

November 2008

**Becta** leading  
next generation  
learning

# Harnessing Technology Review 2008: The role of technology and its impact on education

Summary report

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# Introduction

Three years on from the publication of *Harnessing Technology* in 2005, the Government asked Becta to revise and further develop this strategy. The refreshed strategy, *Harnessing Technology: Next Generation Learning* (Becta, 2008), sets out the system-wide role for technology over the next six years.

*Harnessing Technology: Next Generation Learning* supports key priorities of the Department for Children, Schools and Families (DCSF) and Department for Innovation, Universities and Skills (DIUS), with a particular focus on:

- raising achievements and improving skills
- narrowing gaps and supporting the vulnerable
- improving capacity, quality and efficiency.

The strategy outlines five high-level outcomes which contribute to these priorities. This review brings together a range of research evidence and data to provide a picture of where we are now and what the key issues are in achieving these challenging objectives. The review addresses both the children, schools and families and further education (FE) and skills sectors.

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The five high-level outcomes sought by the strategy are:

#### Technology-confident, effective providers

*Education and training providers able to make strategic and effective use of technology to achieve the best outcomes for learners.*

#### Engaged and empowered learners

*Learners able to access technology and the skills and support to use it to best effect inside and outside formal learning.*

#### Confident system leadership and innovation

*Education leaders enabled to lead technology to support their priorities and deploy innovative solutions to improve the quality of teaching.*

#### Enabling infrastructure and processes

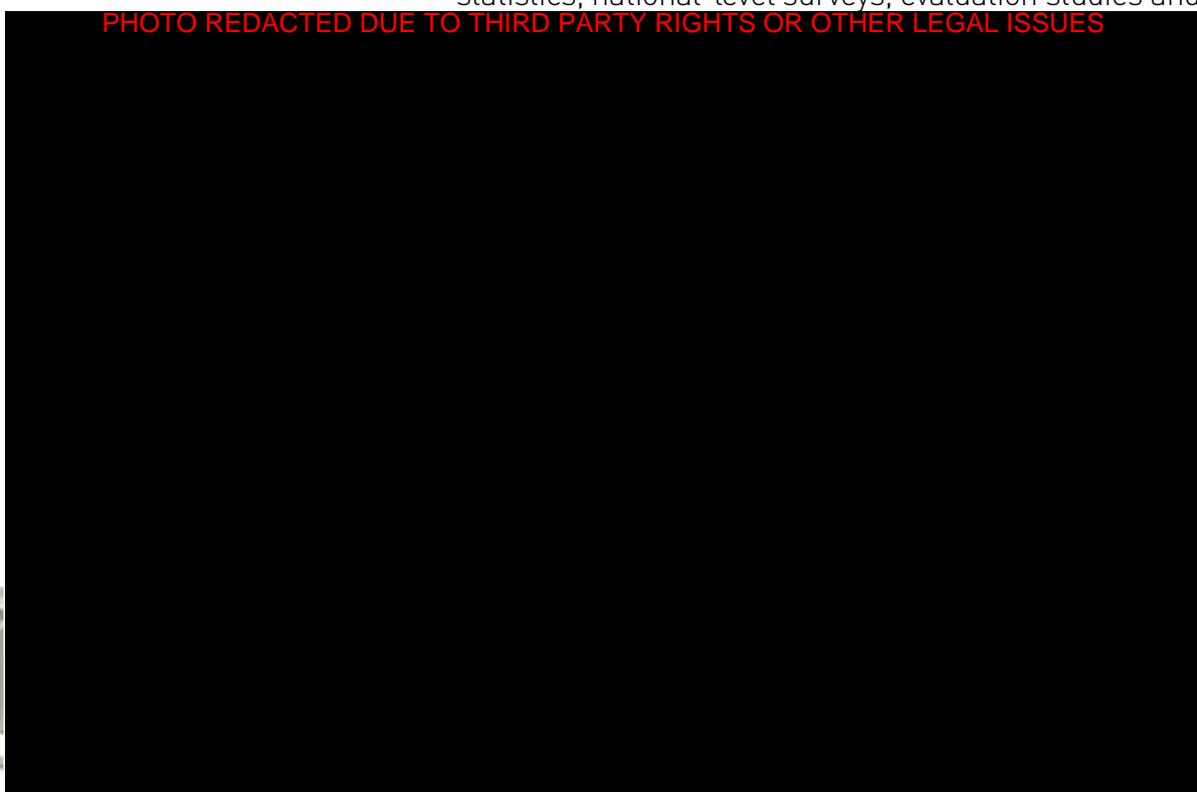
*A technology infrastructure that offers learners and practitioners access to high quality, integrated tools and resources at the best possible value for money.*

#### Improved personalised learning experiences

*Technology enabling improvements to learning and teaching, and tailoring of learning to suit the needs of learners.*

The evidence and research presented here is derived from Becta's national and large-scale surveys and research studies. It also includes other statistics, national-level surveys, evaluation studies and Ofsted reports.

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# Challenges and issues identified from the research

## Progress again, but parts of the system are hard to reach

Echoing conclusions from previous years, this review presents a mixed picture of the adoption, use and impact of technology in education and skills. There have been many promising areas of progress over the last year, with a significant increase in the use of learning platforms and improved integration with management information systems. However, the use of learning platforms is still at an early stage in schools. These are critical underpinnings for further progress and represent a sound basis for the development of practice with technology more generally.

Other progress is apparent, including continued strong growth of practitioners' use of technology to support learning, and indications that the breadth of use is growing. However, there must still be concern about the pockets of very limited adoption. In particular, there appears to be a stubborn core of 'late adopter' FE colleges, a long tail of primary schools with limited provision and use, and polarisation within the FE sector between practitioners making good use of ICT and those making little or no use.

Minister of State for Schools and Learners, Jim Knight, offered a response to the recent launch of the second phase of the *Harnessing Technology Strategy* that 'technology is no longer optional'. It appears it will take considerable effort to ensure the message is reflected in consistent change across the system.

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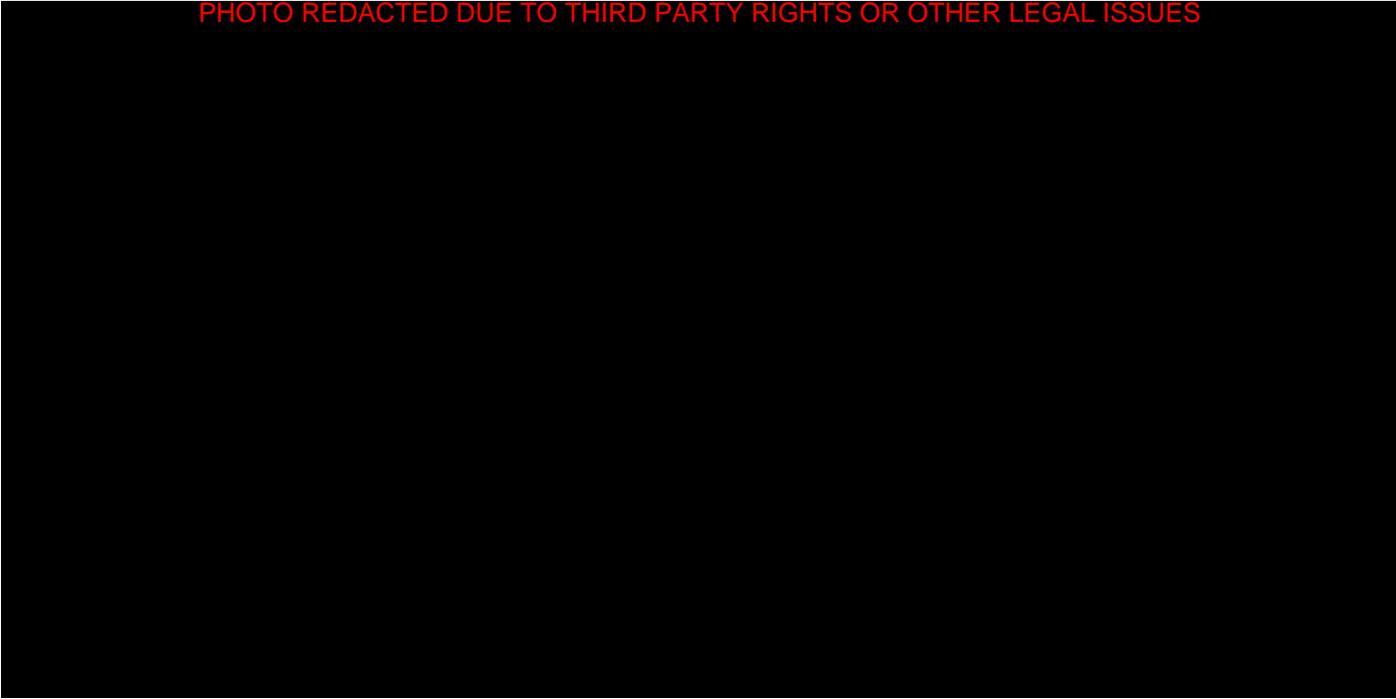
## The continuing challenge of access and learner skills

Ensuring equitable access to technology for parents, young people and adult learners is essential, and likely to represent an ongoing challenge which requires concerted effort and a high level of support at the local level. In relation to school-aged learners, those without access are most likely to come from what are generally considered hard-to-reach groups, such as families who rely long term on benefits, families in social housing, lone parents and those whose first language is not English. In FE and skills, older learners are less likely to have access, and those returning to study or training over the age of 45 are likely to have limited skills in relation to the use of technology to support learning.

The trends for access to technology are generally encouraging, particularly the adoption of broadband. However, the picture suggests that those without access will fail to benefit from the digital tools and resources that are increasingly used to support learning. They are also likely to lose out in terms of broader social participation and employability. Ensuring access and skills for these groups must be high priority in realising the aims of the Harnessing Technology Strategy.

The host school or college is a key factor in children's ability to cite behaviours for staying safe online, and FE learners' capability to use technology both generally and for learning. Thus focusing on building provider e-maturity is an important prerequisite to building learner capability to benefit from using technology.

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## Low bases but big opportunity: parents and disadvantaged groups

The Government's target for schools to offer online reporting to parents by 2010 (secondary) and 2012 (primary) can support better relationships between schools and parents. However, schools' capacity in this area is currently at a very low base. Though tools and systems exist that enable this, adoption and embedding is relatively low, possibly reflecting the change-management challenge faced by schools. In addition, communicating with parents is relatively low down on headteachers' reported priorities, both generally and for technology, over the next three years.

Yet other evidence suggests that parents would value schools' use of online channels for communication of information. There is clearly a big opportunity in this area, but also a need for support and advice to schools, and those who support them, to move schools more swiftly from where they are now to better meet the aspirations of parents.

A similar opportunity exists in relation to disadvantaged and vulnerable learners, particularly young people. There have been highly successful projects with these learners over recent years, demonstrating a significant opportunity for technology-based projects to prevent young people slipping through the net and disengaging entirely from learning. Successful projects offer new models both of learning and of the relationship between the young person and professionals and learning providers, often enabling greater control for young people to shape their learning. Building and sharing this practice is a challenge, but will be important in helping ensure national priorities are addressed.

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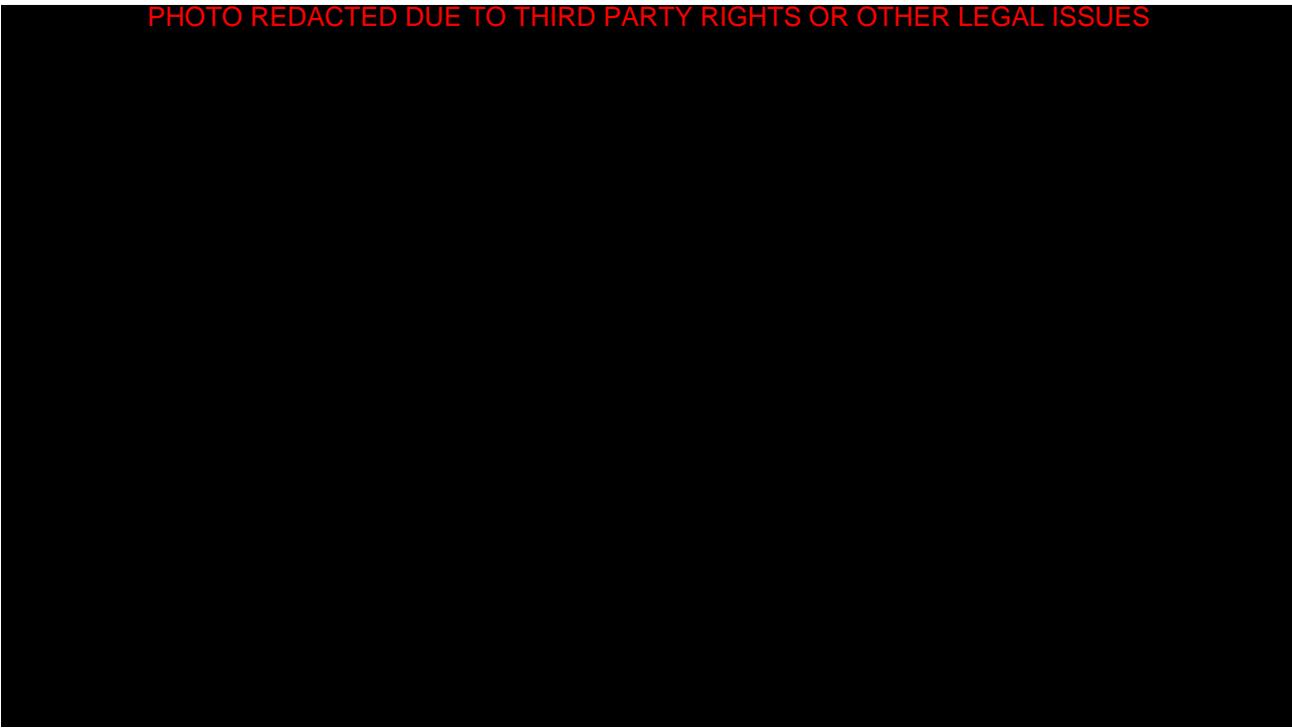
## Leadership and transfer of innovation

A recurring theme across much of this review is that of leadership. For example, there are differences between the accounts of learners, practitioners and leaders of learning platforms in FE which suggest that there are particular issues in embedding the use of technology across all levels of large organisations – a key leadership challenge. In addition, school leaders' priorities for technology do not fully reflect its role in supporting parental engagement. And some FE college technology strategies still focus primarily on infrastructure development, rather than on improving learning and teaching.

Building leaders' understanding of the role of technology in supporting their priorities and communicating the business case for technology-based change is a continuing but important challenge.

There are now many good examples of practice with technology which achieve real benefits for children, young people and adult learners. These range from mobile learning practices that improve young learners' achievements in core subjects, to creative uses of technology to engage hard-to-reach learners, and the use of learning platforms to extend the curriculum and support personalising of learning. The challenge is to shift from recognising valuable isolated projects to building recognised good practice among the majority of adopters. It will continue to be critical to the success of the Harnessing Technology Strategy to recognise excellent innovations and support leadership and professional development networks that facilitate knowledge transfer.

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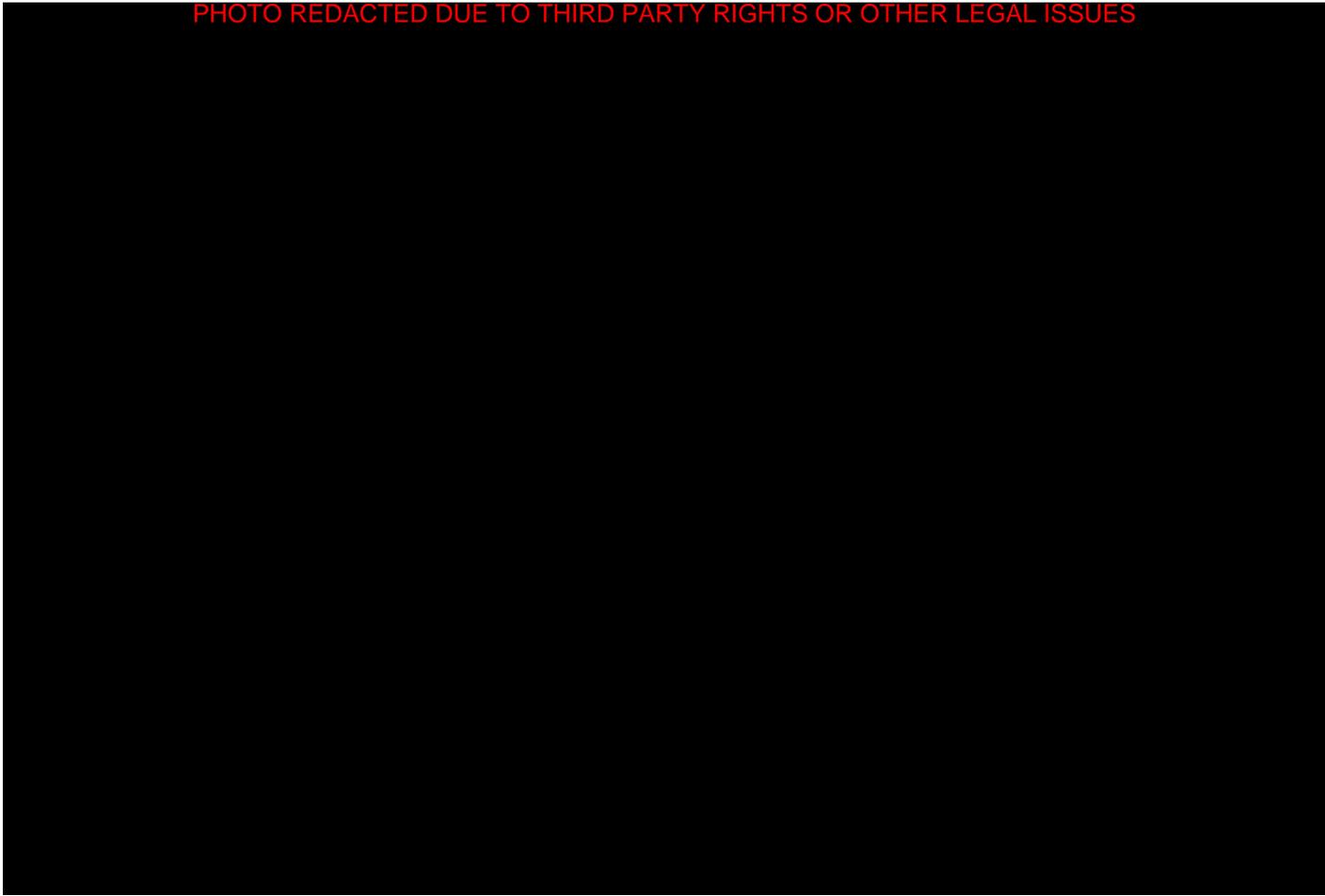
## Practitioner skills, tools and professional development

The issue of the slow development of learning and teaching practice using technology is a theme which has been discussed in previous reviews. This year there are signs that the breadth of practice among teachers and FE practitioners is expanding, with more practitioners reporting that they are using technology to support learners in being creative and working together.

However, the percentage of practitioners still reporting that they 'rarely or never' do this is still high. There still appears to be a significant deficit in practice which is likely to be based on lack of awareness of the benefits of different practice for learning, lack of practical pedagogical skills, and possibly lack of time and incentives to develop practice.

Addressing these issues is a challenge which is likely to require multiple strategies, including building a coherent approach to continuing professional development, developing a greater sense of the importance of technology-based practice in the professionalism of practitioners, building better understanding of benefits of change, and sharing related good practice among the education profession.

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## The need for professionalism in technology services

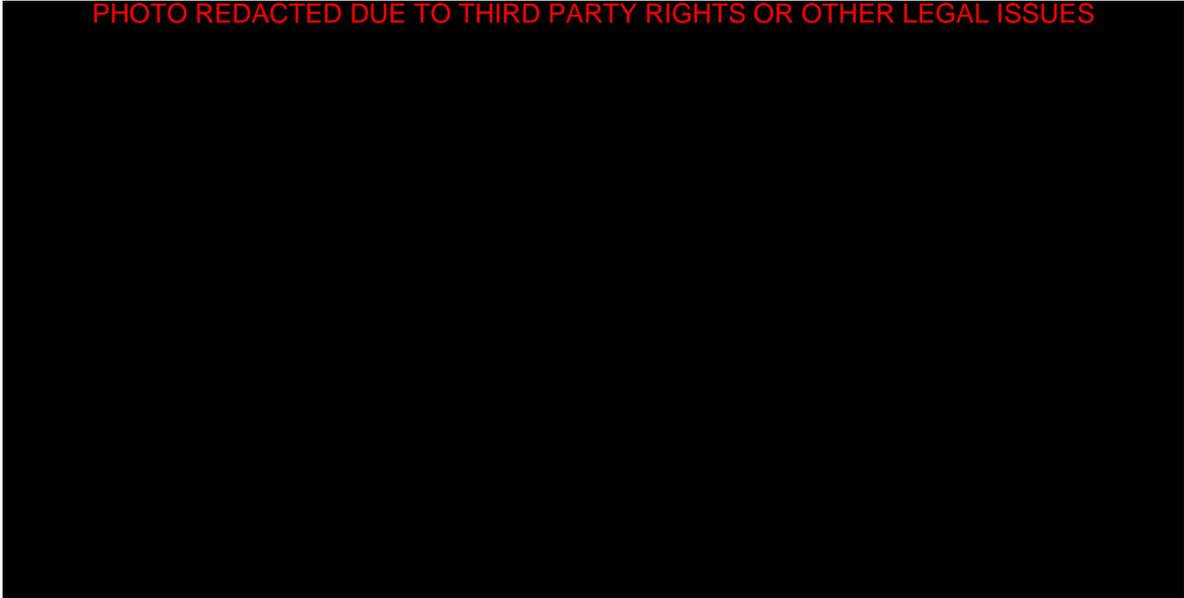
Though many of the issues in delivering the ambitions of the Harnessing Technology Strategy relate to the development of practice and the management of change in schools, colleges and other providers, there still remain issues in building good technology infrastructures that can support flexible and extended learning.

Limitations in most schools' infrastructure to support mobile and remote access to the network are a major concern. This is far from easy for teachers, and is even less readily available to learners. Additionally, though good progress has been made in integrating technology systems, particularly at a local level, only a minority of operating learning platforms are linked to central management information systems. This is true both of schools and FE colleges.

When considered alongside indications that there are issues for schools and colleges in relation to access to, and quality of, learning resources, this suggests that learners and practitioners are generally receiving a technology service that is far from reliable and professional. This is particularly the case in primary schools, where a lack of on-site technical capacity is likely to prove a barrier to school-led progress.

While it is important to note that there has been much progress in the development of institutional infrastructures over recent years, this is unfortunately likely to be failing to keep up either with external developments or the expectations and behaviours of users. There is a need to rethink how technology services are developed and delivered, ensuring that schools and colleges, and particularly smaller institutions, can access the capacity they require.

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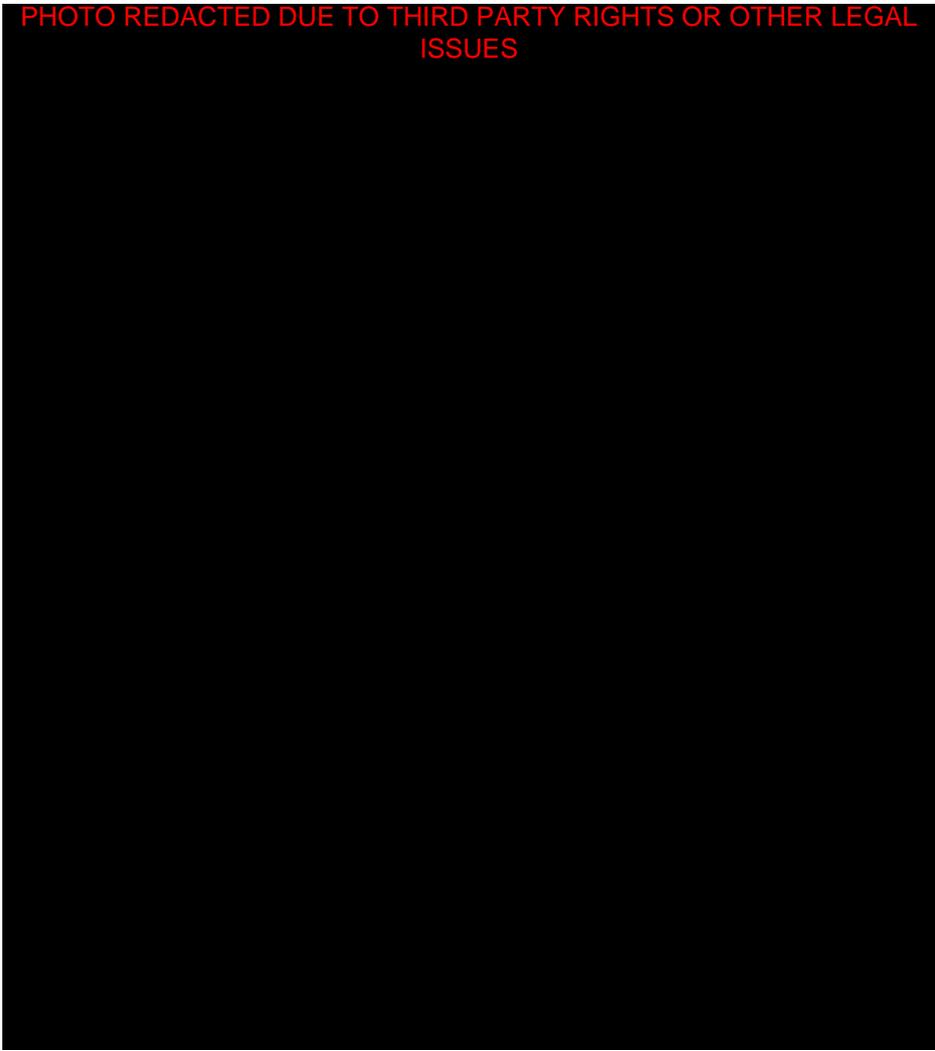
## Conclusions

While this year's review echoes many of the messages from previous reviews, and many of the challenges identified here remain from previous years, a different sense and feel emerges in this year's review.

The use of technology is not just contributing to general, sometimes unspecific, improvements to teaching and learning. There are developing practices with technology that are delivering identifiable improvement and transforming services for learners. We are talking much less of 'potential', and more of transfer of successful practice; less about early adoption and development and more about embedding across a majority.

This is encouraging. But we must not forget the major challenges facing the education sector in realising the benefit of technology-based change. The continuing challenge for Becta in leading the strategy is to ensure that the right interventions, advice and support are targeted at those who need them in the right ways and at the right time.

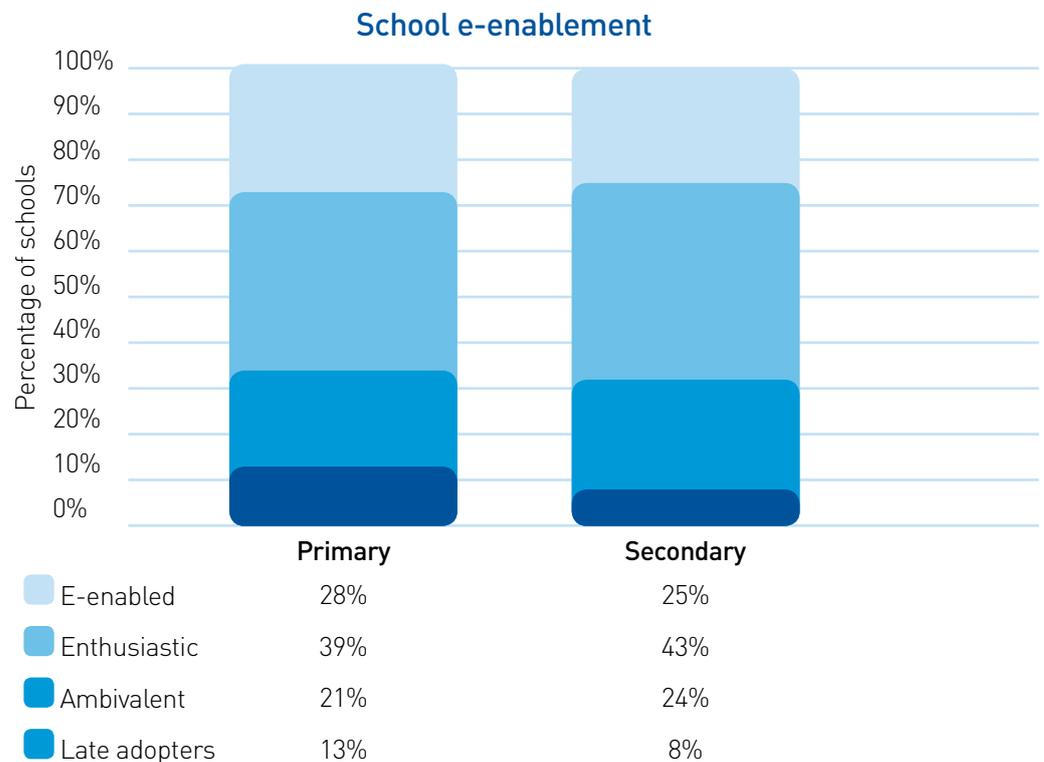
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# The role of technology in meeting system-level outcomes and priorities

## 1. Technology-confident, effective providers

Over the last few years there has been steady progress across sectors in the development of the ability of providers to make strategic and effective use of technology to improve educational outcomes. Primary schools in particular have made good recent progress in developing this e-maturity and have, to a large extent, caught up with secondary schools. Some 28 per cent of primary schools are categorised as e-enabled, compared to 25 per cent of secondary schools. In the FE and Skills sector around 25 per cent of FE colleges were e-enabled, and work-based learning providers had similar scores.



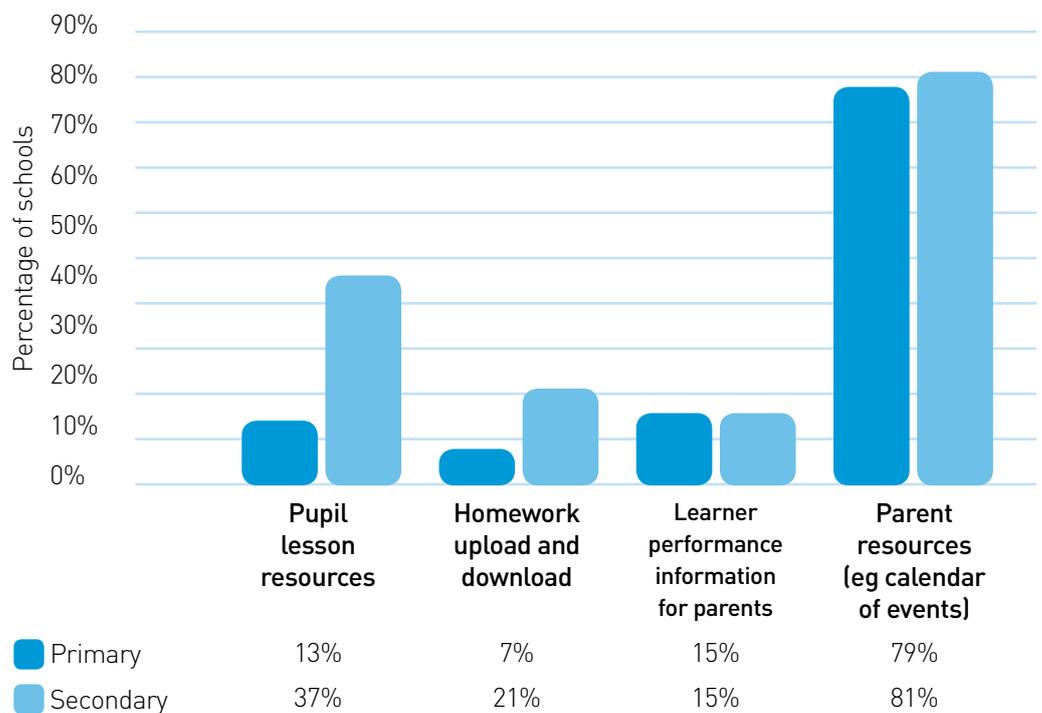
However, a considerable proportion of providers still do not score well against e-maturity criteria. In the primary sector in particular, there is a long tail of less e-mature schools. Some 13 per cent of primary schools achieved lower scores compared to 8 per cent of secondary schools. There was also a stubborn core of late adopters in the FE and Skills sector. Around 19 per cent of colleges and 25 per cent of work-based learning providers were in this category. In FE colleges, progress may also have reached a plateau (Becta, 2008b). This is of particular concern for two reasons. Firstly, the e-maturity of a provider influences learners' capability to use technology effectively and safely. Secondly, it reflects the capacity of providers to deliver flexible and extended learning opportunities.

Both schools and FE colleges made considerable progress in the adoption of learning platforms. This rose markedly from 46 per cent of secondary schools to 63 per cent over the last year. A far lower number of primary schools reported that they support a learning platform, but this had doubled to 22 per cent in the same period. The figure for FE colleges reporting they use a virtual learning environment (VLE) as their main platform rose from 30 per cent to 46 per cent in the last year (Smith *et al.*, 2008).

However, in schools and colleges, learners and practitioners reported lower levels of use of learning platforms compared to ICT co-ordinators. This suggests that full implementation of learning platforms across sectors, along with any resulting change in practice, is taking time to become embedded.

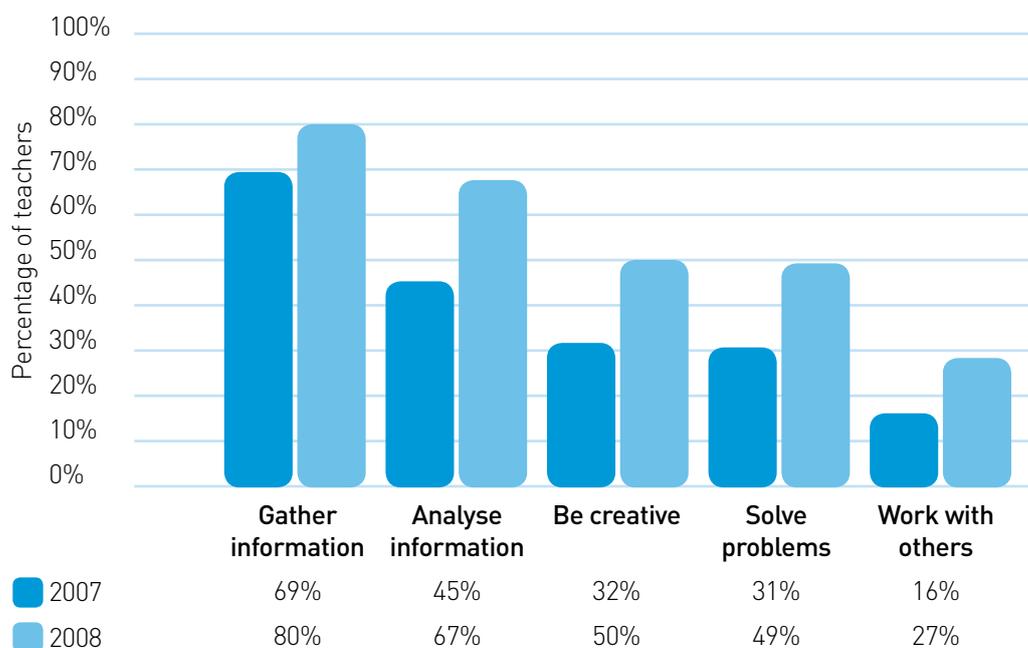
Online reporting to parents by schools is at an early stage. However, around 80 per cent of both primary and secondary schools are now using their website to provide resources for parents – almost double the figures reported in 2007. This indicates a degree of readiness for greater use of online tools. However, using their website for direct communication to parents remained at very low levels, with 4 per cent of primary and 3 per cent of secondary schools doing this (Smith *et al.*, 2008). Parents also recognise the potential for technology to contribute to supporting their child's learning. In one study, 81 per cent reported they would like more feedback on their child's progress (Populus, 2008). In another study, 80 per cent of parents said they would like their child's school to provide a secure website with up-to-date information on how well their child is progressing (Peters *et al.*, 2007).

### School websites used for access and reporting



There has been considerable progress in teachers' use of technology-based tools to support effective learning and teaching over the last few years. Technology is widely used for whole-class work in both schools and FE, with research and information gathering the most common learner-focused use in both sectors. However, around two thirds of primary teachers and half of secondary teachers make some use of technology to support learners in being creative and solving problems. The use of technology to support learners working with others is at a lower level, with around one third of teachers doing this. Only a small number of FE practitioners reported that technology is widely used by learners to support information analysis (18 per cent), solve problems (9 per cent) or work with others (8 per cent) (LSN, 2008). However, these uses are increasing.

### Secondary teachers making some use of ICT with learners



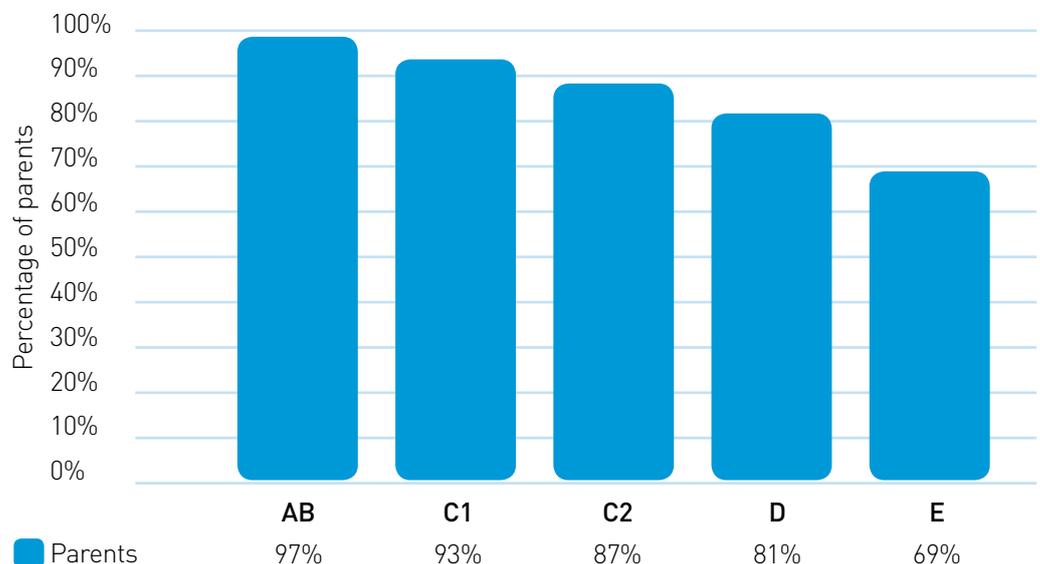
There appears to be a sizeable minority of practitioners in schools and colleges who do not fully engage with ICT and digital resources. It is likely that there is a polarisation in this respect, with a large minority of FE practitioners routinely using specialised digital resources in lesson planning (around one third) and a similar proportion rarely or never using these resources. Analysis suggests that part-time staff are more likely to be in the latter category.

## 2. Engaged and empowered learners

Trends in the consumer market have ensured that, on the whole, learners have good access to ICT and connectivity at home, relative to the population as a whole. Some 92 per cent of parents of school-aged children and 84 per cent of FE college learners reported that they had access to the internet and a computer at home.

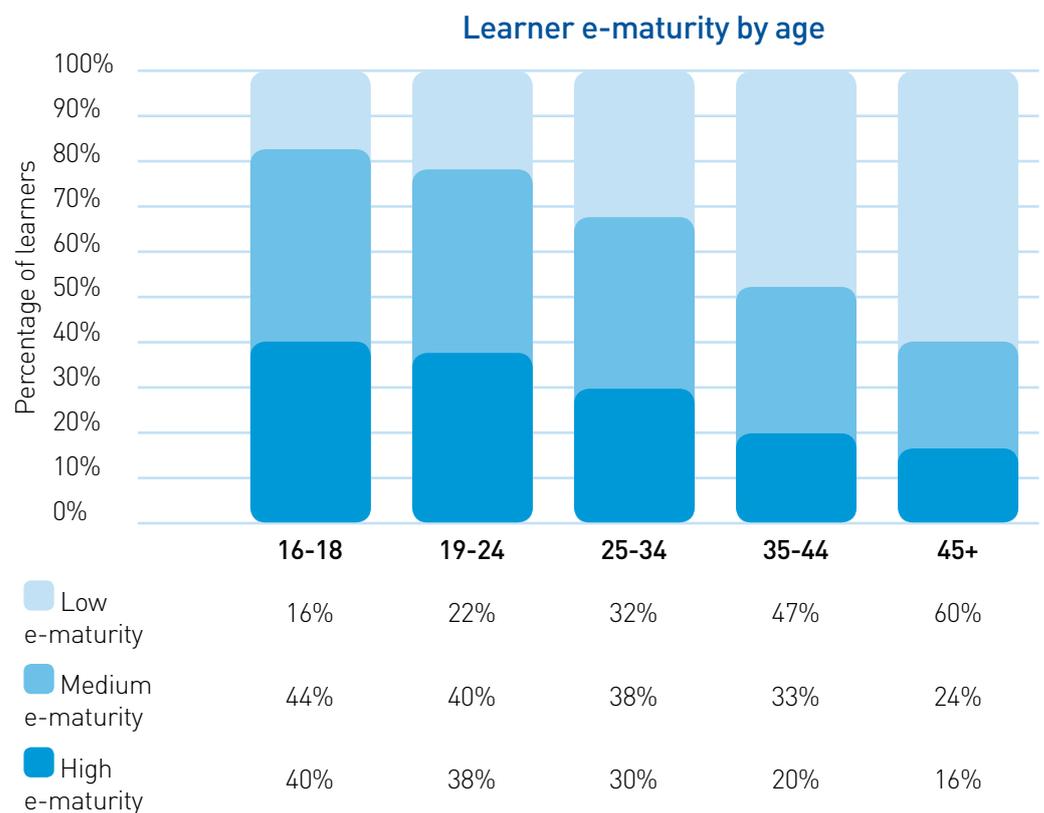
However, this high figure masks some significant differences between groups. For school-aged learners, not having access to the internet at home was strongly related to social class. While 97 per cent of children from social class AB had internet access at home, only 69 per cent of children from social class E had this. Other relatively disadvantaged groups included those whose main language is not English (where 77 per cent have access) and children in lone parent households (Peters *et al.*, 2007). There is also likely to be some overlap between these groups.

Internet access at home by social grouping

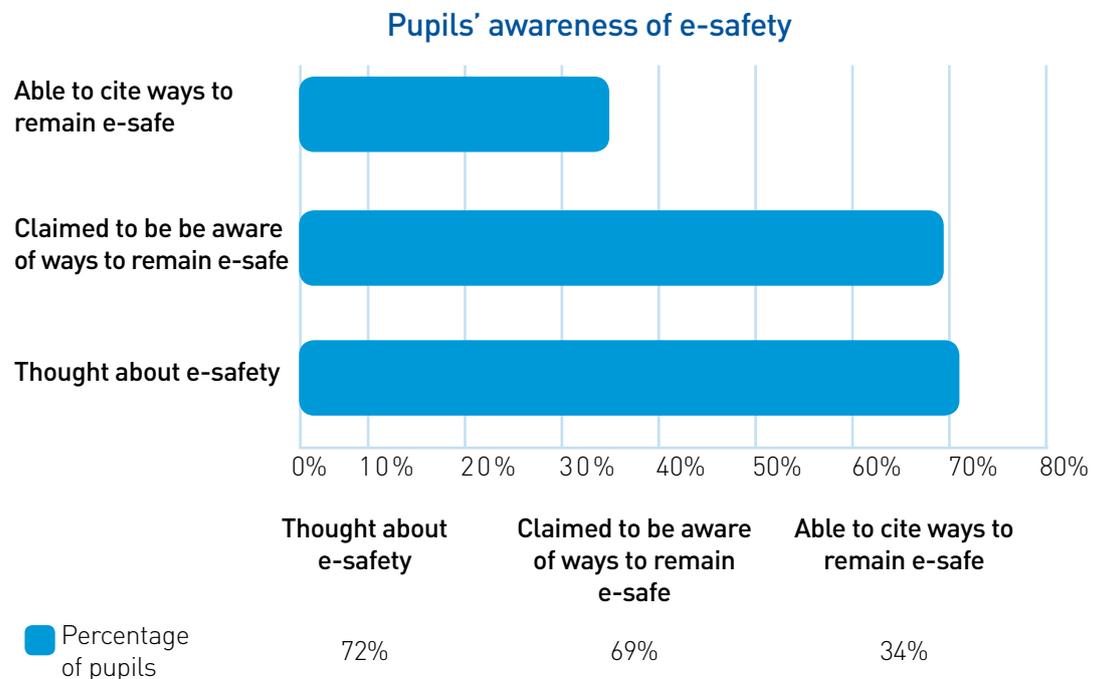


In addition, young people's computer and internet access is often shared, leading to limitations in levels of individual use by children with several siblings (Crook and Harrison, 2008). In further education, levels of home access tended to decrease with age, with those aged 45 and older being most disadvantaged (GfK NOP, 2007b). The other socioeconomic influences on access found among school-aged learners are also likely to apply to FE learners.

The capability of FE learners to use technology in a range of tasks and within their learning was also related to age. For example, nearly half of learners in the 16 to 18 age group were very confident in using technology, compared to only one fifth of those over 45. Capability appears to be linked to levels of general ICT use, with younger learners also being higher general users of technology. However, the level of college e-enablement appears to also be a key factor in learner capability. In late adopter colleges for example, 39 per cent of learners have low capability compared to 28 per cent in e-enabled colleges (GfK NOP, 2007b). This may have implications for the future earning potential of FE students (Dolton *et al.*, 2007).



In schools, children’s e-safety behaviours appeared to be heavily influenced by the school a child attends. A study of five inner-city and suburban primary schools found that while 69 per cent of children claimed to be aware of how to keep safe online, only 34 per cent were able to give an example of how to do this in practice. Children from a school that had specifically addressed e-safety were most able to cite concrete examples (Cranmer *et al.*, 2008).



There is relatively little evidence to date on the use of technology to support family learning. Becta-funded studies in this area will report during early 2009. There was little convergence between learners' technology-based activities in and outside school. In school, technology use was generally associated with 'work', and out of school use with 'fun'. However, school-aged learners recognised the potential for technology to improve learning beyond school, for self-directed and for games-based learning (Crook and Harrison, 2008; Cranmer *et al.*, 2008).

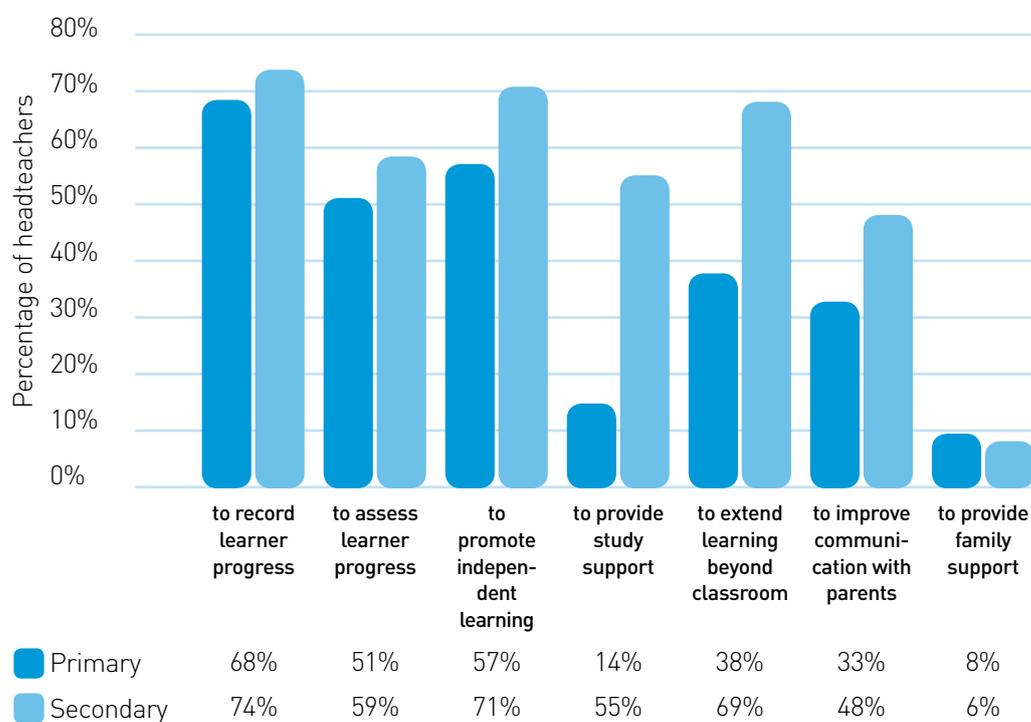
Parents of children in early-years education reported frequently using computers with their children. Some 35 out of 39 parents interviewed reported this. All but one parent considered that technology contributed to young children's learning and development. Young children's use of technology was seen as broadening knowledge and understanding, and helping them develop operational skills (Aubrey and Dahl, 2008).

Use of the internet to support both formal and informal learning is common among adults. Of young people and adults aged over 14 who had access to the internet, 76 per cent reported using it for investigating topics of personal interest, 52 per cent for finding out about further study and 22 per cent for formal distance learning (Dutton and Helsper, 2007).

### 3. Confident system leadership and innovation

Headteachers' highest priority for using technology over the next three years was most likely to be for recording learner progress. Some 68 per cent of primary heads and 74 per cent of secondary heads reported this. Promoting independent learning was the second most frequently reported priority for technology. This was reported by 57 per cent of primary and 71 per cent of secondary heads (Smith *et al.*, 2008).

**Heads reporting "high" priority technology use...**



However, using technology to improve communication with parents or to provide family support were relatively low priorities for headteachers. A possible reason for this is that, regardless of the role of technology, parental engagement and extended schools tended to be unpopular initiatives with heads (EdComs, 2008). Personalised learning, however, is an area that both primary and secondary heads report they are working on. Some 49 per cent of primary and 66 per cent of secondary heads also reported that this area was a key priority for technology over the next few years.

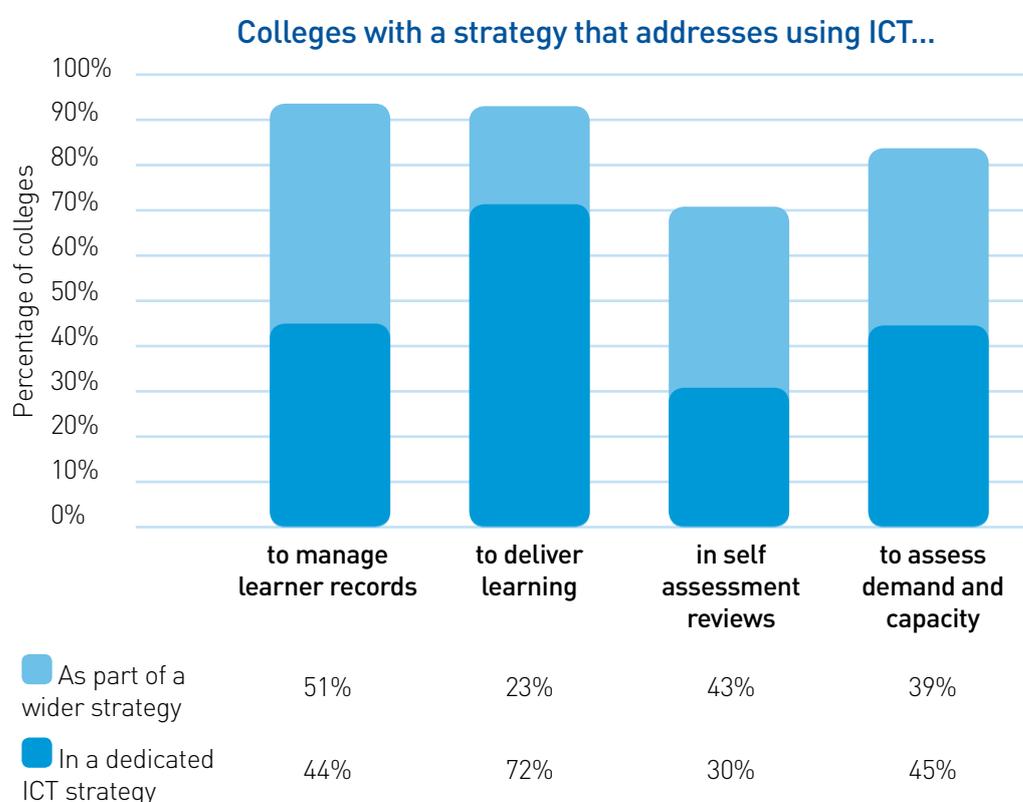
Ofsted has expressed concern about the gap between the best and worst schools in terms of leadership of ICT. Inspection evidence showed that there had been progress in the leadership of technology, but suggested that there was still a gap between the best and worst provision (Ofsted, 2008).

In contrast to the mixed picture at school level, local authorities' strategies for technology in schools were more strongly influenced by national priorities and initiatives. Particular areas of focus were learning platforms and e-safety. The proportion of local authorities which identified online safety as a priority has increased from 23 per cent in 2007 to 34 per cent in 2008. This reflects the national priority of keeping children safe online. Learning platforms were also seen as important for ensuring additional educational value for home access programmes and to enable support for 14–19 learners.



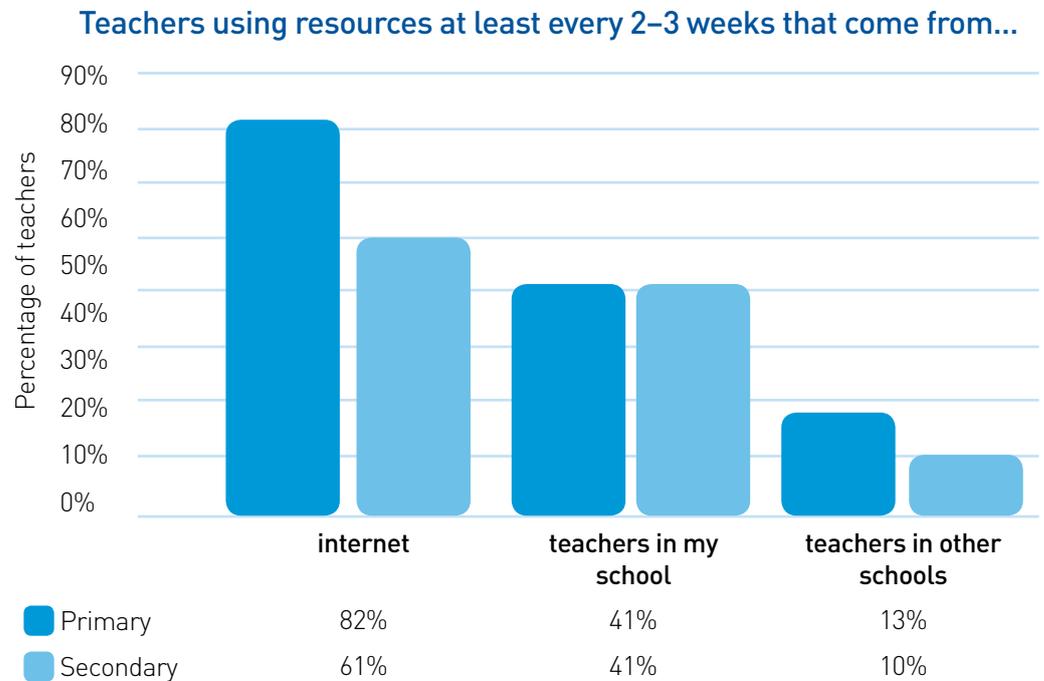
Similarly, curriculum areas prioritised for technology support by local authorities broadly reflect national priorities. These are mathematics (87 per cent), English (86 per cent), ICT (77 per cent), and science (62 per cent) (Hewton and Mortimer, 2008). In the secondary sector particularly, maths and English represent key areas for improvement in relation to National Challenge schools.

In the further education sector, over 80 per cent of FE colleges and over half of work-based learning providers have a written strategy for technology-supported learning. In many cases these strategies are linked with broader strategies or plans, 96 per cent of which mention technology or ICT. However, many technology strategies focus primarily on infrastructure issues rather than improving learning and teaching.



These FE college strategies tended to be developed mainly by senior staff. Consultation with the wider college workforce was less widespread in developing the strategy, and consultation with learners even less common. Some 80 per cent of FE providers thought less than half of their staff were aware of their ICT and e-learning strategy (LSN, 2008).

There are encouraging signs that teachers in schools are increasingly sharing ICT-based teaching resources with each other. Some 41 per cent of both secondary and primary teachers report that they use resources developed by other teachers in their school at least once every 2 to 3 weeks. However, levels of sharing within schools far outweigh those between schools.



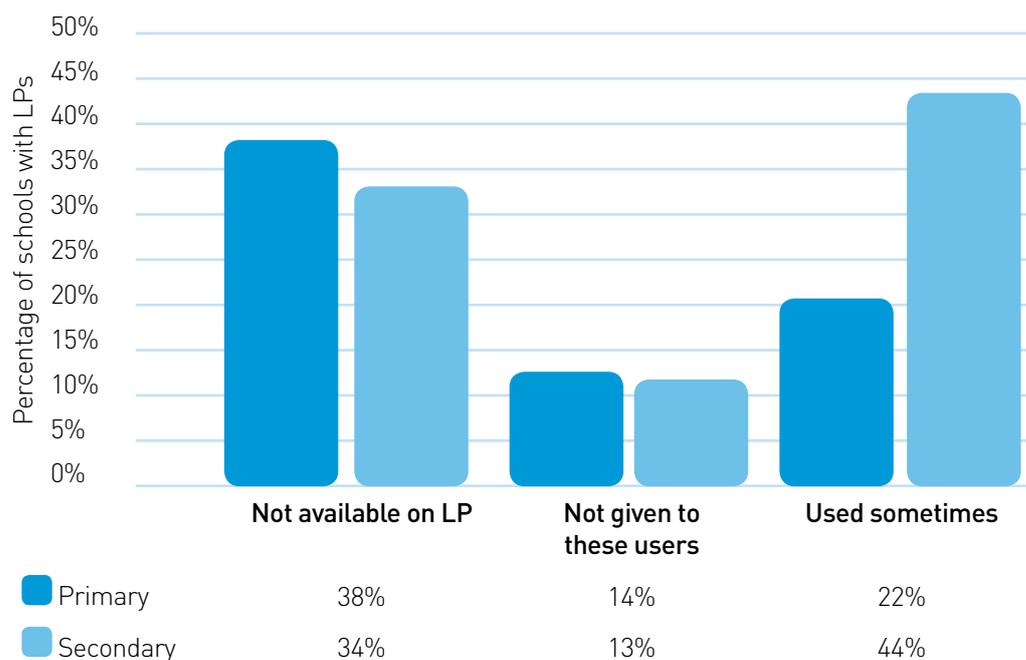
Sharing learning platforms appears to be one way for schools to collaborate. However, this is at a fairly low level, with only 3 per cent of secondary schools and 1 per cent of primary schools having purchased their learning platform as part of a consortium. However, 31 per cent of secondary headteachers and 21 per cent of primary headteachers said they were part of a consortium intending to do this (Smith et al., 2008).

This picture of practice sharing and shared innovation is also reflected in FE colleges. In this sector, 33 per cent of colleges promote resource sharing and collaboration within the college to a large extent. However, only 3 per cent do this for collaboration with other providers. This suggests a genuine need to foster innovation and good practice networks such as the Technology Exemplar Network [<http://excellence.qia.org.uk/page.aspx?o=158557>].

#### 4. Enabling infrastructure and processes

There has been good progress in implementing a more integrated technology infrastructure for education and skills. For example, school learning platforms are used more frequently by teachers to access pupil information, with 22 per cent of primary teachers and 44 per cent of secondary teachers doing this sometimes (Smith et al., 2008). This compares with 8 per cent of primary and 15 per cent of secondary schools reporting this capability in the previous year.

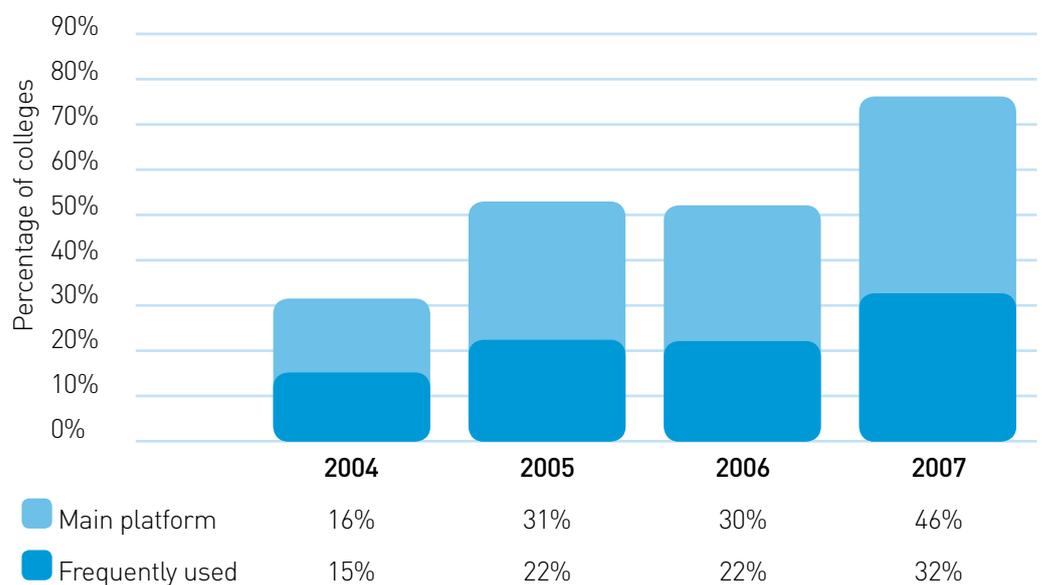
**Teachers' access to pupil information via learning platform**



At a local level, some progress has been made in integrating data systems relating to children and young people. The proportion of local authorities that operated a single MIS (management information system) for schools increased from 28 per cent in 2007 to 40 per cent in 2008. There was also a decrease in the proportion of authorities that used multiple forms of MIS – falling from 62 per cent to 51 per cent in the same period. However, 9 per cent of local authorities did not have MIS integrated with the systems in their schools (Hewton and Mortimer, 2008).

Some 46 per cent of FE colleges have an MIS which is linked to the college's learning platform. Though many colleges did not benefit from the advantages of such a link, progress in this area is good. In the previous year just 33 per cent of colleges reported that their learning platform was linked with the college MIS (LSN, 2008).

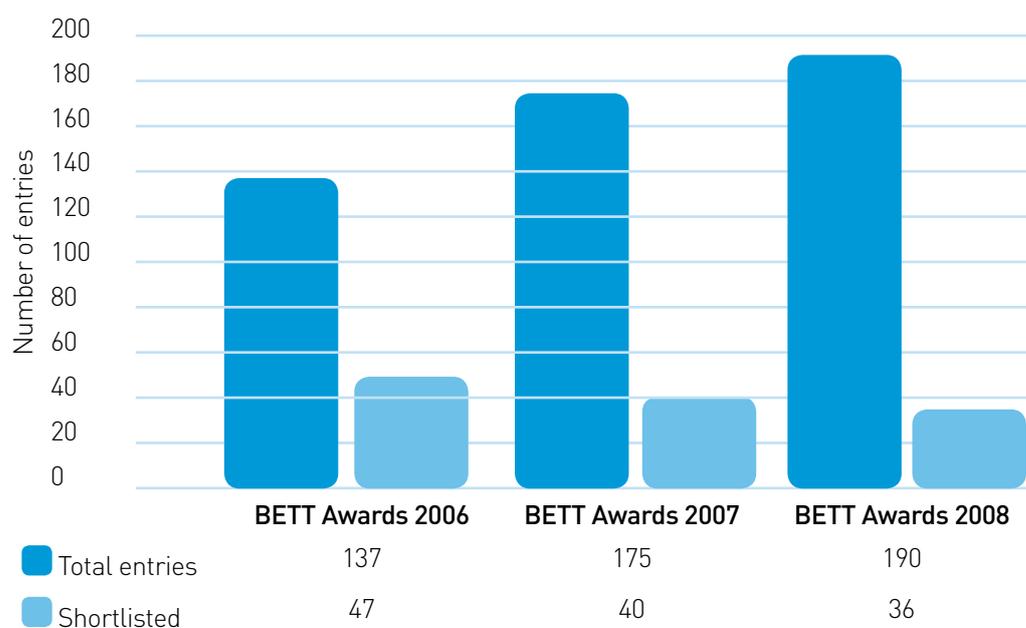
### Colleges making frequent use of VLE



School teachers' use of ICT resources has grown over recent years. This was especially marked in primary schools. Almost half of secondary school teachers, and a third of primary and special school teachers, use self-created resources to plan the majority of their lessons. They use digital resources created by colleagues much less frequently. Primary school teachers adapt learning resources from other people more frequently than other teachers.

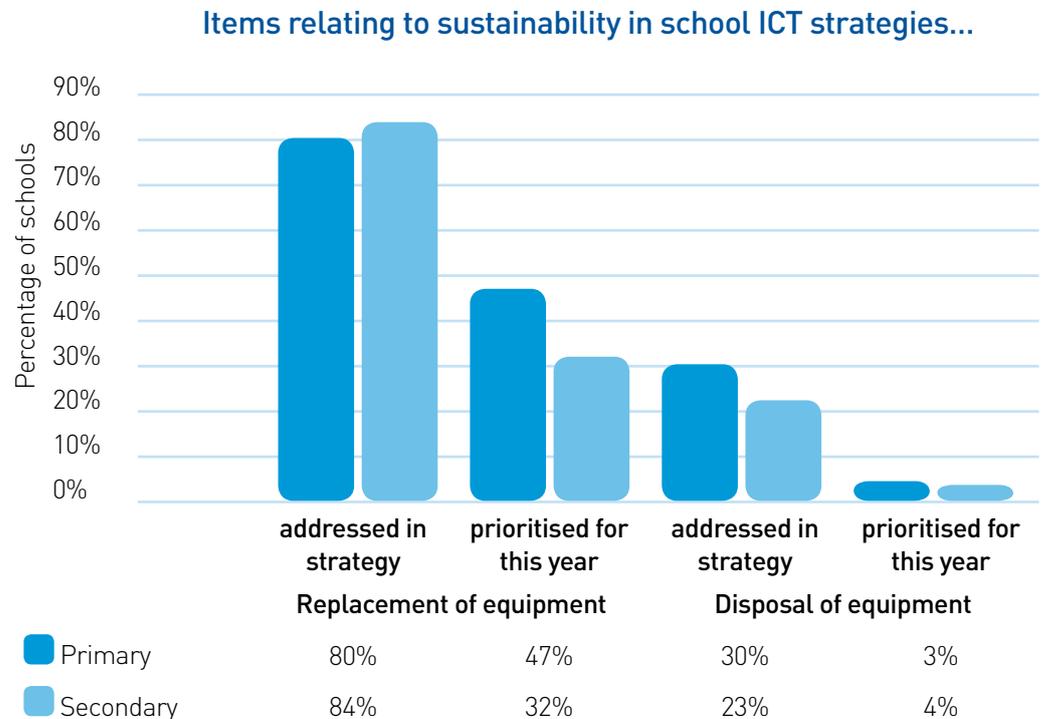
Teachers are also using digital resources in their teaching more often and appear reasonably satisfied with their fitness for purpose. Some 85 per cent of primary teachers and 73 per cent of secondary teachers rated curriculum software as quite good or very good (Smith *et al.*, 2008). However, while more curriculum resources have become available in recent years, fewer products are shortlisted by expert practitioners from an increased pool of entrants for the BETT awards. Some 23 per cent were shortlisted in 2008, down from 52 per cent in 2006. This suggests there may be issues both with the quality of resources available and with teachers' growing expertise in judging the quality of digital content.

**Number of BETT Awards entries shortlisted**



The trend towards increased use of digital resources can also be seen in further education. However, planning for digital resources tends to take place at practitioner level in 64 per cent of colleges. Planning at course or departmental level takes place in only 23 per cent of colleges. Only 33 per cent of practitioners use their college’s learning platform to upload and store digital resources. Part-time tutors are far less likely to do this than full-time staff, reflecting the pattern that part-time staff are much less likely to use technology to support teaching and learning (LSN, 2008).

Despite progress in relation to many aspects of infrastructure, schools’ capability to support mobile and personal access for learners is limited. For example, only 8 per cent of primary schools and 17 per cent of secondary schools reported that they offered access to mobile and handheld devices. Also, only 6 per cent of schools had wireless internet access everywhere on the campus. Some 14 per cent of secondary schools allowed use of students’ own devices in lessons, but only 4 per cent gave full permissions for students on their network (Smith *et al.*, 2008).



Consideration of the environmental sustainability of a school's and college's technology infrastructure is at a fairly early stage. For example, while schools and colleges often reported planning for the growth and replacement of their stock of technology, few reported planning for the safe disposal of obsolete equipment. In relation to purchasing of technology, 40 per cent of schools plan to use their local authority framework for technology purchases, enabling them to benefit from savings as a result of aggregation (Smith *et al.*, 2008).

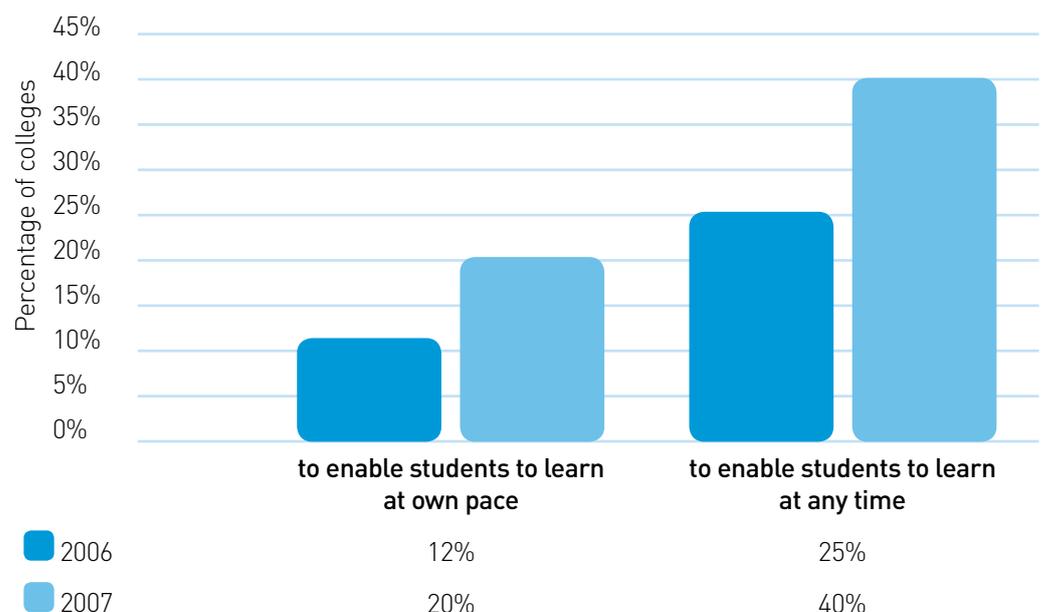
## 5. Improved personalised learning experiences

Using online learning to extend curriculum choice is fairly common in work-based learning (Overton *et al.*, 2007). However, this practice is not widespread in secondary schools. There are case study examples of the technology being used to support greater curriculum choice within 14–19 learning, and secondary school provision generally (Lewin *et al.*, 2008).

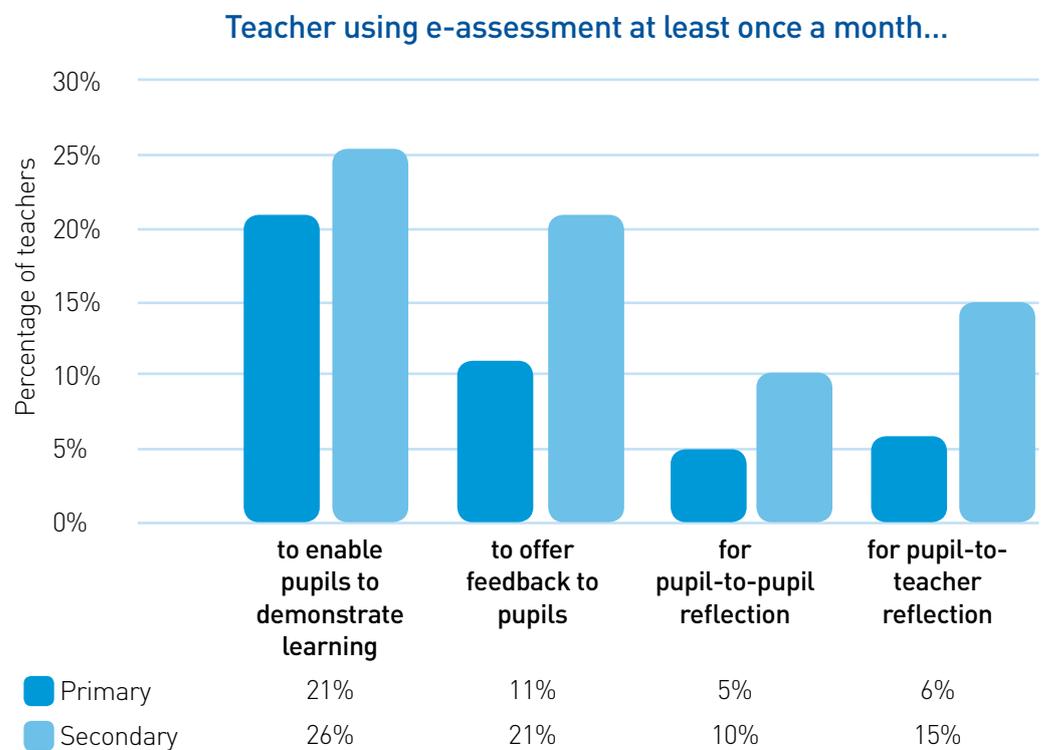
One example is Kingshurst City Technology College, which ran online learning weeks in science, enabling high-ability students to go further with their learning than they might otherwise. The Bridge Academy in Hackney offered 40 young people access to the 'Not School' remote learning service. It also ran its own 'Bridge Academy Online', which supported blended, task-focused learning within the academy. In the further education sector, St Helens College used a learning platform as a focus for hairdressing, music, ITQ and animal management courses. This provided an e-portfolio, access to resources and links, tests and assessment and communication forums (MILO, 2008).

Flexible online and blended learning in the provision of schools and colleges is at an early stage. Just 20 per cent of FE colleges, for example, reported that they used technology to enable learners to study at their own pace. However, learners do appear to be using technology independently to support studying where and when they choose, though this is unlikely to be fully flexible learning. Some 66 per cent of FE learners reported this in 2007. This, however, varied between 80 per cent of 16–18-year-olds and 53 per cent of those over 45 (GfK NOP, 2007b).

Use of ICT in all or most college programmes...



Again, real progress has been made in the use of technology to support more tailored and responsive assessment for learners. Some of this has also delivered efficiencies in the assessment of learning. This broad area includes recording and reporting of learner data; using diagnostic tools, interactive and online assessments; submitting work online; using e-portfolios; and self-and peer-evaluation. However, it is still an area with considerable scope for development.



In schools, technology tends to be used for reporting and recording assessment rather than more interactive forms of assessment. Some 76 per cent of secondary school teachers use technology to analyse or report on assessment data at least once a term. Nearly all teachers use some form of electronic reporting. However, only 11 per cent of primary teachers and 21 per cent of secondary teachers use technology to offer feedback to pupils (Smith *et al.*, 2008).

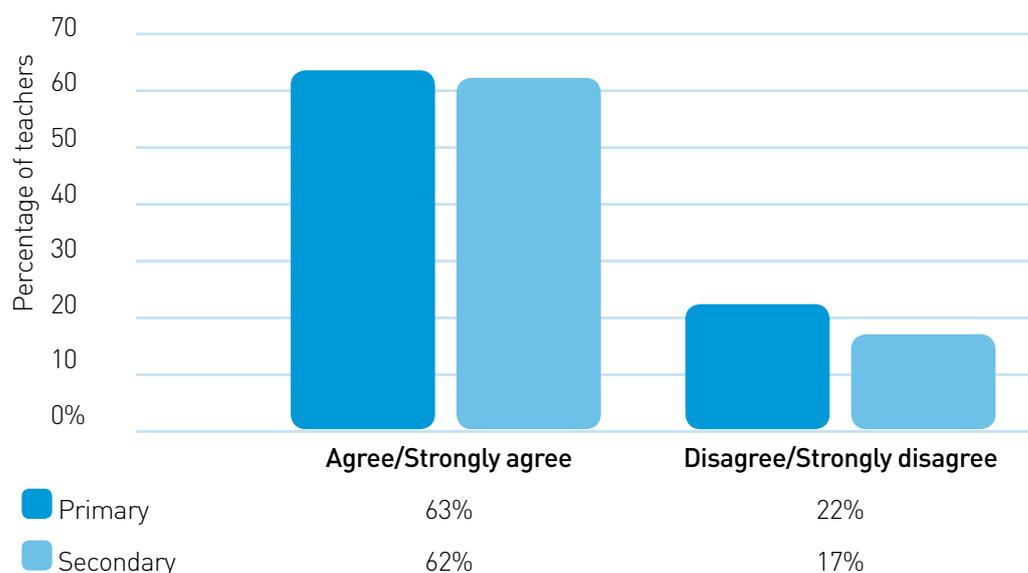
In recently 'turned around' schools, staff reported that technology played a key role in improving pupil achievement by enabling learners to evaluate their own work. Several schools used educational software which supported self-assessment (Hollingworth *et al.*, 2008).

Online assessment, particularly initial and diagnostic assessment, is more common in the FE sector. Some 31 per cent of colleges reported that they commonly use online assessment on many courses across the college, up from 12 per cent in 2006. Some 96 per cent of colleges reported making use of ICT for initial assessment. Some 16 per cent of FE practitioners reported using computer-marked assessment at least once a month, and a third of FE learners reported taking part in a computer-based test which counted towards their final mark (GfK NOP, 2008b).

The use of e-portfolios to support learning has increased, with 54 per cent of colleges reporting that they used e-portfolios for NVQ evidence, up from 30 per cent in 2006 (LSN, 2008). Some 20 per cent of FE students reported that an e-portfolio was a requirement on their course (GfK NOP, 2008b). However, qualitative evidence from work-based learning providers suggests that providers have difficulty identifying systems that fully meet their needs, and are not always convinced about the potential return from their initial and ongoing investment (Mackinnon, 2008).

Evidence continues to grow demonstrating the value of technology for learning. Around 80 per cent of teachers agree that technology has an impact on engagement in learning, and around 60 per cent reported that it enabled them to better support learners' diverse needs (Smith *et al.*, 2008).

**“ICT particularly helps me support the diverse learning needs of pupils”**

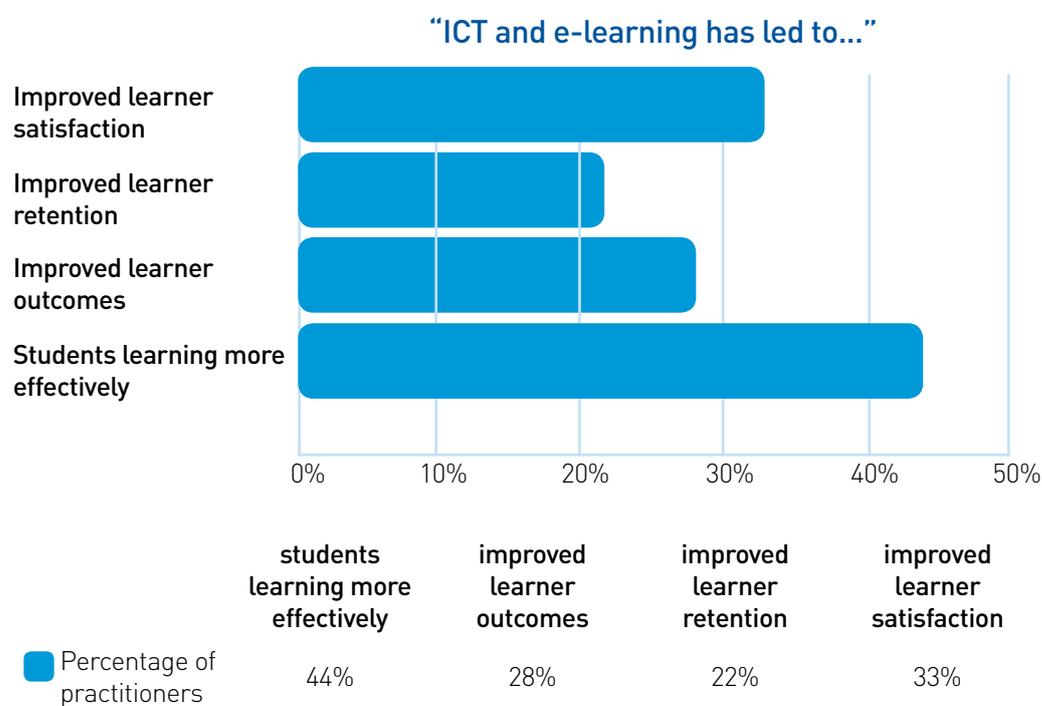


There is good evidence that technology plays an important part in supporting school improvement. A recent study found that, of 181 schools removed from Special Measures and Notice to Improve, 82 per cent of headteachers reported that technology had played a key role in their school's improvement, though the level of technology in the school was not a predictor of improvement. Some strategies for using technology in these schools included the use of information systems for monitoring and analysing learner achievement and progress; systems for managing and monitoring attendance and behaviour (lesson registration, parental alerting); greater use of technology to engage under-achieving pupils, especially creative and applied learning using technology; and supporting learner voice through online polls and forums (Hollingworth *et al.*, 2008).

The evaluation of projects in primary and secondary schools in Bristol and Wolverhampton offers further evidence. It has identified emerging practices with mobile personal technologies which appear to add significant value to learning. These are in the areas of boys and writing, revision for exams, and games-based testing and practice (McFarlane *et al.*, 2008).

The picture of impact from technology on quality of teaching and learning is positive. However, benefits in relation to deep learning and higher-order skills tends to be localised, and recognised good practice is as yet limited, as are related formal professional standards and skills. Finding ways to support innovation and transfer of practice is important for the future.

Fewer FE practitioners than school teachers report that technology supported improvements to learning. Some 44 per cent said that it led to students learning more effectively. However, FE learners were positive about the use of technology, but for supporting learning with a range of media rather than to replace face-to-face learning and teaching.



As with the school sector, there are good examples of practice in FE colleges and the wider skills sector which is improving learning. Using technology to support genuine improvements in quality of teaching and learning has generally been developing well in this sector. However, as with the school sector, recognition of good practice and professional standards is still limited. This practice needs to develop to ensure that learning benefits are delivered more consistently, and good practice is embedded across the sector.

## 6. Impact on national priorities

There is an increasing body of evidence on how technology can affect wider education priorities. These include raising achievement, narrowing achievement gaps, engaging disadvantaged and vulnerable learners, and improving capacity, quality and efficiency. In some of these areas evidence comes from examples of practice which are not embedded broadly. In other cases there is more general evidence of impact.

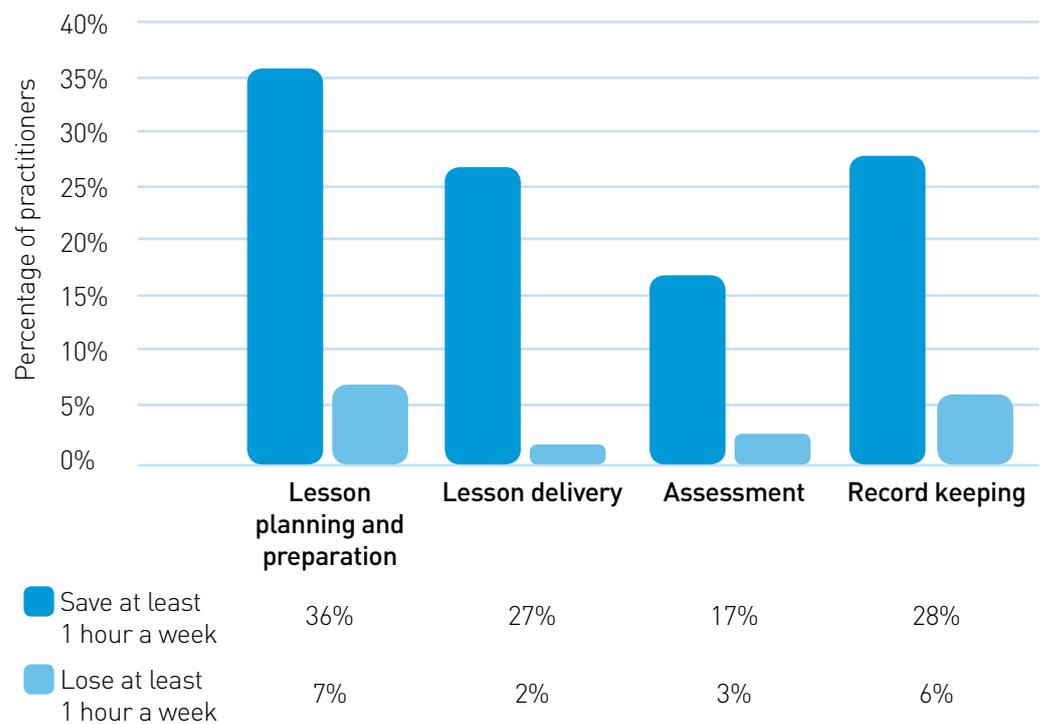
The strongest general impact of technology across education relates to improvements in efficiency, notably impact on the use of teachers' and practitioners' time. Studies have demonstrated that practitioners generally re-invest time they save into core tasks (PwC, 2004), thus quality benefits arise from this. Technology has delivered significant benefits to teachers in the use of their time. For example, overall around half of teachers who use technology for lesson planning report gains in time from use of technology, with just one in ten reporting losing time. Over 60 per cent of teachers report saving time reporting on pupil progress, with 8 per cent reporting losing time. A considerable proportion of those who say they save time report on average saving more than two hours per week (Smith *et al.*, 2008).

In addition, the number of teachers saying they have lost time from using technology has fallen – in the case of lesson planning, for example, halving from 21 to 11 per cent in the last year. This is an important finding, demonstrating that benefits in terms of efficiency take time but are achievable. Teachers do not generally report time savings from the use of learning platforms, however, but these are at an early stage of use within many schools.

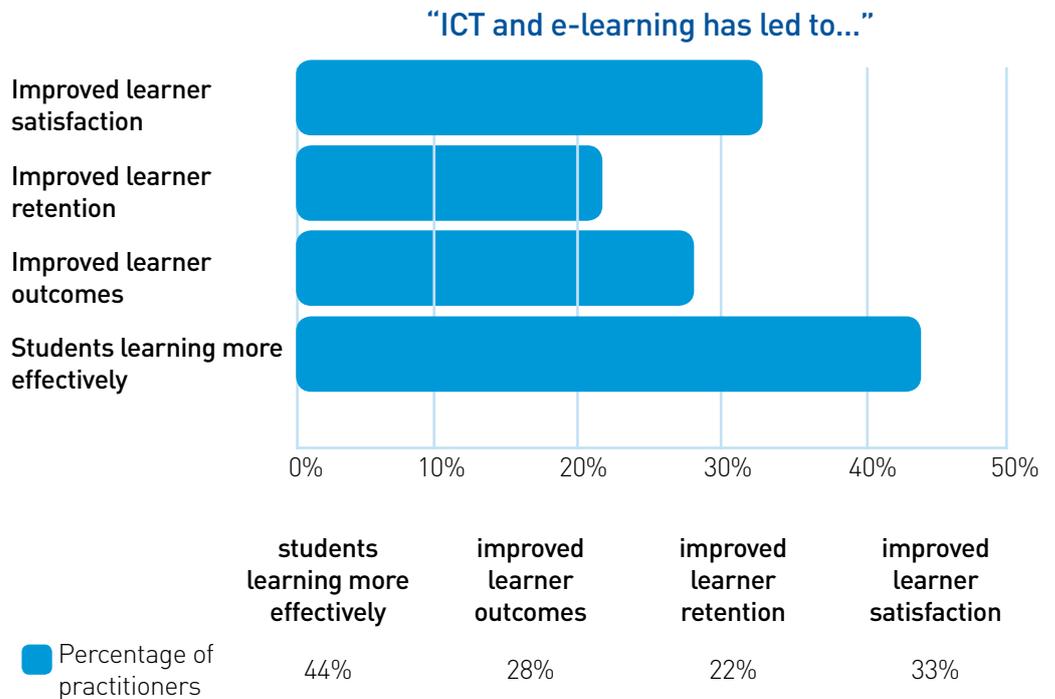
The pattern in FE is broadly the same as in schools. Lesson planning and preparation and record keeping represent the areas in which technology delivers most time savings, with 36 per cent of FE practitioners reporting that use of technology saved them time in lesson planning, and 64 per cent of FE practitioners reporting that the use of online resources saved them time (LSN, 2008).

Work-based learning providers who adopt e-learning often do so as a means of managing the costs of training and professional development. Thus benefits in terms of capacity and efficiency are often requirements of their introduction. Benefits of this kind are in fact confirmed by Overton *et al.* (2007), who found that eight in ten employers said e-learning provided an accessible, flexible and cost-effective method of delivering training, and enabled organisations to respond rapidly to changing business needs with appropriate skills development. There was also evidence that it increased morale and professional confidence among employees.

### Impact of technology on practitioners' time



General studies of the impact of technology on achievement and attainment are planned by Becta for 2009. At the moment we have to rely on previous studies, such as the interactive whiteboard evaluations and the 2002 Impact2 study (Harrison *et al.*, 2002). However, reports from practitioners and providers also offer an indication of the value of technology in supporting the improved attainment of learners. As the previous section demonstrates, those views are generally positive, but tend to be more positive in relation to the learning experience than improvements to outcomes. Nonetheless, 30 per cent of FE colleges, for example, report that technology is ‘a great deal of help’ to improved learning outcomes.



In the work-based learning arena, e-learning appears to support delivery of a wide range of skills, including communications, leadership and management, foreign language training, IT (both for technology professionals and those who use IT in their day-to-day jobs), health and safety and a wide range of company-specific programmes (Overton *et al.*, 2007). The extent of use of e-learning programmes of this kind across employment sectors is difficult to gauge, however. Indications suggest that up to 35 per cent of work-based learning providers can be classified as e-enabled, but around one quarter of providers are unlikely to be realising the benefits of technology-supported learning (MacKinnon, 2008).

Research identifies a clear role for technology in overcoming disadvantage and disaffection in young people, but also a large degree of unmet potential in this area (Bradbrook *et al.*, 2008). Though there are many examples of projects which have made use of technology for supporting disadvantaged learners, most projects are currently achieving isolated impact. However, existing projects demonstrate clear benefits in relation to enhancing achievement, confidence and promoting positive attitudes towards learning (Russell and McGuigan, 2007), providing successful alternatives to the school environment, enabling confidential support and advice, and sharing information and experiences through peer-to-peer networking.

Evidence in relation to other priorities is as yet limited, suggesting the need for further evaluative studies and impact research. More evidence is needed to understand, for example, the links between parents' engagement in children's learning and the use of technology-based information and communication channels (for example, parent gateways). Similarly, little is currently known about the impact on the well-being of children and young people from increased integration of professional information systems at a local level. These and other areas will provide a focus for future Becta research.

## References

- Aubrey, C. and Dahl, S. (2008), *A review of the evidence on the use of ICT in the Early Years Foundation Stage*, Coventry, Becta.  
[http://partners.becta.org.uk/index.php?section=rh&catcode=\\_re\\_rp\\_02&rid=14901](http://partners.becta.org.uk/index.php?section=rh&catcode=_re_rp_02&rid=14901)
- Becta (2007), *Harnessing Technology Review 2007*, Coventry, Becta.  
[http://partners.becta.org.uk/index.php?section=rh&catcode=\\_re\\_rp\\_02\\_a&rid=14409](http://partners.becta.org.uk/index.php?section=rh&catcode=_re_rp_02_a&rid=14409)
- Becta (2008a), *Harnessing Technology: Next Generation Learning 2008-14*, Coventry, Becta.  
<http://publications.becta.org.uk/display.cfm?resID=37348>
- Becta (2008b), *The progress of e-enablement in FE and sixth-form colleges*, Coventry, Becta.
- Bradbrook, G., Alvi, I., Fisher, J., Lloyd, H., Moore, R., Thompson, V., Helsper, E. and Livingstone, S. (2008), *Meeting their potential: the role of technology in overcoming disadvantage and disaffection in young people*, Coventry, Becta.  
[http://partners.becta.org.uk/index.php?section=rh&catcode=\\_re\\_rp\\_02&rid=14771](http://partners.becta.org.uk/index.php?section=rh&catcode=_re_rp_02&rid=14771)
- Butt and Cebulla (2006), *E-maturity and school performance – a secondary analysis of COL evaluation data*, Coventry, Becta.
- Condie, R., and Munro, B. with Seagraves, L. and Kenesson, S. (2006), *The impact of ICT in schools – a landscape review*, Coventry Becta.  
[http://partners.becta.org.uk/index.php?section=rh&&catcode=\\_re\\_rp\\_ap\\_03\\_a&rid=13836](http://partners.becta.org.uk/index.php?section=rh&&catcode=_re_rp_ap_03_a&rid=13836)
- Cranmer, S. Potter, J. and Selwyn, N. (London Knowledge Lab) (2008), *Learners and technology: 7-11*, Coventry, Becta.  
[http://partners.becta.org.uk/index.php?section=rh&catcode=\\_re\\_rp\\_02&rid=14837](http://partners.becta.org.uk/index.php?section=rh&catcode=_re_rp_02&rid=14837)
- Crook, C. and Harrison, C. (2008), *Web 2.0 Technologies for Learning at Key Stages 3 and 4*, Coventry, Becta.  
[http://partners.becta.org.uk/index.php?section=rh&&catcode=\\_re\\_rp\\_02&rid=14543](http://partners.becta.org.uk/index.php?section=rh&&catcode=_re_rp_02&rid=14543)
- Dolton, P., Makepeace, G. and Robinson, H. (Centre for the Economics of Education) (2007), *Use IT or lost IT? The impact of computers on earnings*, London, DfES.  
[www.dcsf.gov.uk/research/data/uploadfiles/ACF51F.pdf](http://www.dcsf.gov.uk/research/data/uploadfiles/ACF51F.pdf)
- Dutton, W.H. and Helsper, E. J. (2007), *The internet in Britain 2007*, Oxford, OxlS  
[www.oii.ox.ac.uk/microsites/oxis/publications.cfm](http://www.oii.ox.ac.uk/microsites/oxis/publications.cfm)
- EdComs (2008), *Headspace national survey of headteachers*, London, Guardian Newspapers Ltd and Edcoms Ltd
- GfK NOP Social Research (2007a), *Learner e-maturity report*, Coventry, Becta.  
[http://partners.becta.org.uk/index.php?section=rh&catcode=\\_re\\_rp\\_02\\_a&rid=14749](http://partners.becta.org.uk/index.php?section=rh&catcode=_re_rp_02_a&rid=14749)

- GfK NOP Social Research (2007b), *Survey of FE learners and e-learning*, Coventry, Becta.  
[http://partners.becta.org.uk/index.php?section=rh&catcode=\\_re\\_rp\\_02&rid=14749](http://partners.becta.org.uk/index.php?section=rh&catcode=_re_rp_02&rid=14749)
- Harrison, C., Comber, C., Fisher, T., Haw, K. Lewin, C., Lunzer, E., McFarlane, A., Mavers, D., Scrimshaw, P., Somekh, B. and Watling, R. (2002), *Impact2: the impact of information and communication technologies on pupil learning and attainment*, Coventry, Becta.
- Hewton, J. and Mortimer, E. (2008), *Harnessing Technology Local Authorities Survey Report*, Coventry, Becta.  
[http://partners.becta.org.uk/index.php?section=rh&catcode=\\_re\\_rp\\_02&rid=15985](http://partners.becta.org.uk/index.php?section=rh&catcode=_re_rp_02&rid=15985)
- Hollingworth, S., Allen, K., Hutchings, M., Abol Kuyok, K. and Williams, K. (IPSE) (2008), *Technology and school improvement: reducing social inequity with technology?* Coventry, Becta.  
[http://partners.becta.org.uk/index.php?section=rh&catcode=\\_re\\_rp\\_02&rid=14541](http://partners.becta.org.uk/index.php?section=rh&catcode=_re_rp_02&rid=14541)
- JISC (2008), *Information Behaviour of the Researcher of the Future*  
[www.jisc.ac.uk/whatwedo/programmes/resourcediscovery/googlegen.aspx](http://www.jisc.ac.uk/whatwedo/programmes/resourcediscovery/googlegen.aspx)
- Lewin, C., Whitton, N., Cummings, J., Roberts, B., Saxon, D., Somekh, B. and Lockwood, B. (2008), *MILO: Models of innovative learning online at Key Stage 3 and 14-19*, Coventry, Becta.
- LSN (2008), *Measuring e-maturity in the FE sector: a research report prepared by the Learning and Skills Network*, Coventry, Becta.  
[http://partners.becta.org.uk/index.php?section=rh&catcode=\\_re\\_rp\\_02&rid=14533](http://partners.becta.org.uk/index.php?section=rh&catcode=_re_rp_02&rid=14533)
- Mackinnon Partnership (2008), *Measuring e-maturity amongst work-based learning providers*, Coventry, Becta. [http://partners.becta.org.uk/index.php?section=rh&catcode=\\_re\\_rp\\_02&rid=14535](http://partners.becta.org.uk/index.php?section=rh&catcode=_re_rp_02&rid=14535)
- McFarlane, A., Triggs, P., and Wan, Y. (2008), *Researching mobile learning: interim report*, Coventry, Becta.  
[http://partners.becta.org.uk/index.php?section=rh&catcode=\\_re\\_rp\\_02&rid=14204](http://partners.becta.org.uk/index.php?section=rh&catcode=_re_rp_02&rid=14204)
- Moss, G., Jewitt, C., Levañiç, R., Armstrong, V., Cardini A., Castle, F. (2007), *The Interactive Whiteboards, Pedagogy and Pupil Performance Evaluation: An Evaluation of the Schools Whiteboard Expansion (SWE) Project*: London Challenge. Institute of Education, University of London.

Northouse, P. (2000), *Leadership theory and practice*, London, Sage.

Ofsted (2008), *ICT in primary and secondary schools*, London, Ofsted.

<http://ofsted.gov.uk/Ofsted-home/Publications-and-research/Education/Curriculum/Information-and-communication-technology/Primary/ICT-in-primary-and-secondary-schools-Ofsted-s-findings-2005-07>

Overton, L., Hills, H. and Dixon, G. (2007), *Towards maturity: Looking at the impact of e-learning in the workplace*, London, e-Skills UK.

[www.e-skills.com/Work-based-e-learning/1411](http://www.e-skills.com/Work-based-e-learning/1411)

Peters, M., Seeds, K., Goldstein, A. and Coleman, N. (BMRB Social Research), (2007), *Parental Involvement in Children's Education*, London, DCSF.

[www.dcsf.gov.uk/research/data/uploadfiles/DCSF-RR034.pdf](http://www.dcsf.gov.uk/research/data/uploadfiles/DCSF-RR034.pdf)

Populus (2008), *Poll of parents*, Coventry, Becta.

[http://schools.becta.org.uk/index.php?section=oe&catcode=ss\\_es\\_fam\\_onrep\\_03&rid=15691](http://schools.becta.org.uk/index.php?section=oe&catcode=ss_es_fam_onrep_03&rid=15691)

PricewaterhouseCoopers (PwC)(2004), *Using ICT in Schools: Addressing teacher workload issues*, London, DfES. <http://www3.dfes.gov.uk/research/data/uploadfiles/RR595.pdf>

Russell, T. and McGuigan, L. (2007), *An exploration of digital creativity used to engage and motivate hard to reach learners in behavioural, emotional and social difficulties (BESD) schools*, Coventry, Becta.

[http://partners.becta.org.uk/index.php?section=rh&catcode=\\_re\\_rp\\_02&rid=14761](http://partners.becta.org.uk/index.php?section=rh&catcode=_re_rp_02&rid=14761)

SERO Consulting (2008), *E-maturity in personal and community development learning: review report*, Coventry, Becta.

[http://partners.becta.org.uk/index.php?section=rh&catcode=\\_re\\_rp\\_02&rid=14532](http://partners.becta.org.uk/index.php?section=rh&catcode=_re_rp_02&rid=14532)

Smith, P., Rudd, P. and Coghlan, M. (NFER) (2008), *Harnessing Technology: Schools Survey 2008 Report 1: Analysis*, Coventry, Becta.

[http://partners.becta.org.uk/index.php?section=rh&catcode=\\_re\\_rp\\_02&rid=15952](http://partners.becta.org.uk/index.php?section=rh&catcode=_re_rp_02&rid=15952)

Somekh, B., Haldene, M., Jones, K., Lewin, C., Steadman, S., Scrimshaw, P., Sing, S., Bird, K., Cummings, J., Downing, B., Harber Stuart, T., Jarvis, J., Mavers, D., and Woodrew, D. (2007a), *Evaluation of the Primary Schools Whiteboard Expansion Project. Report to the Department for Education and Skills*. Centre for ICT, Pedagogy and Learning Education & Social Research Institute, Manchester Metropolitan University.

[http://partners.becta.org.uk/index.php?section=rh&catcode=\\_re\\_rp\\_02&rid=14422](http://partners.becta.org.uk/index.php?section=rh&catcode=_re_rp_02&rid=14422)

Somekh, B., Underwood, J., Convery, A., Dillon, G., Jarvis, J., Lewin, C., Mavers, D., Saxon, D., Sing, S., Steadman, S., Twining, P. and Woodrow, D. (2007b), *Evaluation of the ICT Test Bed Project Final Report*, Coventry, Becta.



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