly noted when interactive whiteboards were used as a teaching resource

- for many teachers the initiative had provided an impetus to develop their ICT knowledge and skills and they were now exploring how other technologies could enhance their teaching

- teachers felt they were gaining maximum impact from

their laptops when used in conjunction with peripherals e.g. interactive whiteboards. Some respondents felt that funding under the initiative should have been increased to facilitate this, others felt that fewer laptops should have been issued in order that schools could use the remaining money to pay for additional equipment.

Impact on administration to support teaching and learning

These findings outline the impact of the initiative on the administrative tasks of the individuals who received a laptop. In particular, they detail the impacts on lesson preparation and planning, assessment, reporting and pupil tracking, class and school management and teacher workload. The key findings were as follows:

- teachers commented that personal access to a laptop had had an extensive impact on their planning and preparation of resources to be used in lessons – both in terms of their time management and the increase in the professional quality of the work they were able to produce

- A higher percentage of respondents (52 per cent) to the follow-up online survey said that they used ICT for whole school activities, such as planning or finance once a week or more, than the percentage (43 per cent) who used ICT to carry out these activities before receiving the laptops

- respondents used their laptops to experiment with an extensive range of software packages and resources. In particular, they had become more confident in their use of email, in a professional capacity, to prepare lessons. When completing the online surveys 48 per cent of respondents to the baseline survey and 67 per cent of respondents to the follow-up survey rated themselves as 'experienced users' of email for professional purposes

- teachers often prepared lesson resources using presentational software packages on their laptops. Twenty per cent of respondents to the online surveys rated their ability to use presentational software more highly after receiving laptops

- many respondents saw their laptops as a vital tool for recording assessment data, reporting and pupil tracking. Commonly, respondents used their laptops for: annual reviews, reports, target setting, producing Individual Education Plans (IEPs) and school registers

- the impact on classroom and whole school

management differed according to the roles and responsibilities of laptop recipients within schools. The impact on headteachers who did not have a teaching role was more likely to relate to whole school management aspects, whereas teachers and headteachers with teaching responsibilities tended to focus on management issues within the classroom

- personal access to a computer allowed respondents to catalogue and retrieve resources more effectively and provided them with the ability to store large amounts of data which could easily be transferred from one place to another e.g. between home and school or between colleagues

- respondents noted that the flexibility to choose whether to work at home or school allowed by personal access to a laptop, had helped them to manage their administrative duties.

Whole school impact

The research looked at the impact of the initiative on the whole school and those who received laptops in particular. This included, firstly whole school processes such as communication and dissemination, and secondly whole school issues which includes health and safety, insurance and security. The key findings were as follows:

- the allocation strategies adopted within schools had been largely successful. In particular, the strategy of allocation to senior management had been well received. For these respondents, access to laptops had enabled them to use ICT in the development of school systems and enhance their own ICT skills in the process

- seventy five per cent of respondents to the online survey reported that one of the main benefits of having a LfT laptop was the extent to which it helped with their management tasks

- laptop recipients experienced greater levels of communication with colleagues, students, parents and governors. This was mainly because headteachers and teachers were able to access resources such as email and the internet more easily and used these to send work between school and home and to communicate with other members of the school community and outside agencies

- twenty two per cent of respondents to the online follow-up survey reported that one of the main benefits of having a laptop was that it increased their level of communication with colleagues within the school

- the streamlining of whole school internal procedures was highlighted, by respondents to the follow-up online survey as an important benefit of the initiative. This was primarily because headteachers had been enabled to ensure consistency of procedures throughout their schools

- recipients generally welcomed the school ownership model adopted by the initiative. Respondents felt this was effective because the laptops contributed to existing school ICT resources and data entered onto the machines remained within the school and was not lost with teacher movement between schools

- fifty two per cent of respondents to the headteacher survey were concerned about the potential threat of theft of their laptop. In some cases this was cited as a possible deterrent when considering transporting a laptop between home and school. However, few recipients reported they had actually experienced theft

- one of the benefits of laptop portability, cited by headteachers, had been the extent to which recipients had become more effective in finding ways to manage their paperwork. With the increased use of laptops recipients need to carry less paperwork

- the security of laptops had been catered for under school and household insurances, however, in-transit cover for laptops remained unresolved for many.

Section 1 Background and aims

In the Spring term of 2002 the Government launched the first phase of the Laptops for Teachers initiative (LfT). LfT was designed to increase teachers' ICT knowledge, skill and confidence in their professional lives. A key feature of the school allocation process was that priority was given to headteachers who had not previously received a computer funded wholly or partly by the Government. This was intended to support the view of the Department for Education and Skills (DfES) that headteachers have a crucial role in ensuring that schools have an effective ICT strategy and a supporting development plan. The guidance issued by the DfES highlighted that providing headteachers with personal access to a laptop 'will ensure in-school support for school staff benefiting from the scheme'[3].

The Laptops for Teachers initiative provided laptops to be allocated to school staff at schools' individual discretion. Laptops were to remain the property of the school and to be returned when a teacher ceased to be employed in that school[4]. As with headteachers, teachers who had already received computers wholly or partly funded by the Government were ineligible to receive a laptop. In the first two years of the Laptops for Teachers initiative, the Government provided £120 million, allocated directly to Local Education Authorities (LEAs) for the purchase of laptops and divided over two years with specified amounts for each year. Funding was also ring-fenced for the purchase of laptops for staff in non-maintained special (NMS) schools. Non-maintained special schools received two years' funding in one allocation and, unlike maintained schools, were able to administer the initiative wholly within school, independently of LEAs.

This report presents findings from data collected during the first year of the Laptops for Teachers initiative and thus the impact of later changes, including increased Government investment and introduction of the teachers' National Agreement[5] for workload are not accounted for.

The National Foundation for Educational Research (NFER) was commissioned by the Department for Education and Skills (DfES) to undertake the evaluation of the first year of the Laptops for Teachers initiative.

The main aim was to investigate the impact the laptops were having on respondents in their professional lives. The evaluation involved:

- a survey of LEA administrators in 150 LEAs

- telephone interviews with 20 LEA administrators

- a survey sent to 880 headteachers in maintained primary, secondary and special schools

- telephone interviews with 20 headteachers of non-maintained special schools

- an online baseline survey offered to one in four recipients at the time they received their laptops

- an online follow-up survey offered to 1910 participants in the initiative who had completed a baseline survey. The online survey took place approximately 6 months after the majority of respondents received their laptops

- case studies in 12 schools (5 primary, 5 secondary and 2 special) including interviews with 48 headteachers, participant teachers and ICT coordinators

- telephone interviews with approximately 60 participants (representing primary, secondary and special schools).

Full details of the methodology used in this evaluation are given in Appendix 1.

1.1 Objectives
The objectives of the evaluation were:

- to assess the impact of personal ownership of a laptop on the teaching, administration and resources used by recipients

- to assess the impact of personal ownership of a laptop on recipients' ICT competence, confidence and motivation

- to explore participants' perceptions of the value of ICT in teaching and learning

- to assess the impact of personal access to a laptop on student motivation and attainment

- to assess the impact on workload of teachers and of other staff in the school

- to assess the impact of laptops' portability, including the benefits and issues related to security, health and

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[3] http://www.naace.org.uk/searchView.asp?menuItemId=2&resourceId=451

[4] http://www.lft.ngfl.gov.uk/index.php?i=1

[5] http://www.teachernet.gov.uk/wholeschool/remodelling

safety and insurance

- to assess the impact of the Laptops for Teachers initiative on communication and sharing of information with colleagues, students, parents, governors and others inside and outside school

- to investigate how schools decided upon the allocation of the laptops

- to assess whether these allocation strategies were effective

- to evaluate teachers' and headteachers' perceptions of the school ownership model underpinning the initiative.

Section 2 The impact of Laptops for Teachers on teaching and learning

This chapter outlines some of the ways in which respondents have used their laptops to enhance the quality of teaching and learning in the classroom. The data suggest that if the full potential of the Laptops for Teachers initiative is to be realised, it is vital that teachers are able to use their laptops in conjunction with a range of other technologies, including interactive whiteboards, data projectors and digital cameras. In schools where teachers have been able to link their laptops to such hardware, laptops have proved to be an extremely powerful and versatile teaching tool. Even in schools where other equipment has not been available, teachers have recognised the potential to produce high quality classroom resources on their laptops, geared towards students' specific learning needs. In each instance, teachers have created a learning environment in which their laptops play an integral part in lesson design and delivery.

With this in mind, this section of the report details how, when using their laptops, teachers have been able:

- to produce high quality teaching materials

- to aid students' skills development in specific curriculum areas

- to use ICT more confidently and competently in their teaching

- to enhance students' motivation to learn

- to increase their current awareness of developments in ICT and recognise how these may benefit teaching and learning in the future.

Throughout, it is suggested by headteachers and teachers that the Laptops for Teachers initiative can play an important role in raising standards, by helping to engage both teachers and students in the learning process.

2.1 Access to teaching materials

One of the most frequently cited benefits of having a laptop is that it has given respondents access to a greater range of resources than ever before. Fifty five per cent of respondents to the follow-up survey said that

they were drawing on a wider range of sources to inform their lesson preparation than they had before receiving a laptop. Table 1 shows that respondents' abilities to find relevant websites, search for relevant information and then download documents increased following receipt of LfT laptops. In most cases approximately three quarters of the respondents to the follow-up online survey rated themselves as experienced users. In each case, the numbers of respondents describing themselves as basic users or having little/no experience with these tasks, decreased.

Table 1 Ability to access resources

How would you rate your current ability in using the following applications?

	Finding relevant websites		Searching for information		Downloading documents	
	Baseline survey %	Follow-up survey %	Baseline survey %	Follow-up survey %	Baseline survey %	Follow-up survey %
Exper. user	65	77	63	76	54	69
Basic user	31	18	33	19	37	24
Little/no exp.	3	1	3	1	9	3
No response	<1	4	<1	4	1	4

N = 958

A series of single response items. Due to rounding, percentages may not sum to 100.
Source: DfES participant baseline survey.
NFER participant follow-up survey.

As a result of receiving a laptop, headteachers and teachers have enjoyed increased opportunities:

- to search for appropriate resources on the Internet

- to purchase electronic resources – e.g. CD Roms or DVDs – which can be displayed via their laptops

- to create their own resources, most often in the form of presentation software and worksheets.

2.1.1 Internet access

Personal access to a laptop has allowed respondents greater freedom in where and when they access the Internet to search for resources. A number of teachers said that, before receiving their laptop, their only opportunity to search for Internet resources had been when using networked PCs in the school computer suite or in their classrooms. As one secondary school teacher

explained, having such limited access had made him uneasy about using the Internet to support his teaching:

I had to use the computer in my classroom, but the computer is in the classroom so the students can use it…I didn't like to use it for anything that wasn't essential and it can take such a long time to try and find things.

However, since receiving his laptop, he said he had been much more willing to use the internet to benefit his teaching. Figure 1 below shows that when asked to rate their ability to use ICT in specific ways, more respondents who completed the online surveys, considered themselves to be 'experienced users' after receiving their laptops.

Figure 1 Respondents who rated themselves as experienced users before and after receiving their laptops

How would you rate your current ability in using the following applications?
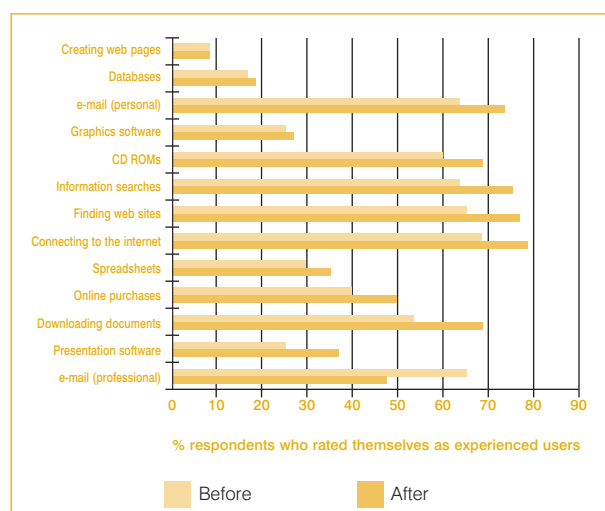
N = 958. *A series of single response items.*
Source: DfES participant baseline survey.
NFER participant follow-up survey.

Many of the teachers interviewed during case study visits and telephone interviews stated that being able to access the Internet through their laptop gave them much greater freedom to search for relevant sites than when working on their school network. One secondary school teacher stated: 'The school network … has security blocks on it so I can't surf the web freely to look for resources.' A few of these teachers also commented that the freedom they enjoyed when searching the Internet through their laptop allowed them to extend students' access to appropriate Internet sites. For

example one said: 'Once I've identified a site on the laptop I can ask for it to be put onto the school network for the pupils to access.' Another teacher commented that, since having his laptop, he had become more confident in using the Internet for research to support his lessons. As a consequence, he also felt better able to support his students' Internet searches:

I can do much more research and things which I previously didn't have the opportunity to do because I didn't have the resource. Looking on the Internet for resources is something I would previously have encouraged the students to do – 'oh, why don't you have a look on the Internet?' – but now I can do it for myself… Now that I know where the resources are I have the opportunity to signpost students to resources on the Internet.

Teachers also saw laptop portability as having a number of benefits when it came to accessing the Internet. Teachers without Internet access points in their classrooms or offices were able to take their laptops into other rooms where they could connect to the Internet. In this way, they were best able to make use of the networking resources available in their school. In addition, teachers were able to search for resources online at times and in places which suited them, rather than having to condense searches into break times when computer resources were free. This has allowed teachers to delineate more effectively between tasks which need to be carried out in school and those which can be completed at home. For example, in order to make most effective use of his time, one teacher took his laptop home to work on the Internet, explaining: 'the school network is so slow'. By contrast, in order to take advantage of his school's investment in broadband, a special school teacher took his laptop into school specifically to search the Internet.

Teachers have commented that as well as facilitating more effective preparation, being able to incorporate up-to-date Internet resources in their teaching has had a knock-on effect on students' motivation to learn. A modern foreign languages (MFL) teacher said that Internet resources helped to 'bring languages to life. It stops languages being text book and starts them being real if it's off a website'. By connecting her laptop to the Internet and then projecting websites onto an interactive whiteboard, she was able to accompany her students on 'virtual tours':

I use the Internet to visit towns in France and Germany using virtual reality. You can feel the culture. I always want to see actual French and German websites on curriculum topics e.g. youth hostels.

Sixth form teachers, in particular, highlighted the importance of being able to access materials on 'minority' topics, for which few published resources are available. In fact, some teachers, drawing on their new-found confidence with the Internet, were keen to produce their own web pages to help fill such gaps in curricular support:

I would like to learn to make websites where students can have a direct link to research on other faiths, Hindu views of euthanasia for example; learning about the 'A2' level syllabus.

Not only has teachers' increased use of the Internet via their laptop allowed them to access a huge range of up-to-date, quality resources but it has done so, in the main, without incurring prohibitive costs. For example, a geography teacher commented:

It is a much cheaper alternative to textbooks and is easier to keep up to date in geography as it is a living, breathing subject. [Use of the Internet] does motivate and it is interesting and I don't think it will wear off. It is good to focus attention and get up to the minute, immediate data, e.g. weather forecasts.

A few teachers stated that virtual tours, whether of continental towns, museums or art galleries, are a highly cost effective means of allowing students 'off site' without having to contend with the contingent difficulties of risk assessment, permission slips, transportation and so on.

However, in some cases, teachers' increased ability to access the internet at home, through their laptop, raised concerns about the potential cost increases which they may incur.

The ability to download lesson plans and games, especially for pupils with severe learning difficulties, was positively endorsed by teachers in non-maintained special schools, who valued the greater choice and access to a range of specialised resources that personal access to a laptop had afforded them. Special school teachers also used their laptops to look on the Internet to find out more about the needs of their students and strategies for teaching them effectively. One teacher said:

I use my laptop to look on the Internet to find out more about the learning difficulties and behavioural difficulties the pupils have like autism and ADHD (Attention Deficit Hyperactivity Disorder). We have all sorts of pupils here. It's good to have links with outside specialist organisations.

2.1.2 Other related ICT resources

In addition to accessing resources from the Internet, those teachers who were allocated laptops with the facility to play DVDs had a further range of educational software available to support their teaching. A secondary school science teacher commented that many of the videos to support science teaching appeared dated and he was keen to explore the possibility of purchasing DVDs as an alternative to these.

2.1.3 Creation of resources

Teachers had also used their laptops to create their own resources. Many teachers commented that since receiving their laptops, they had been able to produce higher quality worksheets, often incorporating graphics software and Internet images to make the work visually more exciting. Those with access to digital cameras or scanners had been able to produce resources to support educational visits, incorporating pictures taken during the students' visit. For example, a secondary school geography teacher took a digital camera on a field visit; by loading the pictures onto his laptop he was able to produce worksheets showing the actual rock formations observed by his students. A similar exercise was undertaken by a junior school teacher, who commented:

It is excellent and has interested and motivated the pupils, especially in the geography coastline work. The photographs…were real and the children were seeing reality – not just a drawing in a textbook which is an example.

In terms of levels of experience with presentation software, there was a significant[6] difference between respondents from primary schools and secondary schools. In Figure 2, a higher percentage of respondents from secondary schools than those from primary schools (44 per cent and 36 per cent respectively) rated themselves as 'experienced users of presentation software after they had received their laptop. The proportion of respondents who indicated that they had 'little/no experience' using this software reduced after they received their LfT laptops. The

baseline survey revealed that 40 per cent of primary school respondents and 27 per cent of secondary school respondents indicated that they had 'little/no experience'. Whereas almost a quarter (24 per cent) of primary school respondents to the online follow-up survey said that they had 'little/no experience', just 13 per cent of secondary school respondents gave the same response.

Figure 2   Respondents' level of experience with presentation software – by school phase
Since receiving your Laptops for Teachers' laptop, how would you rate your current ability in using the following applications?
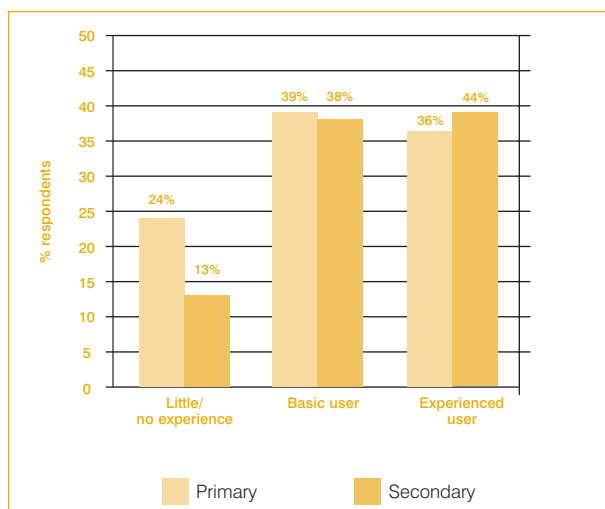
N = 901. *A single response item.*
Source: NFER participant follow-up survey.

As will be discussed in Chapter 3, in connection with lesson planning and preparation, presentation software had also found much favour among teachers and students. Teachers had been able to design presentations at home on their laptops and then, by linking their laptops to a data projector or interactive whiteboard, show these in school. This was seen as a particularly useful way of presenting students with structured plenary sessions – this being particularly pertinent in the light of the National Literacy and Numeracy Strategies, and the Key Stage 3 Strategy. Some teachers had worked with their students to design presentations about educational visits. These had often been presented in assemblies or at parents' evenings. In this way, the benefits of educational visits had been

extended to other students in the school and also disseminated to parents.

2.2 Use as a teaching aid
Teachers drew attention to ways in which laptops can be used to facilitate the teaching of specific skills. They commented particularly on the use of laptops:

• as demonstrational tools

• for developing students' literacy skills at all key stages.

2.2.1 Demonstrational value
Several respondents commented that explaining something to a student was often most effective via their laptop. Almost a fifth of respondents to the online survey rated their ability to use graphics software more highly after receiving their laptops. Typically, teachers commented: 'If it's hard to express what I want to teach, then often I'll show them on the laptop'. This point was made most frequently by teachers in science, mathematics, technology and business studies, who tended to use specialised software packages to support their teaching. For example, a secondary school mathematics teacher commented:

I'm having demonstration software packages put on my laptop so that I can learn how to use them and then use them in school with the projector… Certain topics would take a lot longer to demonstrate with a pen than it takes to use demonstration software and a projector – things like moving different shapes around on different axes. It makes it more interactive and more motivating for the students. It can only be positive for them.

Other teachers highlighted the benefits of being able to take their laptop from one group of students to another, using it to answer each group's specific queries. Again, this shows the versatility of laptops as teaching tools, with teachers being able to support both whole class and small group teaching. Seventy six per cent of respondents to the follow-up online survey considered that having their laptop had improved their efficiency in supporting student learning (see Figure 3).

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[6] We say that there is a statistically significant difference between two groups in some quantity if the probability of that difference arising by chance is less than a preset value (usually 5%). Similarly, we say that there is a significant relationship between two variables if the observed results have a low probability of arising by chance, that is by random fluctuations when the two variables are really independent.

Figure 3 Improvements in efficiency since receipt of laptops

How far do you agree with the following statement? Having a laptop has improved my efficiency in:
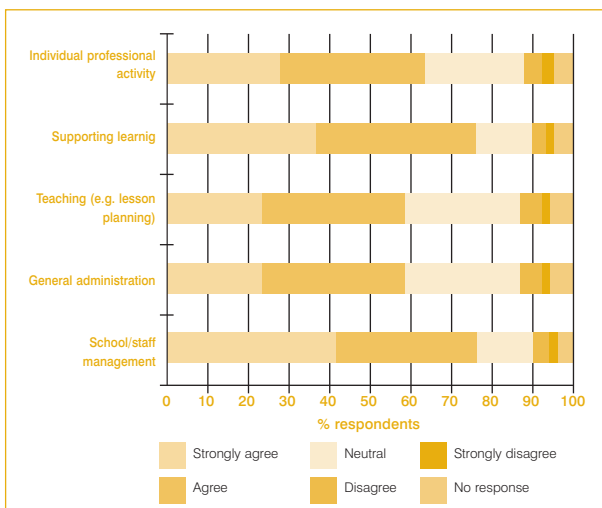
A series of single response items. A total of 958 people responded to this question.
Source: NFER participant follow-up survey

There was a significant difference between the numbers of respondents from primary and secondary schools who considered that ownership of laptops had improved their efficiency in supporting pupil learning. Table 2 below shows that a slightly higher percentage of primary school respondents than secondary school respondents agreed that ownership of laptops improved their efficiency in supporting learning.

Table 2 Laptop use to improve efficiency in supporting learning

How far do you agree with the following statement? Having a laptop has improved my efficiency in supporting learning.

	Strongly agree %	Agree %	Neutral %	Disagree %	Strongly disagree %	No response %
School phase						
Primary	40	39	12	3	2	4
N = 520						
Secondary	31	42	16	6	2	4
N = 381						

A single response item. Due to rounding, percentages may not sum to 100.
Source: NFER participant follow-up survey.

2.2.2 Literacy support

A further theme common to much of the data was teachers' use of laptops to support literacy teaching. Teachers in primary and secondary schools commented widely on the benefits of using their laptops to facilitate collaborative writing and modelling exercises in which students are asked to revise texts:

We use them to share with the pupils and seeing things modelled on the computer produces amazing results especially in writing myths and fables when looking at the structure. Scribbling on an ordinary whiteboard does not engage them and takes longer. Using the e-beam[7] projector and word processing is good for shared writing because we can type straight onto the board… The pupils are engaged more and there is a certain amount of excitement when the laptop comes out. It is good for those with poor motivation to develop thinking skills.

Another teacher commented specifically on laptop portability, saying that when using her laptop during whole-class collaborative writing exercises, she was better able to act in a facilitative role:

The pupils' responses are better when the laptop is used. They enjoy putting work onto the laptop to share, especially shared writing. It is good for classroom management and face-to-face teaching and partnership between us. The advantages are you can type and not turn your back on the pupils.

Laptops have also been seen as particularly helpful for teaching literacy skills because the word processing packages installed on them have features designed to aid the editing and revision of texts. Where teachers have had the opportunity to use their laptops with projectors or interactive whiteboards, they have been able to explore these features with their students during whole class literacy sessions. For example, the 'red and green squiggles' used to indicate spelling and grammar mistakes were seen as helpful in teaching pupils to correct their own work.

Importantly, teachers were using their laptops to teach literacy in a way that acknowledged, and sought to address, many of the problems associated with poor literacy skills, which may hamper students' use of word processing packages. In whole-class teaching, students were made to think about how to correct errors

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[7] When combined with a data projector e-beam technology can be attached to a laptop or desktop computer to create a presentation tool and used in conjunction with whiteboards. E-beam provides teachers with greater flexibility to import images and annotate information shared in lessons.

appropriately, as opposed simply to selecting the first alternative offered by the spelling or grammar check.

The ability to revise work quickly without continually 'rubbing out' was also seen as a way to help maintain clarity of editorial work. Teachers also noted the great advantage of not having to complete the revision of a text within a single lesson; when projected from the laptop, such texts could be saved and worked on again. One teacher said:

For drafting, if you are writing on the whiteboard it gets messy and on the computer it is easier and you can save the work. It is neater too. You can see the process and the product without having to copy it out.

Having personal access to a laptop had also encouraged teachers to find creative ways of developing skills in pupils. For example, to encourage students to write analytically, a secondary school teacher used his laptop to play a music CD, he then asked his students to write a review of the music. He explained 'they had to write a review but the children have a habit of just rewriting the story and not analysing it'. The laptop allowed the information to be presented to the students in auditory format rather than visually in order to prevent them from simply re-formatting what was in front of them.

2.3 Development of teachers' and pupils' ICT skills

Respondents widely reported, during interviews and when completing the follow-up online survey, that since receiving their laptop they had become more competent and confident in their ICT use. As shown in Figure 4, data suggested that respondents (both headteachers and teachers) to the online surveys were more confident in their use of ICT to analyse school and pupil performance after they had received LfT laptops. The proportion of respondents who said that they either 'agreed' or 'strongly agreed' that they were confident rose from 65 per cent before receipt of laptops to 74 per cent after they received their laptops.

Figure 4 Respondents' level of confidence in using ICT

How far do you agree with the following statement relating to your use of ICT before and after receiving laptops?

I am confident in my ability to analyse school and pupil performance using ICT.
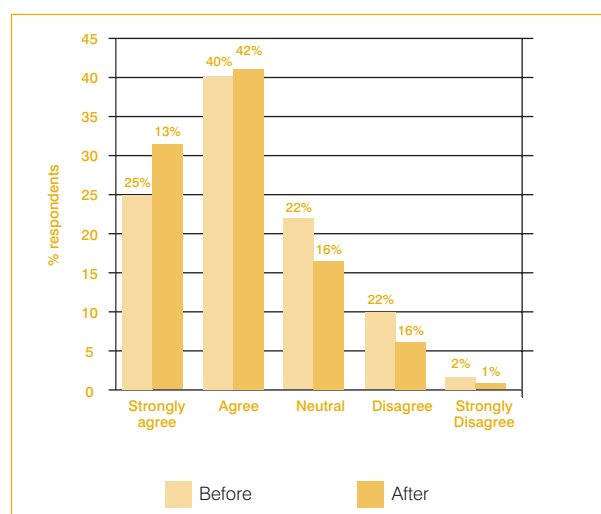
N = 958. *A single response item.*
Source: DfES participant baseline survey.
NFER participant follow-up survey.

Their increased confidence had often made teachers more willing to use ICT resources in lessons and to supervise students' ICT use. As one teacher commented: 'Having the laptop has had a massive psychological effect'. By the fact that you're given a laptop you think "I can use it, I'm worth it"'.

As a result of increased confidence, teachers variously:

- overcame their reluctance to use ICT in the classroom
- extended the range of software packages used in the classroom
- developed pupils' ICT skills alongside their own.

When considering the perceived competence levels of respondents, the data revealed small but significant gender differences. Figure 5 shows that when respondents were asked if they felt that they were competent ICT users, a slightly higher proportion of male respondents felt that this was the case. Within the follow-up survey, while most male respondents (90 per cent) said that they were experienced users, fewer (85 per cent) female respondents rated themselves as experienced users of ICT. It is noteworthy, however, that from the data ownership of laptops appears to have had

more impact on female recipients (in terms of their perception of their own ICT competence), as the chart records a higher percentage increase for female respondents who indicated that they were competent users.

Figure 5 Competent users of ICT before and after receiving laptops
The percentage of male and female respondents who agreed with the statement 'I am a competent user of ICT'.

Figure 5   ⬛ Male   ⬛ Female
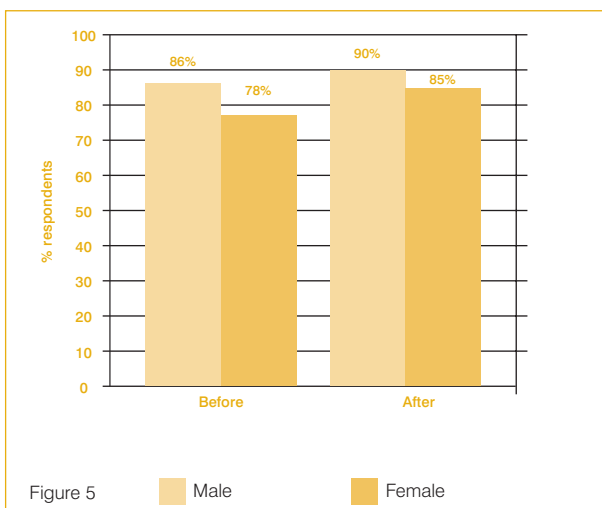
N = 349 *(male),* ***N = 602*** *(female). A single response item.*
Source: DfES participant baseline survey.
*   NFER participant follow-up survey.*

2.3.1 Extending the use of ICT
Teachers who were previously reluctant and inexperienced users of ICT had become more confident and competent with ICT as a whole since receiving their laptop. For example, one primary school headteacher, who identified his teachers as 'B.C.' (before computers), recalled how a teacher who was initially very reluctant to use ICT had grown more confident since receiving her laptop. This had had a direct impact on the quality of her lessons in the school's computer suite:

We had one teacher who was so terrified of using ICT she spent her first lesson in the ICT suite teaching children to adjust their chairs. She's gone from playing with chairs to really doing ICT. It's had a huge impact on teacher like that.

For particularly reluctant teachers, the ability to take their laptop home and learn how to use it in their own time had been extremely valuable; in the words of one primary school headteacher:

[I am] more confident and less phobic and I do take classes to the ICT room. I used to feel that computers were not effective and was phobic in terms of the time it took to use them. I have found it convenient and it speeds things up. I can face the front of the class and not lose them. It has made me more confident and I can see the point in computers.

2.3.2 Extending the range of software packages used
Teachers also identified ways in which they could use their laptops to develop teaching techniques. They had set out to become competent users of specific software packages, such as presentation software, which they believed would aid communication of teaching points:

We do have in-house training to help us meet the students' needs – and also we can learn how to train the students. For example, the technician taught me to use [presentation software] and I have taught the class to use [it] as well with help from the technician. [Presentation software] lends itself to MFL particularly well. (Secondary school MFL teacher)

In addition, some teachers reported that their students were helping them to learn how to use the LfT laptop for a variety of different teaching and administration tasks. In such instances, laptops had presented a common medium, via which teachers and students could facilitate each other's learning. Teachers were learning new ICT skills which allow for the creative presentation of curricular content, thus enhancing students' learning. Illustrating this, a MFL teacher explained:

I have got my Year 8's to do [software] presentations for my Year 7 classes. They are producing useful resources and teaching me about it … We are given no time to work out how to use it so it is good to be able to learn with my students.

An infant school teacher explained how he needed, first, to be able to experiment with his laptop at home, in order to develop the confidence to learn about ICT alongside his pupils. He commented that he no longer felt he had to have 'a solution to everything that could possibly go wrong' before he could introduce a new piece of software to pupils:

I've learnt by my own mistakes. I taught myself to use [graphics software] so pupils could do desktop publishing. It was easy for me to pick up and I could teach myself, I don't think I have to know everything before I use it in class. The children are confident and happy to have a bash.

15

As this indicates, teachers also commonly saw their laptops as a means through which they could become familiar with new software packages before having to introduce them to their students. By being able to experiment with new software packages at home, teachers had been able to develop:

- a greater awareness of what can be achieved when using a particular software package

- an understanding of how a software package may be used most effectively to support the curriculum

- the confidence and competence to introduce a new software package to students.

Teachers often commented that it was only since receiving their laptop that they had had the opportunity to 'play with new packages at home, taking as long as I need'. Frequently, the computers teachers had at home were old and of an insufficient specification to run the software packages used in schools. This was corroborated by a secondary school technology teacher who stated:

We've just introduced CAD/CAM [Computer Aided Design/Computer Aided Manufacture software] and I needed to have the laptop to be able to take it home and learn how to use it. My machine's prehistoric and CAD/CAM's too big for it. It's only since I've had the laptop that I've had time to get into [graphics software packages]. My use of CAD/CAM has come on enormously. I can work at CAD/CAM at home on the laptop and then bring it into school. I can do prototypes at home and then show them to my class.

2.3.3 Developing students' ICT skills
Teachers' increased confidence and competence with ICT had also had a 'knock-on' effect on their students' attitudes towards ICT and their computing skills. One teacher explained how her own progress had been mirrored by that of her students:

You use [the laptop] because you've got it. Now that I have a laptop and I'm confident with using it, I'm confident to use the school laptops. In the past few weeks 80 per cent of my lessons have used the school laptops which I wouldn't have done a year ago. Now the students are using the laptops, students' skills and confidence have clearly advanced in the classroom.

By using laptops to enhance their lesson delivery, teachers have been able to increase students'

awareness of the benefits of using laptops as presentational tools:

Pupils have been able to see the potential of a laptop, especially from the perspective of doing [software] presentations. It's changed their expectations of what computers can do.

2.4 Student and teacher motivation
Since receiving their laptops, many teachers had become more motivated to use ICT in their teaching. The laptops had also made usage technically and logistically more possible. A secondary school humanities teacher commented:

The workload has currently increased dramatically but it is fun and I enjoy doing it. There is a risk I could overdose on it! But it's fun and it's new! It doesn't feel like work.

Talking generally, teachers noted that 'ICT is a motivator' and that students enjoyed the novelty of having a laptop in the classroom: 'they sit and pay attention when I get [the laptop] out. They're interested in the laptop. It makes them more inclined to listen and have a go'. Teachers were able to provide high quality resources using their laptops and this too was seen as a way for teachers to meet students' expectations:

Our students are relatively affluent so they expect good resources and up-to-date resources. Having the laptop enables me both to access and provide these resources.

Often the greatest impact was noted in those instances where teachers had used their laptops in conjunction with interactive whiteboards and/or e-beam projectors. The visual nature of interactive whiteboards was seen as a particularly valuable way to focus students' attention and keep them 'on task':

Using [the laptop] with the interactive whiteboard, the kids were amazed. It's visual which is good, especially with fidgety children, and it grabs their attention. It means there is more attention from everyone in class and it's so big so everyone can see.

Being able to present students with visual stimuli by projecting from a laptop onto a whiteboard was seen to be of particular benefit by some special school teachers. A teacher said, 'with our kids what you want is visuals. You need something to grab their attention.'

Teachers also commented that using their laptops in conjunction with interactive whiteboards or projectors:

'quickens the pace of lessons and engages the whole class more. It is much more immediate.' Software presentations were seen as especially valuable, enabling teachers to display information, or instructions for students to follow, almost instantly; and to structure lessons clearly with appropriate material for introductory and plenary sessions, for example.

As mentioned earlier, it is important to note that it was since receiving their laptops that teachers were more willing to incorporate the use of presentational software into their teaching strategies. A number of teachers explained that even though they had previously had access to interactive whiteboards or projectors, they had been reluctant to prepare work at home and then try to transfer it to the school network. This process was described by one teacher as 'a risky business, especially with our cumbersome school network. You could lose your whole lesson because it wouldn't take your disk.' With laptops, teachers were now able to prepare work at home and then bring the laptop into school to connect directly to an interactive whiteboard or projector. They were, as a result, more willing to use presentational software packages in their teaching.

2.4.1 Effect on student attainment

A number of teachers commented that the ways in which they had used their laptops in their teaching had had a positive impact on student attainment. A primary school teacher stated:

Most of the time it's great – especially with the interactive whiteboard. It excites the children. Using computers is an exciting prospect for them … I think ICT has an impact on attainment because it increases children's enthusiasm for learning.

Other teachers, although not having access to additional equipment, had noted improvements in students' motivation and attainment relating to the use of laptops in the classroom. A secondary school teacher who kept a spreadsheet of students' coursework grades on her laptop explained that:

Pupils respond well to being shown their progress and records of work completed, grades etc., in a pictorial form of the laptop – I can take [my laptop] into class and show the pupils. It has a big impact on the motivation of the pupils in that way because they can see how they are doing concretely.

Another teacher used a database he had designed on his laptop as a stimulus for his students' GCSE business studies coursework:

The pupils saw me designing the database I use to record pupil data over a period of months. When I explained to the pupils what I was doing and how I was doing it, they could see improvements and then for their database projects did brilliant databases – they all wanted to go one better than the teacher! They are always bringing in things for me to put on my laptop as CD-Roms, or on disk. It really focuses them and motivates them.

Other teachers used their laptops as a way of motivating students with special educational needs to produce written work of a high standard. An English teacher commented:

I sometimes take my laptop into the classroom and make it available for pupils with special needs to use so they can word process a piece of work and correct spellings and it looks good which motivates them. It's a treat for them to use. If they do a good piece of work I let them type it up.

2.5 Development in use of laptops

As the previous sections have shown, teachers had used laptops effectively in the classroom, often in conjunction with other hardware, to enhance teaching and learning. They had become both more willing and more able to use ICT in their teaching. The Laptops for Teachers initiative has acted, in effect, as a 'springboard' for many teachers to develop their ICT knowledge and skills, and they were exploring how other new technologies could enhance their teaching.

It was strongly felt across all school phases, that effectiveness in teaching would be maximised if the Initiative was broadened to supply all teachers with laptops and additional peripherals. Teachers who had yet to benefit from the purchase of projectors or interactive whiteboards were often frustrated because they could not realise the pedagogic potential which having a laptop had opened to them, *'if I had more training to use my laptop in class with Internet access it would bring my lessons into the twenty-first century'*.

Indeed, one teacher commented that the only negative impact of the initiative was that:

Laptops for teachers

It gives you a taster and you want more and so it's costly. It's the potential it gives you. These classrooms could be buzzing, that's my vision and I suppose we'll be looking for even greater technology. When you look at palmtops, it's fantastic.

Some teachers were already seeking to capitalise on the potential of laptops in their lessons, trialing new technologies which would allow them to build on the foundations laid down through the Laptops for Teachers initiative.

To conclude, the Laptops for Teachers initiative has provided an impetus for innovative teaching approaches in many schools. As one headteacher stated:

As more teachers are provided with laptops, it will enhance teaching and learning as a new pedagogy with projectors and whiteboards emerging and teachers becoming familiar with it.

Section 3 Impact of Laptops for Teachers on management and administration to support teaching and learning

This chapter explores the impact on the administrative tasks of the individuals who received a laptop through the LfT initiative. In particular, as in the previous chapter, it illustrates the effect the scheme has had on recipients' professional practice. It covers the following areas:

- lesson preparation and planning

- assessment, reporting and pupil tracking

- class and school management

- teacher workload (including the balance of work undertaken at home and at school).

The chapter also considers the different impact according to recipients (i.e. headteachers and teachers), and outlines issues of confidence and competence, and portability of the laptops.

3.1 Lesson preparation and planning

Teachers commented, during interviews, that personal access to a laptop had had an extensive impact on their planning and preparation of resources to be used in lessons – both in terms of their time management and quality of the work they were able to produce. In the follow-up survey, a quarter of the total respondents put greater importance on using laptops to prepare materials than they did when they completed the baseline survey. Over half of the respondents to the follow-up survey said that they used ICT more frequently for whole school activities such as timetabling, planning or finance after they received their laptops (see Table 3). Also, a smaller proportion of respondents said that they had never used ICT for these purposes.

Table 3 Using ICT for whole school activities before and after receiving laptops

How frequently do you use ICT for whole school activities?

	Once a week or more	Less than once a week	Never	No response
Before	43	31	26	<1
After	52	32	12	4
N = 958				

A single response item. Due to rounding, percentages may not sum to 100.
Source: DfES participant baseline survey.
NFER participant follow-up survey

In part, this increase can be attributed to the greater access to ICT that having a laptop has allowed them. Typically, teachers made such comments as '[LfT is] an excellent idea that gives teachers a convenient method of accessing computers and being more efficient in planning'.

Teachers also said that they found it easier to manage their planning and preparation because all the information they needed could be entered into their laptop and was therefore 'in one place so I've got everything in one':

Having the laptop has been great. I really enjoy preparing plans, target sheets and reports much more. It has been good to get away from dusty bits of paper that are forever getting 'lost'. Now I save all my essentials on a disk and it saves space and time.

In terms of lesson planning, the most frequently cited tasks for which teachers were using their laptop were:

- creating presentations/worksheets/revision sheets

- curriculum development

- information finding

- producing lesson plans/displays

- writing schemes of work.

Teachers also highlighted how using their laptop for administrative tasks facilitated sharing and joint planning within year groups and subject departments. Often teachers worked independently on their laptops, and then connected them to the school intranet to make their work accessible to other members of staff:

I share my work more now by doing it on the laptop and then plugging the laptop into the school network and saving my work on the shared drive where we keep lesson plans, schemes of work etc.

While the Laptops for Teachers initiative has seldom been the sole impetus for such whole-school developments as online resource banks, it has nevertheless played an important role in helping teachers to make their work accessible to others. There had been whole school benefits where schools had created such data banks and had encouraged teachers to use their laptops to make their lesson plans available. Being able to access data from other year groups and subject departments – and in some instances to load this onto a laptop – had helped teachers to ensure curriculum coherence and continuity. The creation of shared resources, whether templates or lesson plans, had also helped teachers to manage their workload more effectively:

A lot of our planning is done on the computer and if you don't want to repeat work then you can use the previous stuff as a start and save time … The more I can do now will save me time next year.

Teachers commented that the time they saved by using shared resources allowed them more opportunity to prepare for lessons: for example, to experiment with a range of software packages and resources. Since receiving their laptops, headteachers and teachers had become more confident in their use of email, in a professional capacity, to gather information for lessons, and often prepared lesson resources using presentational software packages. When completing the online surveys 48 per cent of respondents to the baseline survey and 67 per cent of respondents to the follow-up survey rated themselves as 'experienced users' of email for professional purposes. There was also an increase in the percentage of respondents rating their ability to use presentation software, as over a quarter (26 per cent) of respondents to the baseline survey and over a third (38 per cent) of respondents to the follow-up survey rated themselves as 'experienced users' of presentation software packages. In sum, as teachers are becoming more confident and competent with a range of software packages, they are extending their capacity to access resources for lesson planning and preparation.

3.2 Assessment, reporting and pupil tracking

3.2.1 Assessment

Creating an 'information rich school' in which all staff have access to the pupil data needed to plan effectively was considered, by some headteachers especially, to be an important part of the drive to raise standards of attainment in schools. Many headteachers and teachers saw their laptops as a vital tool for recording assessment data, pupil tracking and reporting. Commonly, respondents used their laptops for:

- target setting
- school registers
- reports
- producing Individual Education Plans (IEPs)
- annual reviews.

A number of teachers found that access to a laptop made it easier to keep detailed records. Teachers commented on the advantages of being able to bring their laptops into their classrooms to record student data, because 'all the information is at hand …I can just flip [the laptop] open on my desk'. A second teacher explained:

I use my laptop in the classroom for doing assessment tables at this time of year … and report writing. I use it in the classroom because everything is there for me to use, my notes, the children's books, my schemes of work. It's very convenient instead of lugging everything home.

Teachers frequently talked about the benefits of using their laptops to write annual reports, using various software packages to help them work efficiently. One teacher stated: ' … allows me to write reports in a third of the time, though in the short term it's a steep learning curve'. In another school, a deputy headteacher commented that:

In some areas of administration [personal access to a laptop] ought to reduce the workload. We have a report writing package for teachers to load on their laptops and it gives the facilities of shared phrases in the phrase bank.

Teachers also highlighted the benefits of entering assessment data into spreadsheets which allowed them to create an 'instant overview' of pupil progress. As one teacher explained:

I use [spreadsheets] now whereas I didn't before. It is helpful to see pupils' attainment and the progress they've made. It's a more ordered and efficient way of showing this.

In another school, the use of laptops for recording student data had had the 'knock-on' effect of providing students with greater accessibility to their own progress reports. Teachers used their laptops to record students' results on spreadsheets and then mail-merged into letters and reports for individual students. This exposed pupils to practical application of ICT, which they could then use to inform their own practice.

Teachers also found the laptops valuable in helping them to set targets for students. A secondary school science teacher commented: 'I keep a database of test scores and use it to generate specific targets across ability bands and within classes'.

3.2.2 Preparation of individual education plans (IEPs)
Teachers in the non-maintained special schools were similarly impressed by the improvements in writing IEPs which access to a laptop had given them. Headteachers highlighted how staff felt more able to manage their duties with regard to pupil tracking and assessment as a result of access to laptops.

In a special school, a teacher reported:

The laptops are used for weekly planning and IEPs. These are drawn up with parents, care staff, speech therapists and other professionals involved in the children's care. With the laptops they can get together and do their planning anywhere and straight onto the laptop. Before it would have to be done by hand as notes and then typed up, so it cuts down workload significantly.

3.2.3 Attendance data
The case above illustrates the flexibility which access to a laptop can provide. This is not only amongst individual laptop recipients: for example, teachers in a school with high truancy levels used their laptops to record pupil attendance at the start of lessons. One teacher explained how the school's electronic registration system made it much harder for students to 'wag off' because attendance data were immediately accessible to all staff throughout the day, being both entered and retrieved via their laptops.

3.3 Class and school management
The impact on classroom and whole school management differed according to the roles and responsibilities of laptop recipients within schools. The impact on headteachers who did not have a teaching role was more likely to relate to whole-school management, whereas teachers and headteachers with teaching responsibilities tended to focus on management within the classroom. Teachers with additional duties, such as coordinator roles, also demonstrated how having personal access to a laptop had helped them to manage their particular administrative tasks such as policy writing.

A headteacher who was without a full-time secretary found that with access to a laptop he was able to complete some of his administrative tasks more quickly than if he waited until the support was available in-school. In another case, the headteacher explained 'I am doing a lot of admin work because it is easier for me to do, rather than tell the secretary'. These comments were made before the agreement on the reduction of teachers' workload was introduced in September 2003.

### 3.3.1 Routine administration and data management
At a classroom level, teachers commonly spoke about the ease with which, using their laptops, they were able to produce resources necessary for routine classroom management, such as file labels and drawer names. Increasingly, teachers felt more organised because, as they saved lesson plans, pupil data, and schemes of work onto their laptops, they were in a position where: 'saving things on the laptop means I always know where to find them… I don't have to worry about carrying around bits of paper which I may lose'.

In particular, interviewees reported how personal access to a laptop helped them to catalogue and retrieve resources more effectively – the immediacy of this process was highly valued. Many respondents to the online surveys felt they were able to manage learning more effectively e.g. contacting parents and accessing pupil records (see Figure 6). The proportions of respondents using ICT to manage learning once a week or more increased from 45 per cent to 61 per cent since they received their laptops.

Figure 6 Using ICT for the management of learning before and after receiving laptops
How frequently do you use ICT for management of learning?
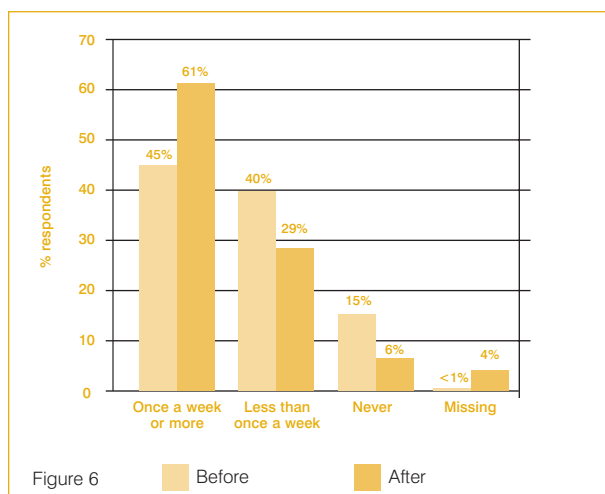
Figure 6   ▢ Before   ▢ After

A single response item. A total of 958 people responded to this question.
Source: DfES participant baseline survey.
NFER participant follow-up survey.

Interviewees were also impressed with the large amounts of data which could be stored and the ease by which they could be transferred from one place to another e.g. between home and school or between colleagues. The ability to transfer data between home and school by saving it onto the laptop, and then connecting the laptop to the school network, was strongly supported by teachers. Headteachers and teachers alike commented that: 'Bringing stuff in on diskettes is unreliable – the laptop is much better'.

Those with additional responsibilities such as coordinator or head of department roles also highlighted how the laptops were facilitating departmental planning or tasks such as the production of timetables. A special educational needs coordinator (SENCO) in one school commented 'as a SENCO I use the laptop for admin tasks. Next year I will be sharing a class and expect to use it for more lesson planning'.

3.3.2 Communication with external agencies
In one school, an LfT laptop had been allocated to the school counsellor to help him coordinate and disseminate information about child protection issues. This was particularly important in helping him to ensure that sensitive issues were managed correctly at a whole-school level. The counsellor explained that being able to

send and receive emails via his laptop was vital to his role within the school:

When I only had the computer in school I couldn't access my e-mails in the holidays or after school. Now at home, I'm available professionally… This increased contactability is very important because I advise others about child protection issues so I have to check the e-mail.

Headteachers and other individuals with whole school management responsibilities also supported the introduction of the LfT initiative and spoke about the impact they had noticed. In one school, the headteacher reported:

It is more positive and I can do the governors' reports and [I] am beginning to get email so I can send things to my admin staff so it is a more efficient use of time.

3.3.3 Whole school management
Other benefits highlighted by headteachers, during telephone and case study interviews, which had positively influenced whole school management, included:

- the ability to submit school data electronically e.g. absence data

- arranging and coordinating meetings e.g. working groups

- ease of letter writing e.g. to parents/governors

- greater accessibility to Government data sources

- improved access to financial packages

- increased accessibility to the ordering of resources

- organising staff training/professional development

- preparation of information for parents evenings

- production of proformas/policies allowing for standardisation across the school

- compilation of sections for the school development plan.

In each of the instances cited above, teachers also noted that they were able to work more efficiently because the information could be manipulated with greater ease e.g. copying and pasting.

3.3.4 Confidential data

Headteachers and teachers also commented that having personal access to a laptop allowed them to store data outside of the school network, saving it to the hard drive on their laptop. This was seen to be of particular merit in instances where they wanted data to remain confidential. For example, some headteachers and teachers with professional development responsibilities used their laptops to store confidential information such as:

• performance management records for members of staff

• information about teaching staff applying for Threshold (salary increments)

• teacher references

• details of lesson observations of members of staff and graduate trainees.

Again, storing data on the laptop was also seen as more reliable than saving it to floppy disks.

3.4 Managing administrative tasks

As already noted, many headteachers and teachers commented that, since receiving a laptop, they were able to work more efficiently. Respondents also noted that the flexibility to chose whether to work at home or school allowed by personal access to a laptop, had helped them to manage their administrative duties and offered more choice about where and when to execute them. A deputy head in one school explained:

You don't have to think ahead so much – what do I need to take home, what work am I going to do tonight, transfer it, bring it back etc. because now all you do is pick up your laptop.

In school, the flexibility to work in different locations when using a laptop was also felt to be beneficial. As another deputy headteacher commented, 'I have greater flexibility in school due to portability. If someone needs to use my office then I can take my laptop and work elsewhere'.

Many teachers reported that they could complete their planning in a shorter amount of time because they could take work home on their laptop, make any alterations to it and then bring it back in to school. Many saw the ability to use a laptop at home as particularly advantageous, allowing them to leave school earlier to 'beat the traffic', and in giving them the ability to work on a computer even once the school building was closed. The findings from the online surveys supported the increased likelihood

that recipients were choosing to work at home. The online surveys asked respondents to rate using a scale of one to five (with one being the most important) the level of importance that they attached to using their laptops to transfer work between home and school. The ability to transfer work between home and school rose in importance by twenty three per cent after laptops were received.

The ability to complete administrative tasks at home was particularly welcomed by teachers in the non-maintained special schools. Telephone interviews with a number of these teachers revealed how they were making effective use of their LfT laptops to differentiate lessons. In one school, a teacher explained that he produced software presentations at home, and inserted digital photographs into these in order to produce individual sets of reading materials for each of his pupils. Using the laptop he also found it easier to generate individually tailored worksheets. Consequently, pupils with more specialised needs could more easily be involved during lesson time because the teacher was able to prepare more extensively before the lesson. Teachers in the non-maintained special schools spoke about the difficulties of finding time to search carefully through the abundance of educational software available for pupils with special needs. In such cases, the ability to carry out such tasks at home was welcomed.

In a small number of cases, the greater accessibility individuals had to their school work, as a result of the ability to transport it more easily, resulted in perceptions of increased workload and greater pressure to complete it. This was most evident in those teachers who reported using their laptop during holidays or weekends or in those recipients who previously had no email access but were now able to check their emails at home. One teacher commented, 'sometimes there is no demarcation between home and school. Sometimes I have to draw boundaries between home and work times'.

Other reasons, which were identified, were of a more practical nature: either the recipients were unaccustomed to a particular piece of software, or they lacked proficiency in their typing skills or ICT in general. This tended to result in various tasks taking longer to complete. However, there was a general consensus that the more time teachers spent becoming familiar with working on their laptops when they received them, then the more time would be saved in the future.

At the time of the research, the general feeling among laptop recipients was that while they were able to work more efficiently, they still spent the same amount of time on administration and lesson preparation, the difference being that they could complete more tasks in the same time frame. Interestingly, 55 per cent of respondents to the survey of headteachers felt that personal access to a laptop had had no effect on teacher workload. The main gains, as noted above, appeared to be in terms of efficiency. Findings from the online survey reflected improved efficiency in school management. Three quarters (75 per cent) of respondents to the follow-up survey said that they either agreed or strongly agreed that LfT laptops had improved their efficiency in school/staff management related issues (see Figure 7 below).

Figure 7 Respondents' efficiency in school/staff management before and after receiving laptops
How far do you agree with the following statement? Having a laptop has improved my efficiency in school/staff management.
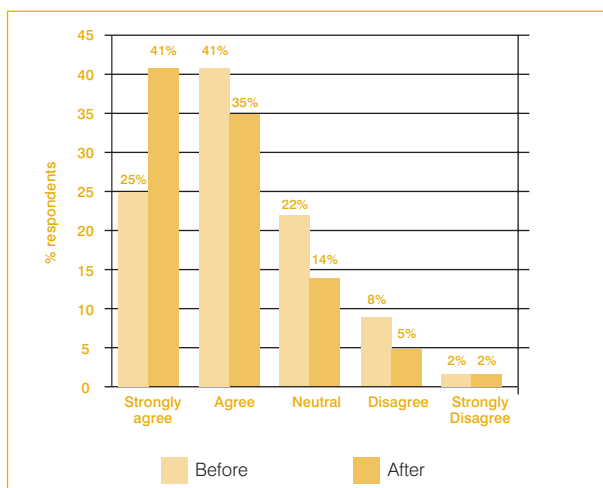
N = 958. *A single response item.*
Source: DfES participant baseline survey.
        NFER participant follow-up survey.

As one teacher commented, in a statement typical of many:

I probably spend the same time working but I can work more efficiently. [The laptop's] biggest impact has been on how I manage my time. It has changed the way I work.

The positive views expressed about the LfT initiative with regard to teachers' administrative duties suggest that there will be further benefits for teaching and learning in terms of improved planning, curriculum management and differentiated resources.

Section 4 Whole school impact

The LEAs were responsible for the allocation of the laptops purchased through the Laptops for Teachers initiative. The LEA approach to allocation was investigated in the LEA administrators' survey. LEAs were encouraged to consult with schools using guidance published by the National Association of Advisors for Computers in Education (NAACE). The guidance suggested three models of distribution:

1. Model A – Pro-rata distribution
2. Model B – Allocation according to previously known need
3. Model C – Allocation according to need as identified by schools.

Table 4 below shows that most LEAs chose to allocate laptops to schools on a pro rata basis, taking into consideration the numbers of teachers based at each school.

Table 4 LEA Allocation methods
Which model of allocation, as described in the NAACE guidance, was chosen to distribute laptops to schools within your LEA?

Allocation Model	Respondents %
Model A – pro rata distribution	78
Model C – according to need identified by schools	8
Model B – according to previously known need	1
Other Models	11
No response	2
N = 111	

A single response item.
Source: NFER LEA administrator survey

The LEAs involved other individuals in their allocation processes and Table 5 summarises data from the LEA survey, showing some of the individuals who assisted in determining LEA allocation policy. Most LEAs involved ICT Advisors and over half (55 per cent) also involved headteachers in this decision-making process.

Table 5 Individuals involved in LEA allocation
Who was involved in determining the policy regarding the allocation of laptops to schools in your LEA?

Individuals determining allocation policy	Respondents %
ICT Advisors	85
Headteachers	55
Other individuals	38
Other consultative bodies	35
N = 111	

More than one response could be given, so percentages do not sum to 100.
Source: NFER LEA administrator survey

Allocation of laptops to individual teachers within schools was the responsibility of headteachers, and most of the LEA officers, when completing the LEA survey, revealed they had no specific knowledge of how the schools were allocating the laptops to teachers.

The school allocation strategies reflect headteachers' perceptions of the Laptops for Teachers initiative: as a tool to help teachers work more efficiently, thus easing workload; or as part of a broader school vision for ICT as an integral part of teaching and learning. In examining these strategies, this section reports issues related to:

- allocation of laptops
- the use of laptops to enhance communication within and without the school
- the use of laptops to improve internal procedures
- laptops and professional development.

4.1 Allocation of laptops

The way in which laptops were allocated within schools was indicative of the way in which their potential use was perceived and the way in which they could further the institutional development in ICT.

The impact of the laptops within the whole school vision context was important because, in many schools, laptops have been seen not just as a tool in themselves but as an impetus for whole-school ICT development. Headteachers wanted to ensure their teachers and students were confident and competent users of ICT and regarded the Laptops for Teachers initiative as an important element in working towards this.

4.1.1 Who made the decisions about allocation

Headteachers felt that they were often best placed to make decisions about allocation, having a strategic overview of their school's development.

Table 6 below, from the survey of headteachers, shows who was involved in the decision-making regarding the allocation of laptops within the schools.

Table 6 Staff with responsibility for deciding on the allocation of laptops within schools

Who has been responsible for deciding the allocation of laptops within your school?

Member of staff	%
Headteacher	68
Senior management team	40
Head of ICT / ICT coordinator	31
Other	12
No response	Less than 1

N = 408

More than one response could be given so percentages do not sum to 100.
Source: NFER survey of headteachers

Respondents indicated that 'others' who had been responsible for deciding about the allocation of laptops included school governors, their school's staff development officers, or ICT management groups. As with headteachers, these groups can be expected to have an overview of ICT development within the school and to be able to target the provision of laptops to those areas where they are most needed.

4.1.2 Contextual issues affecting allocation

Decisions regarding allocation were influenced by the prevailing circumstances. Laptops seemed to be allocated either as a support for those with a heavy administrative workload or as a resource to enhance teaching and learning in the classroom.

In some cases, laptops were specifically issued to those most likely to use them to bring about desired change, either through their status in school:

For a school like this that needs to change, we are giving laptops to those who have the greatest power to bring about changes – senior and middle management – it's giving them the tools to plan more effectively and to set an example to other staff

or because they had the required skills:

We have to be equitable between the school and the service, we have to look at whether people have the skills and the confidence to use them, and to take their usage further and their role within the school.

4.1.3 Management responsibilities

Within those schools concerned about easing heavy administrative workloads, laptops were most likely to be allocated to a subject coordinator, a head of year or key stage or staff who had a management role within the school. When asked to indicate the main ways in which they had benefited from having a laptop seventy five per cent of respondents to the follow-up online survey reported that laptops had benefited their management tasks. This suggests ICT has not been isolated from the rest of the curriculum because the laptop has been 'targeted' to the school's needs, identified by subject coordinators and coordinated through the whole school ICT plan or policy. Unsurprisingly, there was significant difference between the percentages of teachers (78 per cent) and headteachers (22 percent) who thought that having a LfT laptop had helped them with their management tasks, such as report writing and accessing pupil records.

A secondary school mathematics teacher with responsibility for planning and coordinating ICT training for the mathematics department found his laptop invaluable in his role because it gave him greater freedom to train colleagues to use specific software packages without needing to use departmental computers. Likewise, the headteacher of a case study special school considered that one of his senior management team who had responsibilities that required her to communicate with outside agencies, often through meetings, should be prioritised and given a laptop. He explained 'she deals with a lot of reports and statistics and so her allocation was more about administration than about teaching and learning'.

For some schools, therefore, the Laptops for Teachers initiative has provided a much needed tool, enabling teaching staff the means by which they can manage their non-teaching responsibilities. A secondary school headteacher said that he 'just wanted to ease the burden of administration, to increase teachers' opportunities to access effective ways of doing admin'.

4.1.4 To enhance classroom practice

Having additional laptops available was seen as a useful means of supporting the whole school ICT policy and bringing about change. For example, a special school headteacher described how he had given a laptop to an innovative mathematics teacher who could be a catalyst for change and lead curriculum development with her colleagues. Another headteacher explained:

Peer learning is useful and takes ICT forward … The laptops have maximum impact with the more skilled, and these teachers support and feedback to the less skilled. We hoped to get the impact spread among the different levels and we are looking to those who go further and faster to cascade their knowledge to others to help them grow in confidence.

In other cases, headteachers allocated laptops specifically to develop the skills and competence of staff and to effect consistent practice across classrooms. For example, the headteacher of a secondary special school referred to progress being made in the art department, where most teachers had effectively introduced new technology into lessons. He felt that greater advances would be made if one member of staff was encouraged to make use of ICT opportunities; he thus allocated this teacher a laptop in the hope that she would develop the skills, confidence and competence to enhance her teaching. Allocation was regarded as a means of 'speeding up' what was happening in the art department.

Indeed, where teachers had been able to share their practice, those who were more confident and competent using ICT in their teaching were able to change the expectations of less competent colleagues. An ICT coordinator, who provided in-school training for other laptop recipients, recalled:

One teacher wanted to do a multi-media presentation but it was quite basic and then they saw one I had done, all-singing, all-dancing, and they were amazed. They didn't realise you could do that sort of thing. So it's not that teachers aren't willing to use ICT but that they don't necessarily know what's out there or how to use it.

4.2 The use of laptops to enhance communication within and outside schools

There was evidence from the headteacher and online surveys (mentioned by nearly two-fifths of respondents to the latter) that the LfT laptops facilitated communication with colleagues, students, parents and governors. There was, for example, a greater use of email. There was evidence that individuals started with a particular cohort, for example, the governors or the family of schools and then extended to other groups, such as parents.

A primary headteacher commented:

The governors and I do the headteacher's report to the governors together. The budget is also done electronically and I write letters to parents at home ready to send because in a small school it is saving administration time. If only I had been in receipt of it sooner. It is a useful tool!

One primary ICT coordinator commented:

I think we communicate more with parents. We have a newsletter on hard copy and we've asked parents for email addresses so we can email them a colour copy. Parents already email the school to say if a pupil is not coming in and so there is a change in the overall ethos and Laptops for Teachers is one strand of that.

Some interviewees pointed out the danger of workloads increasing if electronic communication was not purposeful and well managed and there was undue communication just because it was much easier.

Internal communication was also enhanced. Twenty two per cent of respondents to the online survey reported that having a laptop had benefited them in terms of communication with colleagues within the school. When completing the online surveys teachers and headteachers were asked to rate their ability to use email. Figure 8 below shows that the percentage of respondents rating themselves as 'experienced users' increased by approximately twenty per cent after receiving LfT laptops, whilst the percentages of respondents indicating that they had 'little/no experience' or that they were 'basic users' of email facilities reduced following receipt of LfT laptops.

Figure 8 Ability to use email facilities professionally before and after receiving laptops

How would you rate your current ability in using email for professional purposes?
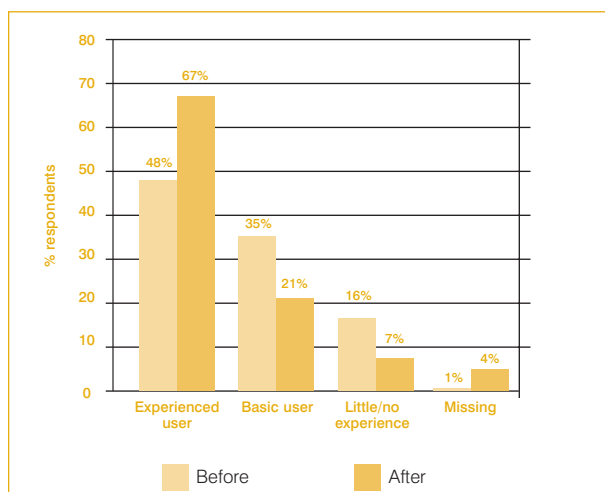
A single response item. A total of 958 people responded to this question.
Source: DfES participant baseline survey.
NFER participant follow-up survey.

An infant school teacher explained:

I am able to share with colleagues in planning meetings and demonstrating to the year group. We share class records in meetings. I meet with my colleague and have refreshed my skills with a new teacher in the school.

In a secondary school, a director of humanities used his LfT laptop to design a faculty web page for colleagues. Elsewhere, the skills of the ICT technician were utilised:

I email the head and the technician and vice versa and it tends to be about ICT rather than school but we're looking to expand [communication] e.g. contacting parents.

Electronic communication was particularly useful for visiting teachers. Special schools, in particular, remarked on the benefits where there was a high degree of multi-agency collaboration around individual students: one special school headteacher specifically allocated a laptop to the senior member of staff responsible for liaison with external agencies. Another interesting example was in a school where some Key Stage 4 students were on a programme involving off-site placements; the students emailed drafts of their work to school tutors (who were able to retrieve messages via

their LfT laptops) for comment before they took it in to college tutors. Unsurprisingly, there was evidence from the online survey that hospital school staff who had been allocated a laptop found it invaluable in facilitating effective and efficient working and communication. A headteacher of two hospital schools, whilst completing the online survey, stressed the importance of having her LfT laptop as she used it to prepare presentations for other agencies.

Significant differences between male and female respondents' ratings of their ability to use Email for professional purposes were evident only within the baseline survey (see Table 7 below). Table 8 shows that after respondents had received their LfT laptops there were just small differences between male and female respondents' perceptions of their emailing abilities, suggesting that LfT was helping to close the gap.

Table 7 Ability to use E-mail for professional purposes before LfT – by gender
How would you rate your current ability in using email for professional purposes?

Baseline survey			
Gender	Experienced user	Basic user	Little/ no experience	No response
Male	55	35	9	1
N = 349				
Female	44	34	21	1
N = 602				

A single response item.
Source: DfES participant baseline survey

Table 8 Ability to use E-mail for professional purposes after LfT– by gender
Since receiving your 'Laptops for Teachers' laptop, how would you rate your current ability in using email for professional purposes?

Follow-up survey			
Gender	Experienced user	Basic user	Little/ no experience	No response
Male	69	20	7	5
N = 349				
Female	66	22	8	5
N = 602				

A single response item.
Source: DfES participant follow-up survey

4.3 The use of laptops to improve internal procedures

An important whole-school impact has been the streamlining of internal management procedures. Seventy five per cent of respondents to the follow-up online survey either 'agreed' or 'strongly agreed' when asked whether the laptop had improved their efficiency in school or staff management.

The laptops have also had an impact on whole-school internal working because headteachers have been able to ensure consistency of procedures throughout their schools. For example, a primary school headteacher commented; 'we are all doing reports using [specialist report writing software]'. This meant the school could address the level of staff skills whilst learning to use the software together. A secondary head of department, stressing the importance of consistency of procedures explained, 'I use it for department documents, a new Key Stage 3 class work grid and constant updating and presentation of schemes [of work]'.

4.4 Laptops and professional development

The research showed that laptop owners need training to use them effectively, particularly with regard to using them with other ICT facilities such as interactive whiteboard and data projectors and software packages to ensure consistency of data management across the school. One of the challenges was to ensure that training was available alongside access to required equipment: very obviously, skills are soon lost if they cannot be applied in practice. An ICT coordinator commented that if ICT were to be fully integrated across the curriculum, training and usage should be contextualised and linked to specific classroom practice rather than generalised.

There was evidence that there was great value in in-house and on-the-job training, with those teachers who were more skilled and confident in using ICT supporting those who were less so. In some cases, laptops were allocated on condition that the recipients would take the lead in developing colleagues. For example, a teacher with administrative responsibilities would be expected to put the data onto the laptop and then share it with colleagues. A teacher benefiting from this strategy commented:

The whole school plans are on disc so we can all look at each other's plans. We have all the Year 3 – 6 plans. I always work in partnership with two Year 4 colleagues because I am just getting the hang of it [using the laptop] and they are enthusiastic and competent.

The way in which informal opportunities for staff development were used is illustrated by the following primary school headteacher:

The equipment helps the teacher competence even if they lag behind the pupils. We use INSET, staff meetings and have time to learn and use software. There is lots of support from the ICT coordinator and deputy head as we work with subject leaders to enable cross-curricular embedding, e.g. the water cycle which has text and posters and ICT as a tool right from the beginning. The laptops needed to be demonstrated to staff but they should overcome staff weakness and make us move forward. We have workshops for all staff which we couldn't do before all having laptops. The NGfL has helped the ICT coordinator to help the staff, as ICT of all things can be hated by older staff because they feel vulnerable. ICT is also the most difficult to manage. Reluctant staff are starting to blossom.

In some schools, teachers were required to agree to a set of conditions prior to receiving a laptop. For example, in a primary school, staff had to agree to participate in an evaluation of laptop usage and also to disseminate some of the practices.

4.5 School ownership model

The school ownership model of the Laptops for Teachers initiative has generally been welcomed by recipients. In relation to whole-school impact, this model has been felt by headteachers and teachers to be effective because the laptop can enhance the ICT resources available at the school. The benefits of the laptops belonging to schools, rather than to the individual teacher, are best seen from the whole-school perspective in terms of consistency, continuity and long-term planning. One such benefit is that any data entered onto the LfT laptops remain in school and are not lost with teacher movement. For example, a primary ICT coordinator explained:

My vision is that all teachers can prepare lessons at home and give interactive lessons. That's my vision for Laptops for Teachers. It's already having an effect on monitoring pupils. Ideally it would be one laptop per class rather than one per teacher. So it could follow the class through school, it would be a superb tracking device and would definitely help with planning and class teaching. I know it was allocated to a particular teacher but I'm not convinced that's the best way to do it.

Her vision was related to continuity and the laptop remaining in the year group since it held schemes of work and resources that related to teaching that particular year group. There were other benefits to this approach as the laptop becomes an integral part of the year coordinator's resources, thus ensuring that ICT is more deeply embedded in the whole curriculum and can play a part in raising standards of pupil attainment.

Unsurprisingly, some schools had established systems for the monitoring and evaluation of laptop use. The ICT coordinator in a secondary school was planning to review the situation after a year, looking at access, use in lessons and dissemination within the faculties. There was to be regular monitoring and there was an expectation that staff would use the report writing package which had been introduced for consistency across the school. Termly senior management team (SMT) evaluations took a different focus each term. A primary school headteacher felt that there should be evidence of appropriate usage, of benefit to the whole school, as laptops were 'a privilege rather than a given'.

However, some staff expressed concern that, were the evaluation of their usage negative, the laptop would be taken away. For example, a history teacher said:

I am worried it could be withdrawn. It should have gone to the Head of Department who didn't want to use it, so it was passed to me. I didn't realise the impact it would have on my work. I don't like that it could be taken away from me at any point. It does make me feel insecure because I am so dependent on it.

She felt insecure and concerned that if she was perceived not to be using the laptop effectively it would be withdrawn and passed to another teacher in the school. She had become dependent upon her laptop for all aspects of her work.

4.6 Optimal use of laptops: practical considerations for schools: health and safety, insurance and security

4.6.1 Health and safety
Discussions with teachers raised only a few issues of health and safety. In most cases teachers had expressed satisfaction with laptops, and felt that they were able to adapt their work practices to accommodate this new tool. Of the respondents to the headteacher survey, just two per cent indicated that they had health concerns which were related to the transportation of laptops. During a telephone interview the headteacher of

a primary school said that one of the benefits of laptop portability was that teachers needed to carry less paperwork. This headteacher explained that the teachers at his school had become more effective in finding ways to manage their paperwork; with increased use of laptops, he said 'teachers now carry a lot less paper'.

During a telephone interview, one of the teachers felt that there had been times when he had 'overused' his laptop. Although he was aware of the potential risks, he had spent prolonged lengths of time in front of the display screen setting up his laptop. He said that he taught 'health and safety aspects of computer use, so really I should know better'. Now that his set-up process is complete he said 'I don't spend so much time on it. I was just keen to get it all up and running'.

A few respondents articulated concerns about 'overuse' of laptops but, at the same time, realised that the problems were largely self-imposed. Most staff should be familiar with routine guidance about computer use.

4.6.2 Insurance
When discussing the portability of laptops, most schools reported that they had made adequate provision through their school insurance policies.

Case study interviews with headteachers revealed that most held the view that insurance for laptops was the responsibility of schools while the machines were on school premises. However, teachers who took the laptops home had the responsibility of ensuring adequate insurance cover. Headteachers were asked, in the survey, to indicate how their school had decided to insure laptops purchased through the Laptops for Teachers initiative. Table 9 shows their responses.

Table 9 Insurance for LfT laptops
How has your school decided to insure the laptops purchased through the initiative?

Arrangements for insurance	%
Included in existing school insurance policies	69
Insured under existing LEA policies	35
Arrangements made by individual teachers for their own laptop	10
Other	3
No response	4
Additional/separate arrangements made by the school	Less than 1

N = 408

More than one response could be given so percentages do not sum to 100.
Source: NFER survey of headteachers

As shown in Table 9, the survey also found that the majority of headteachers reported that the laptops were insured under the existing school insurance policies.

There remained, however, teachers who were still uncertain about their responsibilities regarding laptop insurance. A teacher said, during a telephone interview, 'I have conflicting information about insurance at home and it's not clear'. The instructions which teachers had received from headteachers had, in some cases, been less helpful and some were left to make their own inquiries about laptop insurance.

The main cause for concern for both teachers and headteachers in relation to the insurance of laptops, was about the security of the machines during transportation. An ICT coordinator of a secondary school commented that, 'There is a slightly grey area of insurance when it's left unattended in a car'. Some teachers were clear on the matter and explained, during case study interviews, that they thought teachers were financially accountable if their laptops were lost or stolen in transit. After reporting how pleased teachers at her school were with the initiative, a headteacher, completing the online survey, said that 'The only issue so far has been with insurance for the laptops – teachers are still very wary about owning and transporting these as responsibility for loss or damage is still unclear'.

4.6.3 Security
The potential threat of theft can act as a deterrent to teachers considering carrying laptops between home

and school. Whilst some teachers were worried about laptops being stolen from their cars, others were more concerned about personal robberies or theft within schools. One of the teachers, during a case study interview, explained that in order not to draw attention to himself he carried his laptop 'in a rucksack on the train so it is not obvious that I'm carrying a laptop'. He preferred to adopt this approach rather than carrying it in the protective carrying case with which it was supplied because he felt it limited the likelihood of theft and possible harm to himself. Another secondary school teacher, aware of the attraction of laptops to would-be thieves said 'I disguise it in a bag so that it looks nothing like a laptop. I'm always aware that I'm carrying an expensive piece of equipment'.

Of the respondents to the online surveys, who expressed concerns about transporting their laptops, most (88 per cent) were concerned about theft or loss of the laptops (see Table 10 below). Very few (1 per cent) of these respondents, however, said that they had actually experienced this.

Table 10 Concerns and experiences when transporting laptops
Do you have any concerns about transporting your laptop?

If Yes, which of the following are you concerned about? Which have you actually experienced?

	Concerned about %	Experienced %
Theft/Loss	88	1
Damage	58	3
Physical problems (lifting etc)	17	8
Other	4	1
No response	3	88

N = 375

More than one response could be given therefore percentages do not sum to 100.

Percentages reflect those respondents who said they had concerns transporting their laptops.

Source: NFER participant follow-up survey

The geographical location of the area where some teachers were transporting laptops also influenced their feelings about security. Teachers suggested that transporting laptops between home and school carried more of a security risk in urban areas than in rural ones. They also thought that schools in urban areas were more

prone to theft than those in rural areas. Two of the teachers who were interviewed during case study visits said, 'there might be issues in the city but as we're in the country I am not fearful of theft'. Also, 'we've not had any insurance claims yet, we're lucky to live in leafy [rural area]'.

4.6.4 Sustainability

To ensure that the laptops purchased were of a satisfactory standard for recipients the LEAs were required to purchase laptops with minimum specifications (see Appendix 2). Many LEAs were able to negotiate better prices through cost effective bulk buying strategies. This approach was more possible within regional organisations like the regional Grids for Learning. LEA administrators felt that they were achieving good value for money through the freedom offered by being able to deal directly with manufacturers and suppliers.

When considering the specifications of the laptops, most of the teachers interviewed expressed their satisfaction and felt that the laptops met their immediate requirements. Teachers reported that once the appropriate software had been loaded onto their laptops, they were sufficiently equipped to use them. Headteachers and ICT coordinators voiced their concerns about the expected lifespan of the machines. Suppliers provided laptops with prescribed minimum specifications and, in most cases, schools acquired additional software themselves. Schools anticipated that, due to the rapid advances in ICT generally, within a few years their laptops would become less able to receive and operate the latest programs. During an interview, the headteacher of a secondary school suggested that rather than issuing laptops en masse, the DfES might consider a rolling programme with laptops being replaced after five to six years. Other teachers agreed that laptops have a relatively short life expectancy, and wondered 'In five years' time they will be old and slow, so what are the plans to keep up to date?'. Many of the ICT coordinators and headteachers interviewed felt that 'sustainability is a big issue and needs to be addressed'. One LEA administrator explained 'we went for a high specification, we could have gone for a cheaper version with an alternative supplier but we wanted it future proof'.

Another option that teachers felt should be considered was to purchase laptops with much higher specifications. This strategy, they felt, would offer teachers laptops

containing the latest technology, enabling them to keep pace with the different learning resources that organisations were producing. A teacher, participating in a telephone interview, explained how she felt the initiative could be more economical:

It is vital that the laptops are sustainable. Either more money needs to be put in to try and 'future-proof' each computer for as long as possible, or less money needs to be spent per computer so that there will be money available for replacements in the future.

Schools were given the option to supplement the funds allocated through the Laptops for Teachers initiative. This was intended to allow them to purchase additional laptops through the initiative, or purchase laptops of a higher specification. A third of headteachers responding to the survey said that they had provided supplementary funding.

4.6.5 Funding for peripherals

The initiative did not provide for the purchase of additional peripherals and software; hence, where teachers required additional equipment, schools sought to fund it through their own budgets. The survey of headteachers showed that some schools, while not buying additional computers, had made other investments to support teachers' use of laptops (see Table 11). Investments other than those listed as options in the questionnaire include the purchase of:

• data projectors (eight respondents)

• interactive whiteboards (seven respondents)

• additional network access points for teacher use (four respondents).

Table 11 Areas in which schools have made additional investments as a result of the Laptops for Teachers initiative

Has your school incurred additional costs as a result of the Laptops for Teachers initiative?

Areas of additional investment	Yes %	No %	No response
Internal security measures (e.g. virus protection)	40	48	12
Additional hardware purchases (e.g. scanners, cameras)	34	56	10
Additional software purchases (e.g. database, CAD)	31	55	14
Security arrangements (e.g. secure storage within schools)	21	64	15
Insurance	18	65	17
Other	8	34	59

N = 408

A series of single response items.
Due to rounding percentages may not sum to 100.
Source: NFER survey of headteachers

In a number of non-maintained special schools, additional funds were made available from the school budget in order to purchase scanners, printers and projectors. Several non-maintained special school headteachers commented that they had not spent the whole of their Laptops for Teachers funding when purchasing laptops, having an average £100 left over. They said they would have welcomed the opportunity to use this money to purchase a printer, for example.

Headteachers and teachers advocated various strategies which they felt the Government could consider in order to fund the purchase of peripherals. For example, some respondents felt that the funding should have incorporated the capacity to supply a range of peripherals; others felt that fewer laptops should have been issued in order that schools could use the remaining money to pay for peripherals. One of the teachers completing the online survey stated how he felt the Government could have funded peripherals. He felt that the finance provided for the New Opportunities Fund (NOF) ICT training programme could have served teachers differently, explaining 'it's too late now but the NOF training money would have been far better spent on this initiative'.

Teachers felt that they were getting maximum impact from their laptops when used in conjunction with peripherals such as interactive whiteboards. Some teachers were given laptops which were not fitted with

CD-RW units with which they could copy large volumes of data onto compact disks (CDs). Access to CD technology allows storage of graphical digital images and other forms of data that occupy a considerable amount of disk space. One teacher, in completing the online survey, commented that the laptop 'would have been more helpful if it had a CD-RW drive for back up purposes etc'. Many teachers viewed these peripherals as essential tools, in the contemporary classroom, which could enhance pupils' learning. One of the secondary school ICT coordinators, interviewed during a case study visit, had been trying to encourage teachers at his school to make greater use of interactive whiteboards, and felt that the laptops had raised awareness and helped to promote the whiteboard. He had demonstrated to teachers the ways in which laptops could be used in conjunction with whiteboards but, referring to the shortage of whiteboards, said that 'getting more depends on money'. Another teacher who completed the online survey, explained that he would have appreciated further funding to cover the cost of peripherals, and outlined how any future funding under the initiative might be allocated:

I think that it has been very helpful to have a laptop for use in school. I would have more use for it directly in the classroom if I had a data projector and an electronic whiteboard to go with it. One laptop alone is not particularly helpful when teaching a class. Its strength lies in the preparation of lessons and the materials to go with them, tracking pupil progress through data etc. In your next round of laptops (if it is to continue) I would recommend you buy models with a built in CD-rom writers (I was surprised that there was not one on mine as they seem to be fairly standard now). One problem I have encountered is that of sharing high quality materials in their file form with colleagues – too big for floppy and rejected by the school email system as being too large for the mailbox. CD-rom is also a very useful way of sharing information with a class.

This chapter has illustrated the ways in which the Laptops for Teachers initiative has affected schools, in terms of their strategic outlook as well as their more practical considerations. Through strategic allocation of laptops, headteachers have achieved positive results and are reported to have:

- improved efficiency in school/staff management

- supported enthusiastic ICT users and encouraged those teachers who have shown less confidence with ICT

- enabled teachers to be better informed by improving methods by which teachers were able to communicate and disseminate information and teaching and learning resources to colleagues.

Many of the practical concerns, such as insurance or security, which teaching staff have expressed, have been dealt with through in-school or individual teachers' preventative actions.

Section 5 Conclusions and issues for consideration

5.1 Impact on teaching and learning

One of the key effects of the Laptops for Teachers initiative was to provide teachers with improved access to a greater range of resources for use both in their lesson planning and preparation and also in their teaching. In particular, teachers have been able to access the internet more readily, make use of electronic resources such as CD Roms and create their own resources more easily via their laptops. The ability to provide up-to-date resources of a higher quality without incurring prohibitive costs has been well received. In addition, the flexibility that access to a laptop can provide has introduced a further dimension, in that teachers are no longer confined or restricted by the practical constraints or limitations of accessing ICT resources in their school. The portability of the laptops has meant teachers can choose where they work more easily both within school and at home.

Not only have the laptops provided headteachers and teachers with the means to introduce an increasing range of resources into their classrooms but, in addition, the laptops have been widely acknowledged as a valuable teaching aid. The laptops have encouraged the exploration of innovative approaches to lesson delivery. They offered the possibility to demonstrate information visually and in a way whereby teachers and pupils could interact with, and manipulate, that information. In particular, the laptops have been used to provide support for literacy teaching and learning, both as a motivational tool and because of the software packages which can be installed to facilitate the process.

Respondents reported that they had become more confident and competent in their use of ICT since receiving their laptop and were more willing to explore and experiment with ICT in their lessons. The ability to take a laptop home and practise their skills, had been a valuable experience, especially for those teachers less confident in using ICT. Increasingly, teachers reported introducing new software packages into their lessons, such as presentational software which allowed them to adopt an increasing range of novel and motivational teaching approaches.

Teachers were appreciative of the increased opportunities to access and make use of additional equipment, such as whiteboards and e-beam projectors, which they could use in conjunction with their laptop in lessons. This was seen as an important way of retaining student attention and keeping them on-task. The access to a laptop had provided teachers not only with the stimulus to explore new technologies for use in their teaching but also the practical means by which to do so.

5.2 Impact on administration to support teaching and learning

The impact of the LfT initiative on teacher planning and preparation was extensive. Access to a laptop had afforded headteachers and teachers benefits in both their time management and the quality of work they were able to produce. The ability to use the laptop for a wide range of tasks, from creating worksheets to writing schemes of work was important.

Many headteachers and teachers reported that they were able to complete their planning in a shorter amount of time. They were appreciative of being able to take work home, make any alterations to it and bring it back to school. This allowed respondents to exercise greater control and flexibility over their workload and to utilise their time more effectively. In addition, teachers in non-maintained special schools were positive about the increased versatility and improved time management that access to a laptop had provided them, particularly in supporting them to produce differentiated resources and lesson plans which reflected individual pupil's needs.

Laptops were also seen as a vital tool for recording assessment data, pupil tracking and reporting. Large amounts of data could be stored and accessed which made it easier for teachers to record pupil progress and provided students with greater accessibility to their own records. The ease at which an instant overview of a pupil's progress could be demonstrated was felt to be beneficial. Various software packages, such as report writing packages were also seen as useful tools which teachers could access to improve their efficiency when carrying out certain tasks.

Headteachers and teachers with additional managerial responsibilities demonstrated how personal access to a laptop had helped them carry out, more efficiently, the additional tasks which were intrinsic to their role, such as policy writing or departmental planning. Planning at a

whole school level, in particular, had been facilitated by the initiative. Headteachers frequently reported the positive benefits afforded by the laptops in areas such as producing school development plans and arranging and coordinating meetings.

5.3 Whole school impact

School allocation of laptops was primarily the responsibility of the headteacher as they were often best placed to take into account a strategic overview of school development. Laptops tended to be allocated either to provide support for teachers with additional management responsibilities or to more experienced teachers who could capitalise on their access to a laptop by introducing and exploring new and innovative ways of using ICT technologies in teaching and learning and ultimately cascade their knowledge and skills to less experienced ICT users.

An important influence of laptops on whole school processes was the streamlining of internal procedures. The majority of laptop recipients were supportive of the improvements laptops had made to whole school management. In particular, headteachers were able to ensure the consistency of procedures throughout their schools and a more collegiate approach to whole school policy management and delivery.

Access to laptops had improved communication between colleagues, students, parents and governors. The use of email, in particular, had become more widespread and had facilitated external and multi-agency collaboration. Improvements in within-school communication meant teaching colleagues were able to arrange meetings and share information more easily and with greater efficiency. This encouraged joint planning within year groups and subject departments which ensured greater curriculum coherence and continuity and facilitated the development of a bank of shared resources through which colleagues could access relevant information.

The existence of accessible bespoke training packages, which supported and recognised the introduction of new ICT technologies into the classroom rather than having a more general focus was felt to be important. In-house and on-the-job training were seen as important for cascading skills from teachers who were more ICT confident to those who were less so.

5.4 Additional issues for the future

Sustainability – respondents questioned how sustainability of laptops in the long-term would be ensured. They also wondered whether a rolling programme could be considered or funding for higher specification machines with greater longevity.

Funding for additional equipment – teachers said that they were keen to explore the capabilities of using ICT in their classrooms but were inhibited because of the lack of additional equipment in their schools, such as interactive whiteboards.

Training – respondents highlighted the fact that it was important to improve and increase the amount of training available to teachers which was linked to specific classroom practice, rather than a more generalised approach. This would help to ensure that teachers were confident and competent in using new ICT equipment as and when it was introduced into schools.

Workload – the research evidence showed that the increased flexibility in the workload patterns of teachers following the introduction of the LfT initiative had been well received and that teachers liked to be able to choose where and when to work. However, it is important for school management to ensure that the balance between school and out of school working does not become disproportionate.

School ownership model – whilst there was a significant level of support for this particular model, in some schools members of staff felt under pressure to 'prove' their entitlement to a laptop. Schools which adopted rigorous monitoring practices in regards to their allocation of laptops to individual members of staff were in danger of increasing pressure on teachers to feel that they needed to demonstrate constantly that they were using the laptop to maximum effectiveness to ensure it was not reallocated elsewhere.

Insurance – whilst most schools included laptops on their own insurance, there was some uncertainty as to where the responsibility for the laptop lay during transportation. There was evidence that more comprehensive guidance around insurance issues could be made available to schools in order to provide clarification about this particular concern.

APPENDIX 1

Detailed methodology

The evaluation commenced during the Autumn term of 2002, soon after many headteachers and teachers had received their laptops, although a baseline study was undertaken at the time that respondents registered their laptop. The following research processes were conducted throughout the year, and were completed in the Autumn term of 2003. The evaluation involved collecting evidence from LEAs (who were responsible for administering the initiative), headteachers and teachers from both the maintained and non-maintained education sectors in England.

A range of qualitative and quantitative data collection methods were used within three strands:

Strand 1: LEA survey

Strand 2: Headteachers survey

Strand 3: Data collection from participant headteachers and teachers. This involved:

- baseline and follow-up survey of participants
- case studies in schools
- additional telephone interviews with recipients of laptops.

Strand 1 was designed to investigate:

- how LEAs and schools decided to target the laptops
- the effectiveness of the LEA administration
- the issue of school ownership
- the service provided by suppliers.

Strand 2 was designed to investigate:

- headteachers' allocation of the laptops
- the impact of laptops on teachers and the school.

Strand 3 was designed to investigate teachers' perceptions of:

- the development of ICT competence
- the impact the laptops were having on teaching and learning
- the impact of the initiative on the whole school
- the impact on administration for teaching and learning.

Strand 1: LEA survey

The questionnaire survey was sent to the named officers responsible for administering the Laptops for Teachers initiative in all LEAs in England (150 individuals in total); contact details for each officer were provided by the DfES. The survey covered the following main areas:

- suppliers
- financial aspects
- administration of the initiative
- allocation of laptops to schools.

In addition, respondents were invited to state their job title and to indicate whether or not they were willing to be contacted again by the research team for further involvement in the research (this was a way of identifying those individuals who might take part in telephone interviews that would explore in more detail some of the issues arising from the survey results). Finally, LEA administrators were asked to provide details of all schools within their LEAs that had received one or more laptops under the initiative; this was to facilitate drawing a sample of schools for the headteacher survey, as a random sample of all schools may have included some that had not received any laptops.

The survey was administered using two methods: first, a traditional, paper-based questionnaire; and second, an electronic version of the same questionnaire emailed to each LEA administrator. Individuals were offered the option of selecting the response mode that was most convenient to them: they could either complete and return the paper questionnaire, or complete the electronic version and email it back to NFER without the need to print it. All responses were recorded to ensure that no individual returned both a paper and an electronic questionnaire. The LEA administrators were given four full weeks to complete and return their questionnaire.

In total, 111 responses were received from 150 LEAs, representing a response rate of 74 per cent. Fifty seven responses were paper-based and 54 were electronic responses.

The data collected by means of the questionnaire survey were supplemented with information collected via telephone interviews with 20 LEA administrators who indicated that they were willing to be contacted in connection with the research. The telephone interviews provided an opportunity to explore with a small number

of respondents the issues relating to their administration of the initiative in their LEAs. The administrators selected for the telephone interviews included those who had used different options for purchasing laptops, LEAs of different sizes (in terms of number of schools), geographical locations, and type (e.g. metropolitan areas/unitary authorities/shire counties). Their views provided additional insights into the issues that had been confronted by administrators in a range of LEAs.

The telephone interview schedules were customised to reflect the different approaches LEAs had taken in administering the initiative and to provide opportunity for individuals to comment more broadly on the initiative in general.

Strand 2: Postal survey of headteachers in maintained schools

NFER asked the LEA administrators of the Laptops for Teachers initiative to list all the schools in their authority which had received one or more laptops. Participant headteachers were identified from these records.

The questionnaire survey was administered in two phases, according to how long the teachers had had their laptops. This was to ensure that individuals had an opportunity to become familiar with their laptop before being asked to reflect upon the impact it was having on their practice.

Questionnaires were sent to a total of 880 headteachers, 400 primary, 400 secondary and 80 special schools (351 questionnaires were sent in phase one and 529 were sent in phase two). The first phase was administered in the first half of the Spring Term 2003 and the second in the first half of the Summer Term 2003.

The survey covered the following main areas:

• LEA administration of the Laptops for Teachers initiative

• school administration of the initiative

• allocation of the laptops within the school

• impact on teaching and administration

• impact on beneficiaries' classroom practice

• impact on the whole school

• portability.

The survey was administered as a traditional paper based questionnaire and respondents were given four full weeks to complete and return their questionnaires.

In the first phase, 181 questionnaires were returned which represented a response rate of 52 per cent. In the second phase, 227 questionnaires were returned, achieving a response rate of 43 per cent. In total across the two phases, of the 880 questionnaires that were sent to schools, 408 were returned, providing a response rate of 46 per cent for this part of the evaluation of the Laptops for Teachers initiative.

Telephone survey of headteachers in non-maintained special schools

The main headteacher survey was supplemented with telephone interviews with headteachers of non-maintained special schools. These were carried out to find out what impact the Laptops for Teachers initiative has had on these schools which, by definition, are outside the LEAs' areas of responsibility and were therefore covered by alternative arrangements. The DfES provided non-maintained special schools with specific guidance for the Laptops for Teachers initiative, recognising the different strategies necessary for managing the initiative in this sector.

Non-maintained special schools were selected from the NFER's Register of Schools. The criterion for selection was the number of laptops individual schools received under the initiative. A total of 68 non-maintained special schools were on the Register of Schools and, of those, 54 were listed as receiving funding in the Laptops for Teachers initiative guidance document. Out of these, 20 from a range of geographical locations were invited to participate in the telephone survey. The interview schedule was piloted in two non-maintained special schools to ensure that it dealt with issues that were relevant to non-maintained special schools. Subsequently, interviews were carried out with the headteachers of 18 non-maintained special schools.

The inclusion of the non-maintained special schools in the headteacher survey strand helped to give a fuller picture of the impact that the Laptops for Teachers initiative was having on teaching, learning and the professional lives of the recipients.

Strand 3: Online survey

The online survey of teachers and headteachers who had received a laptop under the initiative was conducted in two parts. The first, the baseline survey, was conducted by the DfES as teachers received and registered their laptops on the Laptops for Teachers website.

These registrations began during the summer of 2002 and continued throughout the school year. The second, a follow-up survey, was conducted by the NFER in order to make comparisons over time of the impact that individual ownership of laptops was having on teachers' professional lives.

The online survey took place approximately 6 months after the majority of respondents received their laptops. Schools received laptops at different times throughout the 2002/3 academic year. Most schools received laptops during the Autumn term 2002. The follow-up online survey went live at the end of the Spring term 2003.

The baseline survey was designed to investigate:

• recipients' access to computers prior to receiving the laptop, including internet access

• recipients' ability to use a computer for a variety of administrative and teaching tasks including lesson preparation, the use of software for presentations

• the training recipients had received and how that had been provided

• any impact that ICT use had had, and was anticipated to have, on workload

• recipients' confidence and competence.

The follow-up survey was designed to investigate:

• use of laptops

• where the laptop was used

• transportation

• impact of laptop on:

 - skill in a range of applications

 - efficiency in administration for teaching and learning

 - frequency of ICT use

 - competence/confidence

 - benefits of having a laptop

 - training needs

• use of the Laptops for Teachers website

• use of after-sales service from supplier.

The baseline survey was offered to one in four recipient headteachers and teachers when they registered their

laptops on the Laptops for Teachers website. This survey had 1910 respondents. The NFER offered the follow-up online survey to each of those 1910 respondents, of whom 958 respondents, representing a response rate of 50 per cent, completed the second survey. Of those 958 respondents 78 per cent were teachers and 22 per cent were headteachers. Table 12 below shows the different levels for which the respondents were responsible.

Table 12 Respondents' teaching responsibilities
Which level(s) do you teach in your current job?

Levels	%
Foundation	20
Key Stage 1	34
Key Stage 2	44
Key Stage 3	38
Key Stage 4	37
Sixth Form	2
N = 958	

More than one response could be given so percentages do not sum to 100. Source: NFER participant follow-up survey

The follow-up online survey was complemented by additional telephone interviews with recipient teachers. The sample of up to 60 interviewees was drawn from information provided from the baseline online survey as these teachers had completed the DfES baseline survey.

Those who were interviewed included:

• 24 primary teachers

• 22 secondary teachers

• 8 special school teachers.

The interview explored:

• background

• school administration including the allocation process

• use of the laptop

• personal ICT skill and training

• impact on teaching and administration

• impact on teaching and learning.

Case studies

The final data collection phase involved case studies in 12 schools selected to reflect region, type of authority and sector. Two schools were selected from each of six authorities, a combination of either a primary school and a secondary school or a special school and a primary school (see Table 13 below).

Table 13 Selection of case study schools

Schools	School sector	Region	Authority type
School 1	Primary	South West	County
School 2	Primary	Midlands	Metropolitan
School 3	Primary	North	Unitary
School 4	Primary	South East	Unitary
School 5	Primary	Eastern	County
School 6	Special primary	Midlands	Metropolitan
School 7	Secondary	London	Outer London
School 8	Secondary	North	Unitary
School 9	Secondary	South West	County
School 10	Secondary	Eastern	County
School 11	Secondary	South East	Unitary
School 12	Special secondary	London	Inner London

Within each of the case-study schools, data were collected by means of interviews with teachers, headteachers and ICT Coordinators. The interviews with headteachers and ICT Coordinators were designed to explore:

• background, including the vision for ICT in the school

• administration of the Laptops for Teachers initiative in their schools related to allocation, school ownership and monitoring

• impact on workload, communication

• impact on the whole school.

The interviews with teachers were designed to investigate:

• school administration of the Laptops for Teachers initiative

• teachers' use of the laptop

• personal ICT skill, confidence and competence

• impact on teaching and administration

• impact on teaching and learning.

APPENDIX 2

Technical specification of laptops

Detailed below is the minimum technical specification which all laptops offered under the LfT Initiative were required to meet or exceed at the time of the research.

Processor One of the following processors:

900MHz or faster AMD or Intel processor or equivalent or

500MHz or faster PowerPC processor or equivalent

RAM 256 Mb minimum

CD/DVD/CDRW drive 1 CDROM drive or 1 DVD-ROM drive

Hard disk 20 Gb minimum

Display Integral TFT screen, 14.1 inches or larger

Graphics Built-in display with a resolution of at least 1024 x 768, providing 24-bit colour at the full resolution of the built-in display

Graphics RAM 8Mb minimum.

Ports - following ports must be integrated into the laptop 1 x SPARE PC card (PCMCIA) TYPE II slot

2 x USB port must be capable of simultaneous output to an external colour display)

Pointing device 1 x integrated pointing device (touchpad or other device) plus external mouse (or equivalent) with a suitable connection

Keyboard UK keyboard with full-size keys.

Audio Minimum specification of 16-bit stereo sampling and playback

Stereo audio output connections

Internal microphone or connection for an external microphone

Speakers Internal stereo speakers plus stereo audio output connection

Modem V.90/ 56K fax/modem, internal upgradeable

Networking On-board 10/100 network interface

Power 1 x lithium ion rechargeable battery

1 x mains adapter

Battery must have minimum of 1.5-hour life under load conditions:

Carry case Carry case with handle. This must be sufficiently large to carry the computer, mains adapter, disks and CDs

Operating system Windows 2000 or later, or equivalent or Mac OS 9 or later or equivalent

Applications software A set of office applications including at least a word-processor, spreadsheet and presentation software.

Virus protection Virus-scanning software must be included, with free updates to the virus-definitions file for at least one year.

Internet connectivity software Netscape or Internet Explorer web-browser version 5 or later, or equivalent. The software provided must not inhibit the use of software from other internet access providers

Delivery All suppliers must provide a delivery service

Demonstration

Note: This is optional and not included within the funding cap. All suppliers must offer a commissioning/demonstration service to the end recipient at the purchaser's preferred location. The demonstration must result in the end recipient being able to:

• connect the equipment purchased

• successfully run application software

• successfully run the CD or DVD

• connect to the Internet and view the site (where Internet access purchased)

Warranty and service Minimum of three years' manufacturer's warranty including parts and labour on all components (except battery). Additional on-site support in available as an option, but must not be included in the funding cap.

Hotline support Support must be provided for all hardware and software purchased. This must include telephone hotline support for three years (one year for Internet access) at local call rates from 8:00 to 18:00 Monday to Friday, excluding bank holidays

Internet access

Note: This is optional and not included within the funding cap. The necessary tool must be provided to allow the user unlimited Internet access at local call rates.

Speed A PSTN dial-up service supporting 56kbps modems must be provided

Software The Internet access service must include support for sending and receiving email including MIME attachments, new groups, FTP upload and download audio and video streaming.

Number of email accounts At least five free e-mail accounts must be provided

Web space At least 5Mb of free web space must be provided

Internet hotline support See Hotline support above.

Acknowledgements

The ICT in Schools programme is central to the Government's ongoing programme of school reforms. *Fulfilling the Potential,* launched by the Secretary of State for Education and Skills in May 2003, outlines future directions for ICT as an enabler in whole school development and teaching and learning. Copies of *Fulfilling the Potential* are available on www.dfes.gov.uk/ictinschools. Research and evaluation is being undertaken using a variety of techniques, both qualitative and quantitative, and at both national and local level.

Below you can find a list of the reports published so far in the ICT in Schools Research and Evaluation series, produced by Becta for the Department for Education and Skills (DfES).

All of the reports in the series can be found on the Becta Research web site at www.becta.org.uk/research and can be ordered from the DfES publication order line (0845 60 222 60).

1. ImpaCT2 – Emerging Findings
   (DfES/0812/2001, Becta 2001)

2. NGfL Pathfinders – Preliminary Report on the roll-out of the NGfL Programme in ten Pathfinder LEAs
   (DfES/0813/2001, Becta 2001)

3. Computers for Teachers – Evaluation of Phase 1: Survey of Recipients (ISBN 1 84185 656 8, Becta 2001)

4. Using ICT to Enhance Home School Links
   (ISBN 1 84185 655 X, Becta 2002)

5. Young People and ICT (DfES/0250/2002, Becta 2002)

6. Total Cost of Ownership (TCO): A Review of the Literature (website only)

7. ImpaCT2 – The Impact of Information and Communication Technology on Pupil Learning and Attainment (DfES/0696/2002, Becta 2002)

8. ImpaCT2 – Learning at Home and School: Case Studies (DfES/0741/2002, Becta 2002)

9. ImpaCT2 – Pupils' and Teachers' Perceptions of ICT in the Home, School and Community
   (DfES/0742/2002, Becta 2002)

10. NGfL Pathfinders - Second Report on the roll-out of the NGfL Programme in ten Pathfinder LEAs
    (DfES/0743/2002, Becta 2002)

11. NGfL Pathfinders - Final Report on the roll-out of the NGfL Programme in ten Pathfinder LEAs
    (DfES/0781/2002, Becta 2003)

12. Young People and ICT – Findings from a survey conducted Autumn 2002 (DfES/0789/2002, Becta 2003)

13. Computers for Teachers – An evaluation of Phase 2: survey of recipients (DfES/0782/2002, Becta 2003)

14. Computers for Teachers – A qualitative Evaluation of Phase 1 (DfES/0327/2003, Becta 2003)

15. Evaluation of Curriculum Online: Report of the baseline survey of schools (website only)

16. ICT Research Bursaries: a compendium of research reports (DfES/0791/2003, Becta 2003)

17. ICT and Attainment: a review of the research literature (DfES/0792/2003, Becta 2003)

18. ICT and Pedagogy: a review of the research literature (DfES/0793/2003, Becta 2003)

19. Laptops for Teachers: An evaluation of the first year (DfES/00132/2004, Becta 2004)

Laptops for Teachers – An Evaluation of the First Year of the Initiative

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