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Harnessing Technology Schools Survey 2007: Analysis and key findings

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Contents

Summary

This analysis highlights some of the key findings of the 2007 Harnessing Technology Schools Survey, a nationally representative survey of the uptake of ICT in schools in England. The report of the survey was published in July 2007 and is available via the Becta website[1].

The survey highlights the high levels of use of interactive whiteboards across the country, and shows that schools are in the early stages of the adoption of learning platforms. It also begins to shed some light on the way ICT, education and the wider social context surrounding these interact with each other.

The overarching finding is that while ICT resources are now commonplace in many schools across England, this does not automatically lead to pedagogical innovation – human factors are just as important as the provision of technology itself.

Access to technology

Computer to pupil ratios have stabilised at around 1 computer (either laptop or desktop) to every 6.6 pupils in primary schools, and 1 to every 3.6 pupils in secondary schools. After a continuous growth in computer:pupil ratios since 2003, ratios seem to be plateauing at what could represent an 'optimum ratio'. The 2004 targets set by the Department for Education and Skills (1 to 8 for primary and 1 to 5 for secondary schools[2]) have now been exceeded.
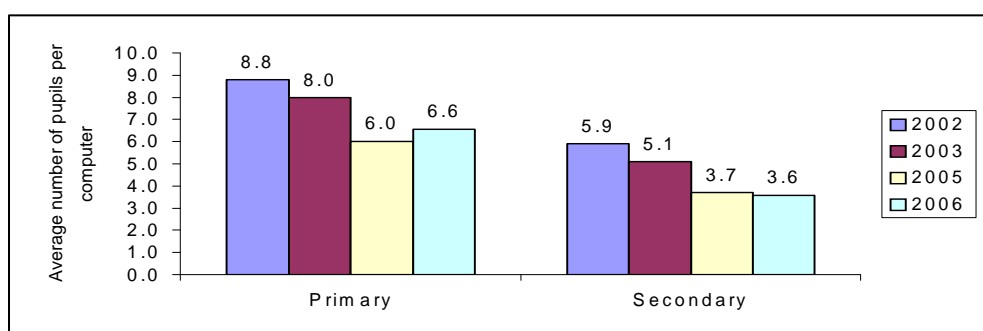

Fig. 1: Computer to pupil ratios from 2002 until 2006

The stabilisation of computer to pupil ratios suggests that the focus of educational ICT strategies in schools has moved from 'counting boxes' towards a more integrated view of technology within a whole-school improvement strategy.

This does not mean that schools stop investing in computers, however; whereas figures suggest that quantities (ie ratios) are being achieved, the focus seems to shift to nature and type of equipment. Computers are being upgraded or replaced with

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[1] See: http://partners.becta.org.uk/index.php?section=rh&catcode=_re_rp_02&rid=14110
[2] NGfL & DfEE (2001). Curriculum Online – a Consultation Paper. London: DfEE

other types of computers. For example, a majority of schools identified computers as priorities for future expenditure, although desktops were less likely to be a high priority for expenditure than other forms of technology. Laptops were particularly likely to be a high priority for primary schools. Furthermore, most secondary schools, and half of primary schools, were making at least some use of wireless networks, putting a higher priority on laptops and other forms of mobile technology.

To put these figures in an international perspective, a 2006 European Commission-commissioned survey of the Directorate General for Information Society and Media found an average computer:pupil ratio of 1 to 9 across the EU. According to the report[3], overall (primary and secondary) ratios in the Nordic countries of Denmark and Norway, and in The Netherlands are highest, closely followed by the UK and Luxembourg. The pattern that secondary schools are better equipped with computers than primaries is also a Europe-wide one.
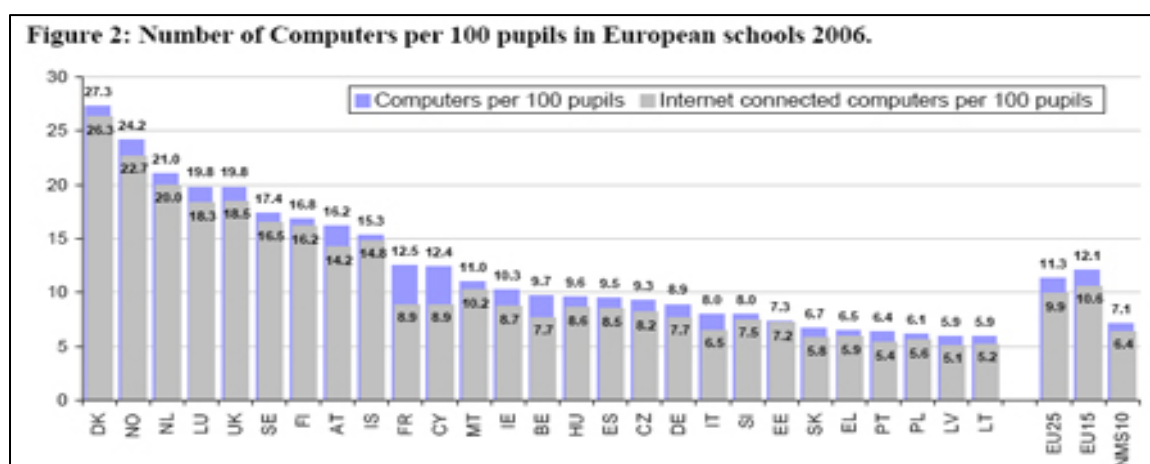

Fig. 2: Number of Computers per 100 pupils in European schools in 2006
(from: http://insight.eun.org/ww/en/pub/insight/policy/policies/benchmarking2006.htm)

Embedding technologies

The numbers of interactive whiteboards available in schools have risen substantially since 2002: 100% of primary schools and 98% of secondary schools have now invested in them. Not only are interactive whiteboards widely available in schools, they are also much used by teachers, with most primary and the majority of secondary teachers using them in half or more lessons, more frequently than other types of digital learning resource. Display technologies were also highly rated in terms of fitness for purpose by teachers, indicating that interactive whiteboards are not only present and widely used in most schools, but also generally considered useful.

[3] European Commission Directorate General for Information Society and Media (2006). Benchmarking Access and Use of ICT in European Schools 2006 Final Report from Head Teacher and Classroom Teacher Surveys in 27 European Countries. Bonn: Empirica

Learning platforms, on the other hand, are still some way off becoming established in schools. One in ten primary schools and around half of secondary schools operated a learning platform by the end of 2006. Where they had been adopted, learning platforms were widely used by teachers for managing digital learning resources, lesson planning and information on pupil progress. There were some indications that where a learning platform is in place in secondary schools, it facilitated the use of digital learning resources in lessons. Investment in learning platforms was a priority for most secondary schools and more than half of primary schools.
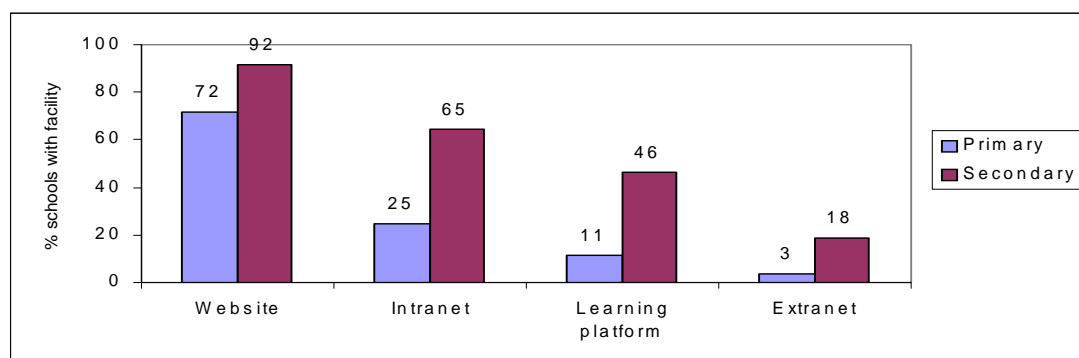

Fig. 4: Availability of resources in schools

However, it is not simply a case that learning platforms are at an earlier stage in their implementation in schools than interactive whiteboards – the two technologies are fundamentally different. Whereas the interactive whiteboard facilitates a more traditional 'chalk and talk' pedagogy, the learning platform is potentially a more transformative technology. The learning platform can impact upon a wide range of aspects of education and is therefore an intellectually demanding innovation. The learning platform, in fact, allows several aspects of educational ICT to link into each other: financial planning, teacher management, student monitoring (achievement and behaviour), learning and teaching software, intra-school communication and home-school links.

Changing pedagogy

While the survey confirms that the technological infrastructure is largely in place in schools, there is less evidence that ICT is being used to transform pedagogy – in other words, it is still largely being used to support or enhance traditional ways of teaching. There are several accounts of innovative practice, but they do not necessarily relate to innovation in the classroom or teaching and learning in general. Nonetheless, a majority of teachers used digital resources to plan lessons, and digital resources made up a higher proportion of resources used for lesson planning, on average, in 2006 than in 2005.

However, it appears that diversity in how teachers use ICT in teaching and for learning is still limited in the majority of cases. Most primary teachers and half of secondary teachers used ICT for whole-class activities in half or more lessons, but

only a minority used it that frequently for pupils working in small groups or alone. The dominance of whole-class activities may reflect use of display technologies. The use of digital resources for developing pupils' skills tended to focus on gathering information, particularly in secondary schools, where most teachers 'rarely or never' used ICT for pupils for analysing information, being creative, problem solving or working with others.

Only a minority of teachers encouraged the use of social software by pupils. The use of technology for assessment activities (e-assessment) by teachers was also limited, beyond using technology to enable pupils to demonstrate their learning. Such uses of technology – to enable assessment and facilitate collaboration with peers – are specifically cited in the *Report of the Teaching and Learning in 2020 Review Group* (also known as the Gilbert Review) as ways in which technology may contribute to personalising learning[4]. However, in general personalised learning was a high priority for future expenditure in most secondary and half of primary schools, suggesting that further progress in this area is likely.

Capacity and capability

The survey found that in secondary schools just over half of teachers had received training in ICT, indicating that not all secondary teachers were accessing the development needed to enable them to feel effective in using technology. Most primary teachers had received training and were more likely than secondary teachers to perceive themselves as effective in using technology.

In particular, more than eight out of ten teachers felt they needed further development in using classroom technology with pupils despite training being widely available, both in schools (86% secondary, 85% primary) and off-site (77% secondary, 87% primary). The quality of the training may be an issue – only 47% of secondary school teachers rated the quality of the training they have had as 'very good' or 'good'. Training for teachers is one of school leaders' top priorities for future spending, but the results of this survey would suggest that school leaders would benefit from advice on the most effective models of ICT training.

Technical support continues to be a key issue for schools, and was a priority for expenditure for most primary and secondary schools. Most secondary schools had a dedicated technician, whereas not more than a fifth of primary schools did – provision for technical support was either shared with other schools, a local authority support service, or the responsibility of a teacher or ICT co-ordinator. Primary schools were thus reliant on external support, with most of them outsourcing the technical support services. Despite these differences in the provision of technical support, similar proportions of primary and secondary teachers reported technical problems with computers used by pupils, as well as problems with the network. In

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[4] Gilbert, C. et al. (2006). 2020 Vision. Report of the Teaching and Learning in 2020 Review Group. Nottingham: DfES, p. 27

general, schools with the highest levels of equipment are also those with the greatest level of technical support.

Technical problems prevented delivery of lessons at least occasionally for the majority of teachers - indeed, evidence suggests that technical failure is one of the main frustrating factors of the success of ICT in the classroom[5].

Perceived impacts on learners

According to a majority of teachers in both primary and secondary schools, the application of ICT impacts positively on both achievement and motivation of learners. Most primary teachers agree that ICT can have a positive impact on motivation at Key Stages 1 and 2 (94% respectively 98%). Most secondary teachers also agreed that ICT could have a positive impact on motivation with pupils in Key Stage 3 (91%) and 4 (88%). Perceptions of positive impacts on attainment were slightly lower, but still a majority of primary teachers found that ICT had a positive impact on attainment in both Key Stage 1 (74%) and 2 (79%). Secondary teachers were slightly less likely than primary teachers to think that ICT could have positive impacts on attainment in Key Stage 3 (67%) and 4 (69%) respectively.

Views of positive impacts on both motivation and attainment were roughly comparable for boys and girls (although, over the whole, marginally higher for boys).
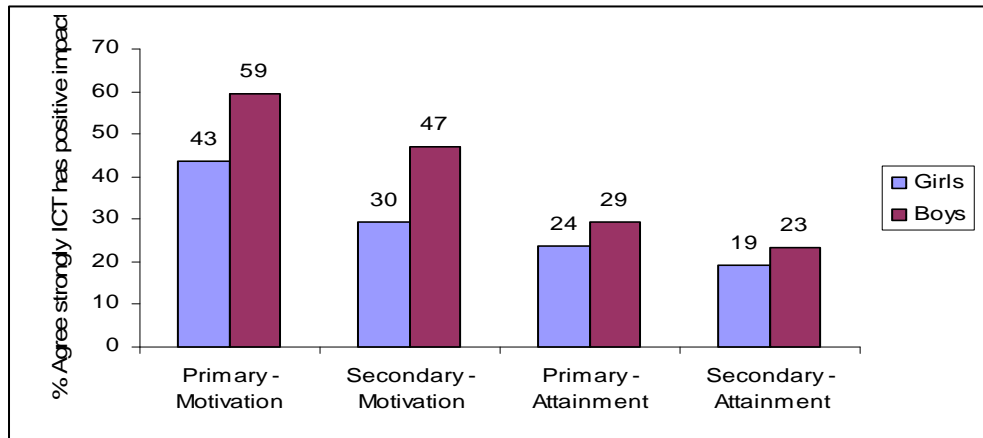

Fig. 6: Perceived impact of ICT on learners

Efficiency savings

In addition, teachers were generally positive about the extent to which ICT improved their productive time. More than half of primary teachers who used online resources and interactive whiteboards, for example, felt that using these technologies saved

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[5] Johnson, Genevieve M.1; Howell, Andrew J.1; Code, Jillianne R. (2005). Online discussion and college student learning: toward a model of influence. Technology, Pedagogy and Education, Volume 14, Number 1, March 2005, pp. 61-76(16). Publisher: Taylor and Francis Ltd

them time. This figure was slightly lower for secondary teachers at 49% for using online. Reported teacher time savings by means of using ICT resources, seemed associated with more frequent use of such resources in lessons. This was true for both primary and secondary teachers.

The area in which use of ICT resources seemed to save teachers most time is lesson planning, although a greater proportion of primary than secondary teachers felt this. Almost a quarter of primary teachers felt using ICT resources saved them over two hours per week in lesson planning. The resources teachers felt would save them most time in the future were interactive whiteboards and online resources.

Sources of advice and support

Despite recent changes in policy moving control of the majority of ICT budgets from local authorities to schools, local authorities are still a significant partner in providing information and advice, and assisting with procurement of ICT for primary schools. Most primary and secondary schools cited the local authority as a source of information and advice influencing the school's e-learning strategy. While teachers mainly relied on sources within the school for advice on using ICT, a fifth of primary teachers sought advice from the local authority. Local authorities were also used as a source of technical support by primary schools. Three quarters of primary schools purchased internet services through the local authority and a third purchased ICT equipment through them.

Just under half primary schools' leaders and over half secondary schools' leaders turn to Becta for advice to help them formulate their ICT strategy. However, the vast majority teachers indicate that they do not use Becta's information and advice on the use of ICT (2% of primary teachers mentioned Becta, and 7% of secondary teachers did).

Engaging with parents

Recent Becta policies[6] emphasise the importance of parental engagement with learners' education, and identify increased home-school links as a means to contribute to this. This links in with a broader strategy to make ICT in education more 'demand'-driven. The notion as such that parental engagement is crucial in stimulating learner achievement is widely accepted[7]. As technology can facilitate home-school communications, this may indirectly stimulate increased learner achievement.

The survey findings illustrate that this use of technology is being explored by at least some schools. For example, in half of cases where extranets are available, they are

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[6] Becta (2008) Harnessing Technology: Next Generation Learning 2008-14:
http://publications.becta.org.uk/display.cfm?resID=37348

[7] See, eg: University of Warwick. Interim Report: EPRA Project. See:
http://www.schoolsnetwork.org.uk/uploads/documents/Interim%20report_124812.doc

accessible to parents – however, only a few schools have an extranet. Most schools do have a website, however, and in almost half of cases these contain resources for parents. Access to schools networks is almost never available to parents, but with the introduction of the learning platform, this may change. Schemes such as Computers for Pupils will further exploit this potential by providing access to ICT resources at learners' homes, with the secondary aim of also improving parents' access to technology.
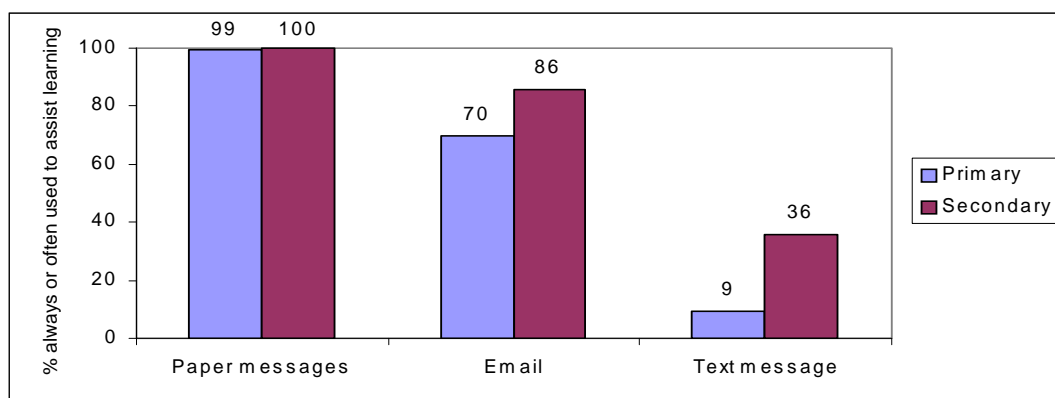

Fig. 7: Communications with parents

The survey found that although many schools use email frequently in their communications with parents, almost all continue to use paper-based mail as well. This may indicate a transitional situation, and one that may well change with the further roll-out of Computers for Pupils and the Home Access scheme.

Key findings

1. Computer to pupils ratios seem to have stabilised in schools, reflecting a possible optimum.

    a. Primary schools have an average pupil-to-computer ratio of 6.6:1, while the average ratio in secondary schools is 3.6:1. These ratios are similar to those seen in the third Curriculum Online study in 2005.

    b. Levels of satisfaction with the quantities of resources available are generally high amongst primary ICT respondents.

2. Whereas numbers of computers in schools seem to have reached a saturation-level, the nature and type of the devices are still being revised, and priorities seem to shift from desktop computers to mobile devices (laptops).

    a. Laptops are more likely than other forms of hardware to be rated as a high priority for investment by primary schools with 37% saying they were a high priority and 40% a medium priority.

b.Similar proportions of secondary school leaders rate laptops (46%) and desktop computers (38%) as high priorities.

c.Since the third Curriculum Online survey in 2005, the number of primary schools saying they made at least some use of wireless technology has risen from 32% to 50%.

3.Interactive whiteboards were implemented successfully.

a.Almost all primary schools report having access to interactive whiteboards (100%) with an average of eight interactive whiteboards per school. The majority of secondary schools report having access to interactive whiteboards (98%), with an average of 22 whiteboards per school.

b.Primary teachers tend to make frequent use of ICT resources in lessons with most (86%) using display technologies in at least half of lessons. Display technologies are used in at least half of lessons by nearly two thirds of secondary teachers.

c.Interactive whiteboards are felt to save time by 55% of primary teachers, with 16% reporting saving more than two hours while 12% felt they lost time. Similar proportions of secondary teachers feel they saved time by using interactive whiteboards (44%), with 16% saying they saved more than two hours, while 17% feel that they lost time by using interactive whiteboards.

d.Amongst primary ICT respondents, satisfaction with interactive whiteboards is particularly high, with almost all schools rating them quite or very good in terms of fitness for purpose (99%). Amongst secondary ICT respondents, satisfaction ratings are also very high for interactive whiteboards, with 95% rating them as either quite or very good.

4.Learning platforms are in the early stages of adoption in schools, especially in primary schools.

a.A learning platform could be found in only one-in-ten primary schools but in nearly half of secondary schools.

b.More than a quarter (26%) of primary schools rate learning platforms as a high priority for investment. Among secondary schools, learning platforms are a high priority for the majority of school leaders with 57% rating learning platforms a high priority.

5.The presence of ICT in schools has not yet transformed education.

a. Most primary teachers use ICT in lessons for activities involving the whole class with 80% saying they did so in half or more lessons. Secondary teachers are less likely than primary teachers to use ICT frequently for activities involving the whole class but still use it in this way more often than for small group or individual work.

b. The most common way in which primary teachers use ICT with pupils is for gathering information with over a quarter (27%) saying that they did this in half or more lessons and 56% in less than half of lessons. Secondary teachers are less likely than primary teachers to use ICT to help pupils develop particular skills. With the exception of 'gathering information', fewer than half of secondary teachers reported that they used ICT to help pupils learn in the ways listed in at least some lessons.

c. About four-fifths (79%) of secondary schools were reported by the ICT respondent to encourage use of e-portfolios. In most cases their use was said to be encouraged for 'some pupils' (55% overall) rather than 'all pupils' (23%).

6. In teachers' perception, use of ICT impacts positively on learner motivation and attainment.

a. Most primary teachers agree that ICT can have a positive impact on motivation at Key Stages 1 and 2. Most secondary teachers agreed that ICT can have a positive impact on motivation with Key Stage 3 pupils (91%) and Key Stage 4 pupils (88%).

b. 74% of primary teachers believe that ICT has a positive impact on attainment at Key Stage 1, and 79% at Key Stage 2. More than two thirds (67%) of secondary teachers agree that ICT can have a positive impact on attainment at Key Stage 3 and a similar proportion agree it can impact positively on attainment at Key Stage 4 (69%).

7. A majority of teachers feel using ICT saves them time.

a. More than half of primary teachers who use online resources and interactive whiteboards feel that they saved time using these resources. Almost half (49%) of secondary teachers who use online resources report that using these resources saves them time, with 11% reporting that they save more than two hours per week.

b. The majority of primary teachers expect to save time by using online resources and interactive whiteboards in the next 12 months. More than half (53%) of secondary teachers expect to save time by using online resources while 12% believe they would lose time by doing this.

8. Authorities play an important role in supporting ICT in schools, particularly at primary level.

   a. School leaders were asked about sources of information and advice that influenced the school's e-learning strategy. The local authority is the most common source of information and advice, used by 94% of primary schools and 83% of secondary schools.

   b. The local authority is used as a source of advice by more than a fifth (22%) of primary teachers and 11% of secondary teachers. Five per cent of primary teachers say that the local authority is the source of advice they use most often.

   c. Hardware is purchased through the local authority by almost a third (32%) of primary schools; just over a third (34%) purchase network equipment and cabling through the local authority. The local authority is used by only a small minority of secondary schools for purchasing equipment (11% for hardware and 9% for network equipment).

   d. Both primary (64%) and secondary schools (46%) most commonly use a local authority managed firewall

9. There is a need for training among teachers, to exploit the possibilities of ICT for teaching and learning.

   a. Eighty per cent of primary teachers and 82% of secondary teachers say they need development in using classroom technology with pupils, while similar proportions (85% primary and 81% secondary) say they need development in supporting pupils' use of technology.

   b. Around three quarters of teachers (75% primary and 77% secondary) feel they need 'a little' or 'a lot' of development in using particular software packages.

   c. Creating electronic materials and activities is an area where most teachers feel they need development with 81% of primary teachers and 78% of secondary teachers saying they need 'a little' or 'a lot' of development.