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Harnessing Technology Review 2009

The role of technology in further education and skills

Contents

Introduction

We now live in an increasingly technology-enabled world. It is vital that learners are well prepared for the pace of this change and that those supporting them can use what technology offers to achieve the best outcomes possible.

This review brings together a range of research evidence and data from England to look at what has been achieved in implementing technology to support learning in the further education (FE) and skills sector.[1] Most of the data presented here was collected through studies conducted in early 2009.

Much has changed since 2008. The increased integration of technology systems in FE puts the sector in a healthier position to deliver benefits such as administrative efficiencies and support for multi-site learners. Furthermore, those who work in the sector are reporting greater benefits from technology, including time savings and positive impact on attainment.

Though the overall picture is positive, it remains important to tackle challenges and issues identified. That way the full benefits from technology investment can be realised. The broad questions covered are:

Technology-confident effective providers
Can learning and skills providers make effective use of technology to achieve the best outcomes for learners?

Engaged and empowered learners
Are learners and employers 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
Do FE and skills leaders use technology to support their priorities and deploy innovative solutions to improve services?

Enabling infrastructure and processes
Does the technology infrastructure offer learners and practitioners access to high quality, integrated tools and resources?

Improved personalised learning experiences
Do technology-enabled improvements to learning and teaching meet the needs of learners?

Impact of technology
To what extent does technology impact on the broader aims of raising achievement, supporting the vulnerable and improving quality and efficiency?

[1] Becta has also published Harnessing Technology Review 2009: The role of technology in education and skills, which looks at the implementation of technology in both the schools and FE and skills sectors.

## Challenges and issues identified from the research

Progress, but some institutions still slow to develop

Across a range of areas there has been a considerable increase in the integration of technology to support learning, teaching and management. For example, there have been significant increases in the use of technology to support assessment and big improvements to the integration of management information and learner systems. This and many more examples offer evidence of a genuine change in the approach to technology within colleges and learning providers. There is related evidence of increased benefits from technology, particularly the proportion of practitioners reporting time-saving benefits.

FE colleges have continued to progress, with around one third now being classed as mature in their use of technology, a steady increase since 2003. E-maturity in WBL providers remains steady at about the same as the previous year. There remains, however, a core of 'beginners' – around a quarter of both types of provider – where progress is slow. In adult and community learning (ACL) there is considerable variation in the application of technology. This is due in large part to the nature of the sub-sector. The wide variety of locations in which ACL is delivered, the staff profile, and the multiple policy contexts which influence ACL all impact on the extent to which e-maturity can be developed.

It is interesting to observe variations within the sub-sectors which make up FE and skills. So, for example, in colleges there are concerns about leadership and innovation in relation to technology, with even the most advanced colleges feeling that they could do better. Work-based learning providers, on the other hand, felt strong in terms of management and staff development but reported concerns about their support for learners.

There are also observable differences in the use of learning platforms and other technologies.
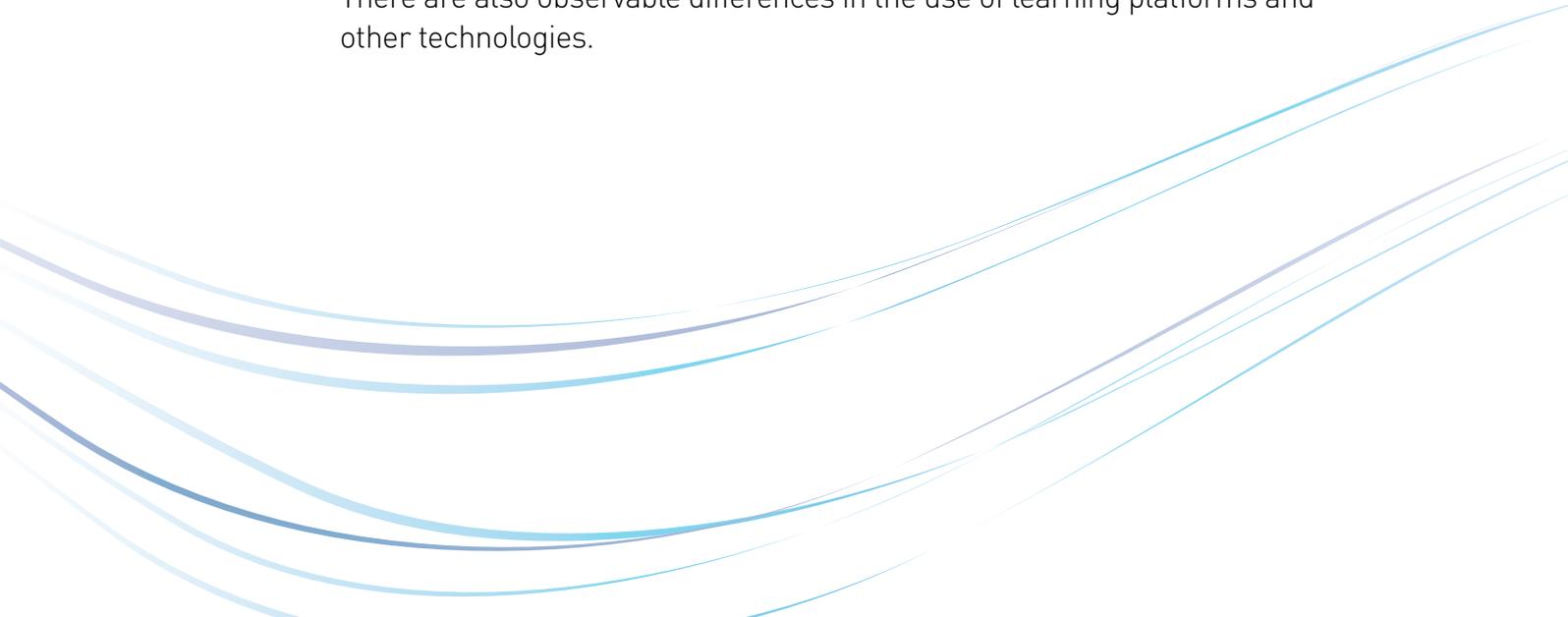
The use of learning platforms in FE colleges has risen steadily since 2003–04, when 58 per cent of colleges had them, to 92 per cent in 2008–09. This is in contrast to the WBL sub-sector, where 36 per cent report that they support a learning platform. In ACL, many providers now make learning platforms available to their staff, but these are at an early stage of development.

Learner and staff access to computers varies between type of provider. In colleges, the mean number of FTE students per networked computer is 4.5 and the median is 3.8, but this contrasts strongly with access outside teaching hours where the mean rises to 28.7. Nearly all work-based learning providers have computers on their premises for their learners, but of course most of the actual training is done in the workplace and the numbers of computers available varies considerably. The median of work-based learners per on-site computer is 7.2:1. In ACL, almost all staff seem to have some access to computers but this is often shared.

Finally, there are differences in the use of other technologies. FE colleges are much more likely to have data projectors (83 per cent) and electronic whiteboards (81 per cent) than other types of providers, though in work-based learning the proportions are increasing encouragingly – for example, over half (54 per cent) have electronic whiteboards, in contrast with 2005 when the figure stood at only 30 per cent. And around two thirds of work-based learning providers have data projectors (69 per cent) and digital cameras (61 per cent).

Access to management information

Over several years Becta has identified challenges in relation to MIS (Management Information Systems) and the use of and access to management and learner information for practitioners. Successful integration of and access to information represents probably the most important step towards realising significant benefits from technology-based systems, both in terms of administrative streamlining and supporting learning.

Within the FE and skills sector there are strong indications that problems integrating management and learner systems are reducing. The percentage of colleges with learning platforms which integrate with their MIS has risen considerably over the last year to 63 per cent (from 47 per cent). It will be interesting to look next year at the impact of this on professional practice as this development opens up significant opportunities for automating and improving information and business processes.

Learning and teaching: the problem of transition

One of the most notable findings in this review is the evidence of some stark differences in the use of technology to support learning and teaching. Put in the context of young people's transitions from school into FE, there are interesting patterns.

In the context of what young people tell us about how they learn and how they prefer to learn, this is significant. We know, for example, that young people increasingly cite using computers as a preferred way of learning.

Yet practice within and between sectors is highly variable. In secondary schools, fewer than 10 per cent of students are offered the opportunity to use technology in core subjects at least once a week. Access in FE colleges seems to vary according to subject studied, but on the whole the experience is generally one of improvement for the learner in terms of access to online information and resources, given that the use of learning platforms is relatively mature in FE. Work-based learning is a mixed bag, but in general also offers increased opportunities for online learning.

Overall there is an increasing need to reflect on and address learners' experience of technology in the context of transition between stages and sectors.

Realising the efficiency premium

Over several years this review has identified efficiency benefits in relation to the use of practitioner time. These benefits have been coming through more strongly every year as the maturity of providers and their technology systems improves. Positive indications in relation to integration of systems within the FE sector signal further benefits in the future as the infrastructure matures to a degree that enables a range of processes to be supported and streamlined. Among many other processes, technology can support large improvements to the efficiency and effectiveness of institution-based information and assessment processes, including setting, submission and return of work and all aspects of recording and reporting of information. It has never been more important for leaders and managers in these more mature technology contexts to focus attention on the changes in practice required to achieve benefit.

There are in fact considerable opportunities for cashable efficiencies given the current maturity of systems in the FE and skills sector. Current readiness to take advantage of this is unclear, however. Leaders' priorities for technology focus on reform and improvement priorities such as supporting low attainers through remote study support. It is encouraging that leaders increasingly see technology as critical to enabling improvement and improving effectiveness. However, as yet the issue of technology-related cashable efficiencies is not high on the agenda of most institutional leadership teams.

Thus it is likely, where there is a good degree of technological maturity, that opportunities are being missed to reduce energy and printing costs, save on space, reduce administrative overheads and realise efficiencies in delivering learning.

Conclusion

It is heartening to see a developing technology maturity in the FE and skills sector, and similarly heartening to find greater benefits being realised where a level of maturity has been reached. This review tells us that across much of further education and skills we are at a stage where there are significant opportunities to realise further benefits from this maturity. The opportunity to achieve considerable service improvement and efficiency benefits is there for the taking. What is required is informed and focused leadership to make it happen.

The role of technology in further education and skills

1.1   Technology-confident, effective providers

Overall e-maturity

The proportion of e-mature further education (FE) colleges[2] has improved steadily since 2003. These measures combine survey data to give a composite, overall measure for each college. E-maturity has been calculated by aggregating responses to the annual Becta survey of ICT in FE colleges (Becta 2003, 2004, 2005, 2006, LSN 2008, Sero 2009). At the same time, a different set of measures were developed from responses to the surveys of ICT in work-based learning (WBL)[3] providers (Mackinnon 2006, 2007, 2008, 2009).
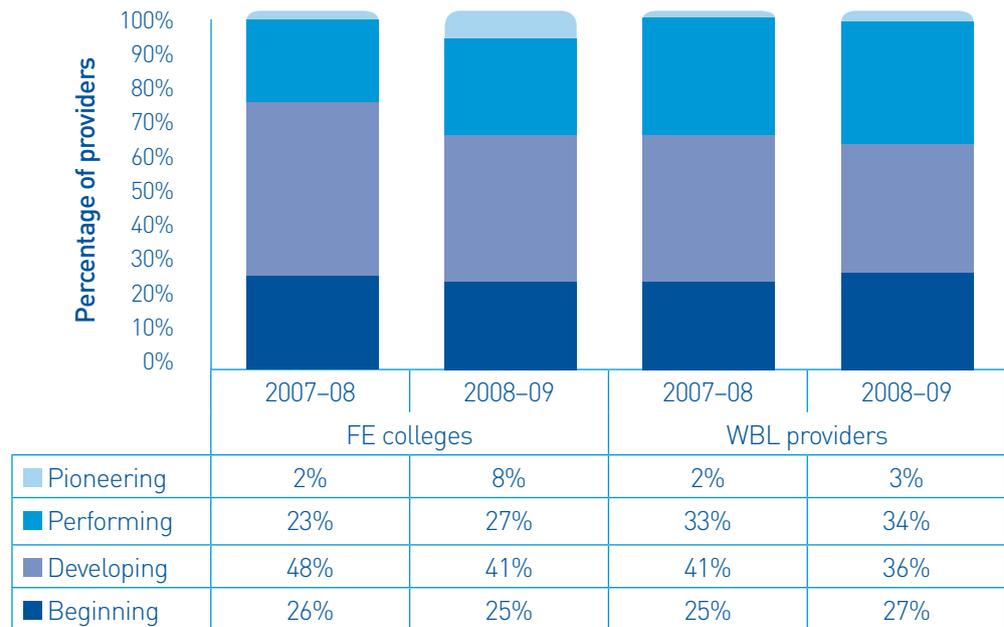
While these two sets of measures are built upon slightly different component data, they both represent broad measures of technology infrastructure, college or provider capability, leadership and uses of technology for learning, reflecting the range of institutional challenges identified in the Harnessing Technology strategy. While they do not offer an exhaustive description of e-maturity, they act as a good set of indicators of the overall level of development and embedding of technology in the college and work-based learning sectors.

Becta's consultation with the sector last year led to a new e-maturity framework linked to the *Generator* self-review tool, with redefined categories. A new 'pioneering' category was introduced to recognise providers who were transforming learning and teaching with technology. Together the new 'pioneering' and 'performing' categories reflect those previously given the single label 'e-enabled'. The old 'ambivalent' and 'late adopter' categories have been combined to form the 'beginning' category.

Similar mappings have been made with the old WBL categories. The old 'transformative', 'embedded' and 'innovative' map to 'developing', 'performing' and 'pioneering' respectively. 'Localised' and 'coordinated' have been combined to form 'beginning'.

[2] Throughout the rest of this report we will use the term 'FE colleges' as a generic term for further education colleges and sixth-form colleges.

[3] The work-based learning (WBL) providers in this report are LSC-funded providers, either private training providers or FE colleges.

E-maturity in FE and WBL

	2007–08	2008–09	2007–08	2008–09
	FE colleges		WBL providers	
Pioneering	2%	8%	2%	3%
Performing	23%	27%	33%	34%
Developing	48%	41%	41%	36%
Beginning	26%	25%	25%	27%

In the year 2008–09, the level of e-maturity of WBL providers remained about the same as the previous year. FE colleges, however, did show some progress, with around one third of colleges being classed as pioneering or performing. There does, however, continue to be around a quarter of both types of provider in the lower, beginner category.

Strengths and weaknesses

The weakest measures for colleges were in the area of leadership and innovation. Even the most advanced colleges were conscious that they might not be at the leading edge of using technology with learners. They also felt that they did not adequately reward staff leading technology developments. College size was also a factor, with larger colleges being more advanced in their technology use. Smaller land-based colleges made least progress, less than the more homogenous sixth-form colleges, and considerably less than the larger general FE colleges. (Sero 2009)

Work-based learning providers, on the other hand, were weakest in the area of learner support, and strongest in areas of management, learning resources and staff development. (Mackinnon 2009)

Within the adult and community learning (ACL) sub-sector the application of technology varies considerably between providers and contexts. These providers are mainly driven by principles of social justice, and are influenced by related policy agendas, e.g. Informal Adult Learning, Family Learning, Community Cohesion, and Digital Inclusion. Attempting to describe e-maturity within this sub-sector has produced an array of measures related to the different contexts of the work of ACL, the staff profile, pattern of dispersed delivery and the multiple policy contexts involved.

Adult and community learning is delivered through a wide variety of locations, not all of which have the potential to support high levels of e-maturity. Low levels of development for off-site support, and variable levels of development across implementation areas indicate that provision is likely to be highly affected by both the environment within which it occurs, and the learners to which it is delivered. This is highly likely to be more the case when one looks to the wider sub-sector and those organisations involved in informal learning and community development. (NIACE 2009)

Learning platforms and remote learning

FE colleges continued to make progress in the adoption of learning platforms or virtual learning environments. Some 92 per cent of colleges had a learning platform in 2008–09, having risen steadily from 58 per cent in 2003–04 (Sero 2009). A far lower percentage (36 per cent) of WBL providers reported that they support a learning platform.

Colleges with a virtual learning environment

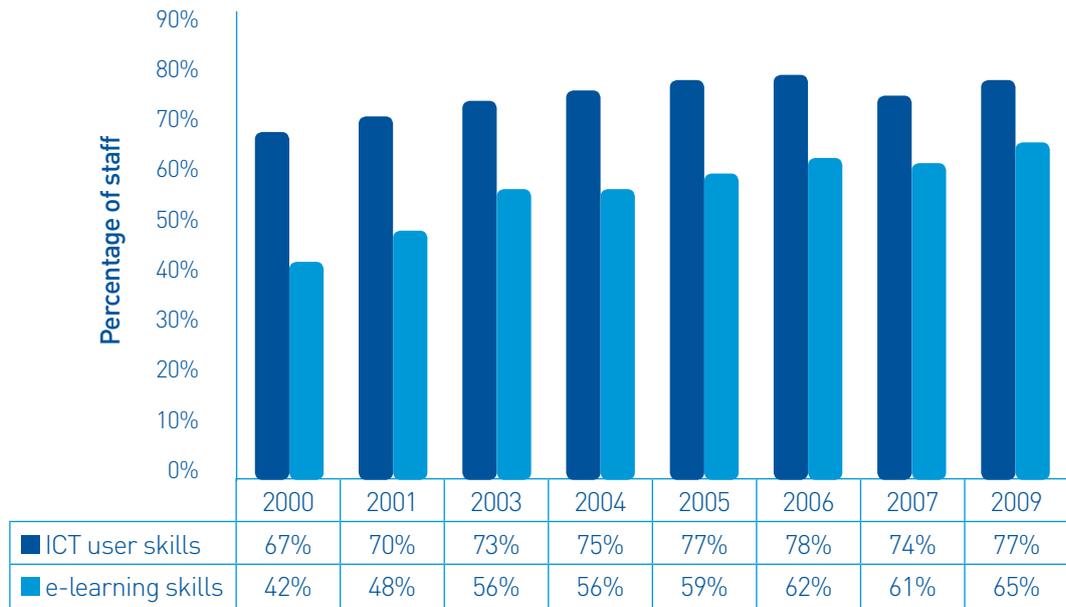|	2003	2004	2005	2006	2007	2009
With VLE	58%	70%	76%	82%	89%	92%
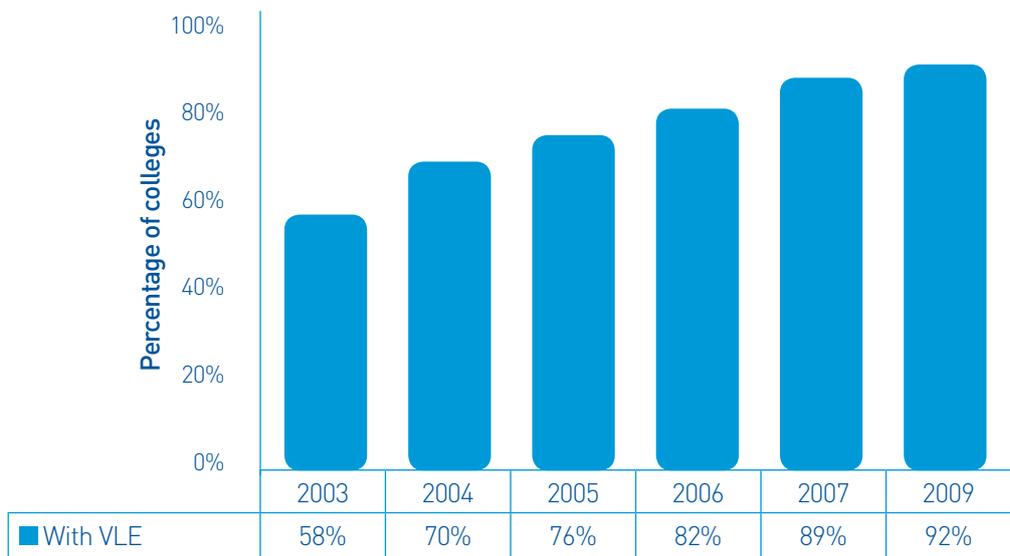
In a report on 25 FE colleges, Ofsted found that frequently the learning platform was still at the stage of being a repository for teaching materials, though sometimes with an email facility to upload or download assignments and assessments. Fewer than a quarter of the colleges were using them to support independent learning, for example by planning courses or modules around chosen topics to re-enforce areas that students needed to develop, or to track progress through exercises and assessments linked to individual learning plans. Seven of the colleges were implementing their second choice of virtual learning environment, having had a poor experience with their first choice. Most were nevertheless making good use of the experience in introducing their new version. (Ofsted 2009b)

Not surprisingly, FE colleges that provide WBL were much more likely to have a learning platform than other WBL providers. Some 81 per cent of colleges that provide work-based learning had a learning platform, compared to 29 per cent of national providers, 26 per cent of regional providers and only 20 per cent of other local providers. Far fewer WBL practitioners reported using a learning platform than the previous year. Some 23 per cent of practitioners reported using one in 2008–09 as opposed to 40 per cent in 2007–08. However, this is likely to be because a higher proportion of the 2007–08 sample were from FE colleges where learning platforms are more common. (Mackinnon 2009)

A large number of ACL providers now report that they make learning platforms available to their staff. However, for 60 per cent of providers, this is either at an early stage of development or has only been partially implemented. The actual use of these online learning spaces is also underdeveloped. Even where the majority of the infrastructure and software investment has been made, the effective engagement of staff to use this technology remains a challenge. (NIACE 2009)

Practitioner skills
Practitioners working in both colleges and WBL providers are reported as having higher skills in their general ICT user skills than in using ICT with learners. This is not surprising given that personal ICT skills are a prerequisite for using technology in the classroom. Also use of e-learning is still spreading in the FE and skills sector, meaning that some staff are still catching up with their colleagues.

FE teaching staff considered competent or advanced in ICT/e-learning

	2000	2001	2003	2004	2005	2006	2007	2009
ICT user skills	67%	70%	73%	75%	77%	78%	74%	77%
e-learning skills	42%	48%	56%	56%	59%	62%	61%	65%

Percentage of staff (y-axis: 0% to 90%)

In both FE colleges and WBL providers, the management view is that on average around three-quarters of staff are competent or advanced in ICT user skills, and around two-thirds of staff are at a similar level in using ICT with learners. Colleges felt that on average 77 per cent of their teaching staff were competent or avanced users of ICT, and 65 per cent were competent or advanced in using ICT with learners (Sero 2009). For WBL providers, these figures were 75 per cent and 62 per cent respectively (Mackinnon 2009). Practitioners working in both types of provider had a more optimistic view of their skill levels, perhaps indicating that less confident staff were less likely to respond to these surveys.
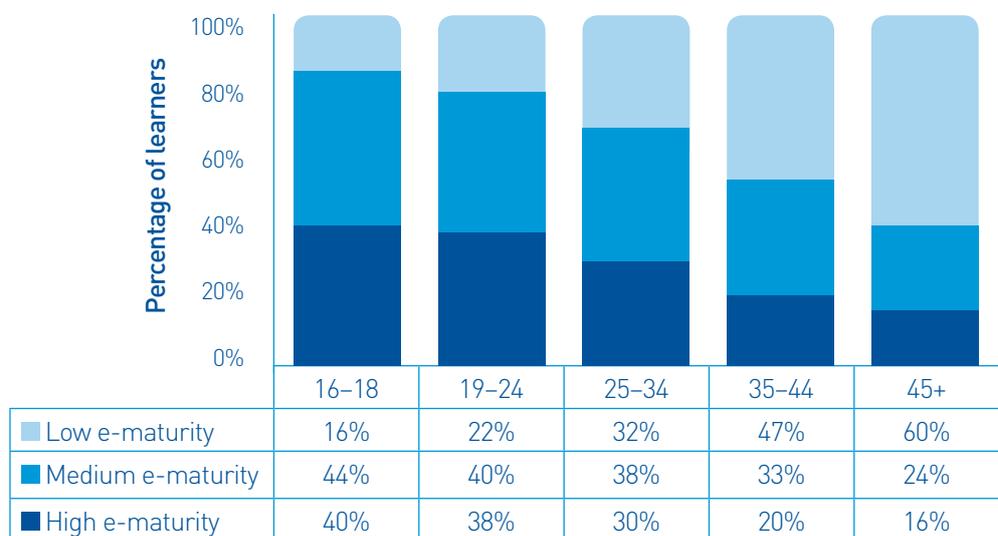
Some 61 per cent of ACL providers felt that the majority of their staff had good general ICT skills, however, only 25 per cent of providers felt most staff were skilled at using ICT with learners. More training was available to teaching staff than was available to learning support staff, with generic ICT skills training and software specific training being the two most frequently cited type available. Training related to developing and supporting online learning was the least available type. (NIACE 2009)

1.2   Engaged and empowered learners

Learner e-maturity

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 linked to level of general technology use, with younger learners also being higher general users of technology. However, the level of college e-maturity 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)

Learner e-maturity by age

	16–18	19–24	25–34	35–44	45+
Low e-maturity	16%	22%	32%	47%	60%
Medium e-maturity	44%	40%	38%	33%	24%
High e-maturity	40%	38%	30%	20%	16%

Some 42 per cent of adult learners most like to learn by doing practical things, a figure that is unchanged since 1998. However, now almost a quarter (23 per cent) mentioned using computers, mobile phones and the internet, not feasible options for most in 1998. (Campaign for learning, 2009)
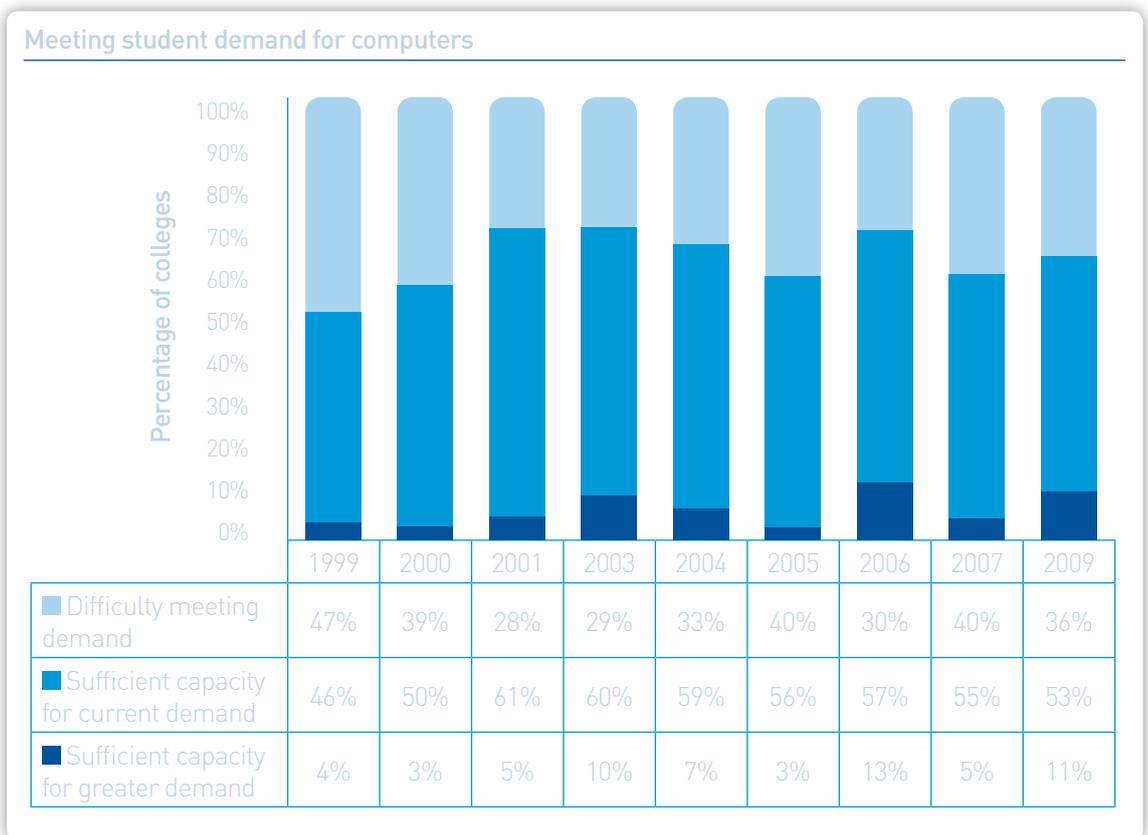
Learner experience

Colleges use technology in a variety of ways to broaden and extend learners' experiences. Over one third (38 per cent) use technology to gain access to a greater range of learning materials, while smaller numbers use technology to help learners understand their progress (18 per cent) or to record and analyse events both inside and outside the classroom (13 per cent). Around one third of colleges (32 per cent) make use of multiple approaches. Just under a quarter of FE practitioners (24 per cent) used technology to create individualised programmes for learners. A small number of colleges (15 per cent) do not allow students to use their own devices in college. However, 43 per cent either encourage learners to use their own devices, or take account of these opportunities in their plans. (Sero 2009)
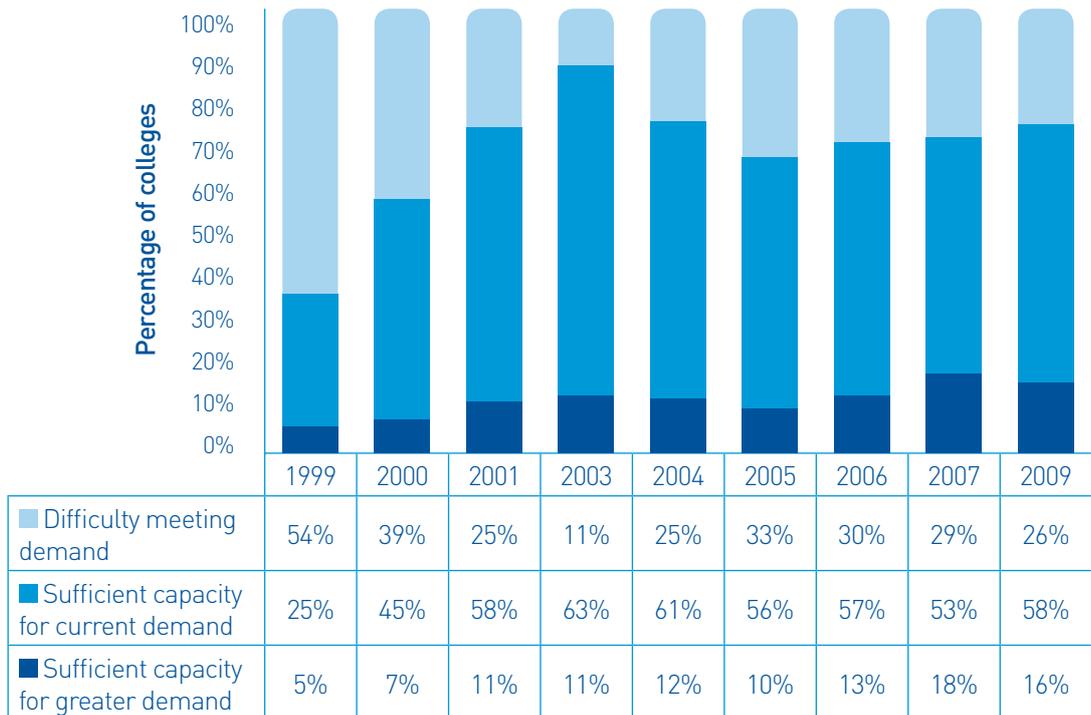
In WBL providers, there have been some large increases in learner-focused uses of technology, albeit from a low base. Some 31 per cent of providers used technology to help learners monitor their own progress, an increase from just 19 per cent in 2007–08. Also WBL practitioners reported more frequent use of technology to help learners collect evidence, manage individual target setting and communicate with learners in the workplace. (Mackinnon 2009)

Meeting demand

In 1999, colleges overwhelmingly described student demand for computers as widespread. Since that time demand has clearly continued to grow in the face of a greatly increased number of high-specification computers available for use by learners. Just under half of institutions (47 per cent) reported that they could not cope with the demand for computers in 1999. Ten years later, this level now stands at 36 per cent. Also, the number of colleges reporting that they are able to cope with increased demand is 13 per cent. The chart illustrates the fluctuations in colleges' response to changes in demand and student numbers. (Sero 2009)

Meeting student demand for computers

	1999	2000	2001	2003	2004	2005	2006	2007	2009
▉ Difficulty meeting demand	47%	39%	28%	29%	33%	40%	30%	40%	36%
▉ Sufficient capacity for current demand	46%	50%	61%	60%	59%	56%	57%	55%	53%
▉ Sufficient capacity for greater demand	4%	3%	5%	10%	7%	3%	13%	5%	11%

A similar but slightly less volatile picture applies to meeting demand for internet access. The number of colleges that were unable to meet current demand fell rapidly from over half in 1999 to 11 per cent in 2003. This proportion increased again to reach 33 per cent by 2005 but has fallen steadily since to a level of 26 per cent in 2009. Over the decade, colleges have been more able to meet demand for the internet than for computers per se. Given that access to computers is necessary for access to both the internet and all other applications, this discrepancy is to be expected.

Meeting student demand for internet access

	1999	2000	2001	2003	2004	2005	2006	2007	2009
■ Difficulty meeting demand	54%	39%	25%	11%	25%	33%	30%	29%	26%
■ Sufficient capacity for current demand	25%	45%	58%	63%	61%	56%	57%	53%	58%
■ Sufficient capacity for greater demand	5%	7%	11%	11%	12%	10%	13%	18%	16%

There have clearly been considerable technical improvements to connectivity and college networks over the last ten years. However, these improvements have only been translated into modest improvements in perceived performance. In some 11 per cent of colleges, slowness is seen as a frequent problem, and in a further 29 per cent networks are slow at busy times. In a substantial minority of colleges therefore, the student experience of technology will be affected. Those whose networked learning is scheduled at busy times will face a worse experience than the winners in the lottery of timetable slots, who are scheduled to use the network when traffic is low.

The majority of ACL providers agreed that technology had a positive impact on learners' experiences. Providers were most confident that technology had contributed to creative teaching and learning; learners' access to relevant content; and flexibility of delivery. Providers were least sure about impacts on learner attainment, progression and retention. (NIACE 2009)

1.3   Confident system leadership and innovation

Strategy and planning

Although the processes for the day-to-day management of technology vary considerably from one college structure to another, around one fifth (21 per cent) have a whole-college plan which operates across all departments. (Sero 2009)

Around a third of FE colleges (34 per cent) now state that technology developments are an integral part of all appropriate annual planning processes. A third of colleges use a cross-college committee to oversee the technology elements of strategic and operational plans with 26 per cent designating a senior manager for ensuring that technology is included in annual planning processes. In 41 per cent of colleges all managers discuss their technology training needs in appraisals. Over 60 per cent of colleges claim to use benchmarking regularly, with 37 per cent specifically using it to check their adoption and use of technology.

Seven colleges out of 25 recently visited by Ofsted were making very good use of data to set and monitor targets for retention and success. However, development was not consistent even between these providers. Only four of the colleges were routinely using value-added measures to assess their performance and set targets. The use of this type of data was most well established in sixth form colleges. Three of these colleges were making particularly good use of student feedback. (Ofsted 2009b)

Nearly all WBL providers (92 per cent) have a written strategy addressing at least some use of technology. Around half of providers (51 per cent) have a written strategy (either as part of a wider strategy or on its own) covering all six aspects of providers' use of technology that were given in the survey. This study also found that having clear management responsibility and planning processes for the implementation of technology was associated with more effective and efficient use of technology. Providers were better able to identify how to use technology to support learners, identify the costs and benefits involved and ensure their organisation has the right skills. (Mackinnon 2009)

The majority of WBL providers (84 per cent) believe they have senior managers with the skills and knowledge to make effective use of technology. Around three-quarters (75 per cent) have clear management and planning process for its implementation (75 per cent). However, there is a small core of providers where this is not the case and the survey suggests that the size of this minority has not changed over the last few years.

Partnership

A high proportion of WBL providers have worked in partnership with other organisations on technology projects. Around two-thirds of providers (66 per cent) have worked with technology suppliers and half (50 per cent) have worked with other WBL providers. Around two fifths have worked with employers (39 per cent) or industry bodies (44 per cent). Some 40 per cent of providers have worked with partners to develop computer-based learning resources.

However, few providers have found partnerships effective in helping them harness technology generally. Providers have found that working with employers, industry bodies and other FE colleges has been least effective. In addition, one fifth of providers (21 per cent) working with technology suppliers report that this has not been very effective and 58 per cent report it as being average. This suggests that providers are building partnerships and working together but that these partnerships are not yet being very effective.

Almost all ACL providers have e-strategies or strategic documents in place, the majority of which made explicit objectives related to ACL. The majority of these were updated annually as a minimum, and communicated to staff at least as frequently as they were updated. Communications were achieved through multiple mechanisms, though most often through a learning platform, intranet or shared drive. However, over half of providers felt that 50 per cent or fewer of their ACL staff were aware of their e-strategy. Teacher CPD, use of learning platforms, replacement of equipment and investment in ICT infrastructure were either being currently addressed, prioritised for next year, or both. Over 70 per cent of providers either agreed or strongly agreed that "there is strategic commitment to the integration of technology within every aspect of the organisation". (NIACE 2009)

1.4   Enabling infrastructure and processes

Access and sustainability

The mean number of FTE students per networked computer in colleges is 4.5 and the median, which is not distorted by extremes, is 3.8 (LSN 2008). There are still a few providers with relatively high numbers of FTE students per computer. Moreover, the ratio for FTE students per computer *available outside teaching hours* is much higher, with a mean of 28.7. (LSN 2008).

Most colleges (81 per cent) regularly review their technology resources in light of demand. Most of the remainder (13 per cent) only review capacity when necessary, and the last 7 per cent have no policy to review capacity (SERO 2009).

WBL is primarily focused on learning in the workplace. Despite this nearly all of providers (95 per cent) have computers on their premises for work-based learners' use and 84 per cent have computers with fast internet connections. (Mackinnon 2009)

Work-based learning providers have a median of 26 computers on-site per provider. This is similar to previous years (22 in 2007 and 24 in 2006). The number of computers varies considerably with one provider reporting they had 2,000 computers available while another reported just two. This results in a mean average of 86 computers per provider. The median of work-based learners per on-site computer is 7.2:1. This result is slightly worse than previous years (6.7 in 2007 and 6.5 in 2006). The mean average of learners per computer is 19.

There are on average 93 computers available for use by ACL staff on the premises, however answers ranged from 2 to 500. Almost all providers felt that tutors had some access to these, though this tended to be shared, with only some staff having sole access. (NIACE 2009)

Networks

The improvement in FE college network specification over the last decade has been associated with an improvement in performance and in capability to meet demand. However, these technical improvements have been associated with relatively slow improvement in capacity. For example, a large number of colleges upgraded their LANs between 2004 and 2005, but though the very small number of colleges that reported being overstretched did decrease, there was hardly any increase in colleges reporting that they could meet greater demand. In 1999, only 24 per cent of colleges had the capacity to meet an increase in demand on their networks, by 2004, 45 per cent of respondents said that they could cope with a significant increase in traffic. In 2009 comfortably more than half of colleges (56 per cent) reported this. (Sero 2009)

Network performance

	1999	2000	2001	2003	2004	2005	2006	2007	2009
Always smooth	35%	38%	47%	53%	56%	55%	61%	67%	65%
Slow at busy times	60%	56%	49%	42%	42%	44%	37%	33%	29%
Slowness a problem	5%	4%	3%	4%	2%	1%	1%	4%	6%
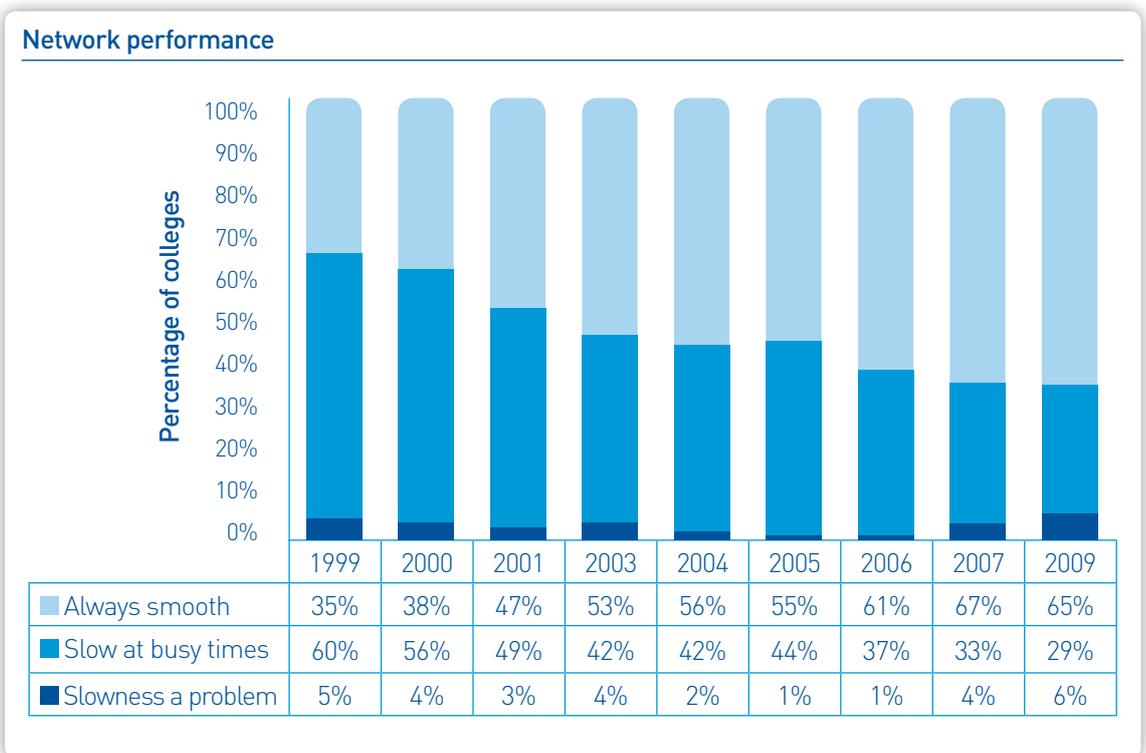
There has been a steady improvement in network performance over the decade. A clear majority of colleges (65 per cent) described their network performance as always smooth, and 29 per cent reported their network performance to be slow at busy times. This is a reversal of the situation in 1999. However, the most dramatic changes took place between 1999 and 2003, the overall trend slowing since that time. Also, the small number of colleges reporting that slowness is a frequent problem has risen to 1999 levels following a steady decline to 2005 and 2006.

Management information systems

The integration of management information and learner systems in FE colleges has developed over the last few years. Some 63 per cent of colleges reported good links in 2008–09, compared to 47 per cent the year before. However, in over one third of colleges, these connections are limited at best. All the colleges responding to the 2009 survey offer some degree of remote access to college systems. However, this access is limited in a large minority of colleges (42 per cent), but a little under one third of colleges (29 per cent) offer remote access at all times. (Sero 2009)

Over two thirds of WBL providers (70 per cent) have a network remotely accessible by staff, although just over one third (38 per cent) have a remotely accessible network for learners. The number of providers with different types of infrastructure has remained unchanged compared to last year, although the proportion of WBL providers offering remote access to learners, with virtual learning environments and dedicated websites to support learners has increased since 2005. (Mackinnon 2009)

Other technology

WBL providers have a range of other technology. Around two thirds have data projectors (69 per cent) and digital cameras (61 per cent) whilst over half (54 per cent) have electronic whiteboards. The latter represents an increase since 2005 when only 30 per cent reported having electronic whiteboards. However, FE colleges are much more likely to have data projectors (83 per cent) and electronic whiteboards (81 per cent) than other types of providers. The use of mobile devices for learning has also continued to increase to nearly one third (31 per cent), placing further demands on college networks. (Mackinnon 2009)

Overall, around three quarters of WBL providers (75 per cent) are satisfied or very satisfied that their staff have access to the appropriate technology that they need. One tenth are dissatisfied. Tutors, assessors and verifiers confirmed this view. Over three quarters of practitioners (77 per cent) responding are satisfied or very satisfied that they have access to appropriate technology and digital resources. Just 12 per cent are dissatisfied. This again provides the same picture as last year.

Networks are a mix of wireless and wired in 60 per cent of ACL providers, and entirely wireless in 32 per cent. Transfer of large files was possible across most networks, though not necessarily supported by organisations, and access to online activities were not equal across organisations' learning locations, suggesting variable access to the internet. Nearly half (48 per cent) of ACL providers were satisfied with the technology access available to their staff. However, 26 per cent were dissatisfied. (NIACE 2009)

Digital resources

As with previous surveys, NLN and publicly-funded materials are used less frequently in FE colleges than materials developed in-house or downloaded from the internet. Some 85 per cent of FE practitioners used materials that were developed in-house and 81 per cent used materials downloaded off the internet. On the other hand, only 30 per cent used NLN materials, however this may be explained by the limited range of materials available from this source. (Sero 2009)

Most WBL providers (79 per cent) use computer-based learning resources in some of their learning programmes and this proportion has changed little over the last three years. Providers are using electronic learning resources across all types of WBL delivery and all employer groups. (Mackinnon 2009)

WBL providers get their computer-based learning materials from a wide range of sources. Over three quarters of providers that are using computer-based learning resources (77 per cent) have bought them commercially, although a large proportion (63 per cent) are using resources that are freely available online. In addition, nearly two thirds (63 per cent) have developed their own resources. Smaller providers, and particularly those that are regional, local or voluntary/community based providers, are less likely to develop their own resources in-house or in partnership with others.

ACL staff created their own networked learning resources in 9 per cent of providers, and standalone resources in 14 per cent. This occurred most frequently in ICT courses, language courses, family learning and arts and crafts. Where resources were used, providers identified the main benefits as the ability to share resources, the ability to save on preparation time, the ability to enhance learner engagement and accessibility of digital resources, when compared to more traditional resources. (NIACE 2009)

| 1.5 | **Improved personalised learning experiences** |

Support for learners

To support learners in using technology, over 70 per cent of colleges offer self-help materials, an email helpdesk and a website as sources of support. A large majority of colleges use a mixture of ad-hoc personal support, stand-alone ICT classes, online packages and drop-in sessions. Two thirds of colleges are confident that this support is effective. However, this means that the remaining third are not. (Sero 2009)

Personalising learning

For more than a third of colleges (36 per cent), email correspondence between teachers and learners is the main way they report that technology supports personalising learning. 8 per cent of colleges consider the development of e-portfolios to be their most significant contribution to personalisation, and a further 19 per cent identify the use of technology to tailor resources to the needs of the individual learner. The remaining 38 per cent of colleges employ a variety of strategies, including the use of handheld and mobile technology for recording learning situations. (Sero 2009)

Some 40 per cent of FE practitioners reported using e-learning with all their learners. However, it is worth noting that this may be a relatively sophisticated group of staff, as they report their skills as higher than the college view of all staff. Some 69 per cent of these practitioners reported using e-learning as a traditional classroom tool, only 25 per cent use e-learning to create individualised programmes.

Adult and community learning practitioners make use of online collaborative tools fairly frequently, with 25 per cent of them using online collaborative tools on a daily basis and a further 21 per cent using them at least once a week. Practitioners appear to use diverse media (such as game-based learning and podcasting) less frequently with only 22 per cent of the practitioners using it on a daily/weekly basis. (NIACE 2009)

Currently two fifths of work-based learning providers (41 per cent) provide some of their learners with an online personal learning space allowing them to learn when and where they choose. However, over two thirds of these providers offer this across just some of their WBL programmes or courses. Provision of online learning space has not changed over the last year. (Mackinnon 2009)

Assessment

The majority of FE colleges use technology for learner induction activities: only 2 per cent did not use it at all, and 74 per cent use technology for some induction activities with most, or all learners. Well over 90 per cent of colleges use technology for initial assessments and over three quarters use it for induction to learning resources. Two thirds of colleges use it for an induction to ICT resources, and around half of colleges for subject induction. More than three quarters of the colleges in the sample are either confident, or very confident that technology adds value to learner assessment. (Sero 2009)

WBL providers have increased their use of technology for assessment. Online tests and onscreen key skills tests are now used by nine out of ten providers and in around half of providers they are used for all of their courses or programmes. Over half of providers now use technology for online evidence management compared with one third four years ago, however only 8 per cent of providers are using this across all of their provision. (Mackinnon 2009)

In addition, just over one quarter of WBL providers (26 per cent) have introduced an integrated learner management system which lets learners manage their evidence portfolios online. Larger providers are more likely to have introduced these systems.

Nearly two thirds of WBL providers (65 per cent) that have introduced these systems agreed that they have improved learner support and over half (58 per cent) agreed they had improved learner outcomes. However, over one third (35 per cent) disagreed that the systems had reduced administrative costs. This reinforces previous findings that providers are unconvinced of the financial business case for introducing new learner management systems.

Around half of ACL practitioners use technology on a daily or weekly basis to assess learner's work (54 per cent). Practitioners do not appear to be making much use of e-portfolios with learners, with 63 per cent of the respondents stating that they have never used e-portfolios with learners. It should be noted that this may be due to practitioners' understanding of what constitutes an e-portfolio. (NIACE 2009)

1.6   Impact of technology

There is a statistically significant positive association between FE college e-maturity scores and Ofsted outcomes. The strength of leadership in the e-mature colleges, rather than the strength of the e-maturity overall, was a key predictor of better Ofsted results. In the most e-mature colleges, ICT is embedded in their culture, is interwoven across all subject areas and is driven by strong leadership from the top. (NCC Group 2009)

However, there is a weaker link at college level between e-maturity and learner outcomes. This is no surprise as much evidence over the years has pointed to the variability in use of technology within college environments, based much of the time at department level. Therefore impact on learners will be highly variable within a single college setting.

The impact of technology on running a college can be seen in terms of the changes it brings to the overall management of the college business and to the improvement in existing business processes such as student recruitment. There is strong evidence that the increased availability of data across the college allows them to be more pro-active in managing their business. For example, they might use real-time information to monitor and manage key indicators such as student attendance at course, group and student level. This rigour was delivering real benefits such as improved course attendance, and re-adjusting group sizes throughout the year to take into account changing student numbers. (NCC Group 2009)

Changing teaching and learning models are also starting to make e-mature colleges reconsider their traditional core metrics. Measures such as core contact time, group sizes, teaching and learning space requirements and room utilisation are being called into question. New building and estates redevelopment have also been triggers for this, as have financial constraints. Colleges are starting to track the utilisation of equipment and teaching rooms and using the information to shape their planning and investment priorities.

E-mature colleges were at different stages of systems integration. Some are using external suppliers to develop bespoke solutions to provide them with greater flexibility. They felt that the college was at its most vulnerable in the middle of the journey, characterised by 'where ICT fails, the college fails'. Past that point there was a more sophisticated and robust infrastructure in place, including a more standardised approach across the college.

College views are evenly divided on whether technology is being used effectively to further personalisation, with just over 50 per cent unconfident and just under 50 per cent confident that technology is having a positive impact. This is likely to reflect the level of maturity of different providers. However, colleges express greater confidence about positive impact on learning, with over 70 per cent confident or very confident that this is happening, and just under 30 per cent more sceptical. (Sero 2009)

Some 74 per cent of WBL providers reported that technology has led to more efficient management and administration of learning. In addition, over half reported that technology increased the choice of methods of learning for learners (59 per cent); improved the quality of learning delivered (54 per cent); led to more effective assessment of learning (53 per cent); saved time for tutors, assessors and verifiers (53 per cent). Providers are more likely to identify impacts on processes than outcomes, perhaps because the impact of technology is difficult to isolate. Fewer providers identified impacts on achievement (39 per cent), completion (32 per cent) or retention (28 per cent). They are least likely to report that their use of technology has had any impact on recruitment either in terms of attracting more (16 per cent) or different learners (15 per cent). (Mackinnon 2009)

WBL practitioners' views were similar to those of WBL managers. Over three quarters think that technology has allowed greater choice in learning opportunities for learners (78 per cent) and increased efficiencies in delivery and administration (77 per cent). Over two thirds believe it has improved staff continuing professional development (74 per cent); learner satisfaction (67 per cent); staff satisfaction (67 per cent). Fewest (52 per cent) feel it has helped, to a large extent or a bit, to improve engagement with employers or learner retention.

Similarly 85 per cent of ACL practitioners believed that the use of technology had allowed learners greater choice in learning opportunities as well as improving opportunities for innovation in learning and teaching. Some 68 per cent of ACL practitioners felt that technology had improved learner satisfaction, whereas 59 per cent felt that technology had improved staff satisfaction. (NIACE 2009)

WBL practitioners were asked how much time each week technology saves them. Around three fifths (59 per cent) of practitioners that use online resources find they save time, whilst just 9 per cent find they lose time. Nearly half (44 per cent) find management information systems (MIS) save time, whilst around one fifth save time using interactive whiteboards (22 per cent) and learning platforms (18 per cent). However, only 45 per cent of practitioners responding use the latter two technologies. Management information systems and online resources can save practitioners significant time during a week. Nearly one fifth of practitioners (18 per cent) report online resources save them over two hours per week, whilst 14 per cent using MIS report it also saves over two hours. (Mackinnon 2009)

Some 67 per cent of ACL practitioners stated that the use of technology had allowed them to save time in lesson planning and preparation and 59 per cent of the practitioners stated that the use of technology had saved time in record keeping. A smaller number of practitioners felt that the use of technology saved time in lesson delivery, (45 per cent) and assessments (44 per cent). However, a similar number of practitioners reported that technology had made no difference on the time spent on lesson delivery (37 per cent) or assessments (40 per cent). Only 40 per cent of the practitioners felt that the use of technology saved time in communicating with learners remotely. (NIACE 2009)

Cross-sector comparison	Further Education colleges	Work-based learning providers
E-mature providers:		
• Pioneering/performing	35%	37%
• Developing	41%	36%
• Beginning	38%	27%
Learners per computer	4.5	7.2
Organisation has a learning platform	92%	36%
Integrated MIS/learner systems	35%	n/a
Practitioners have access to:		
• Learning platform	71%	45%
• MIS	78%	73%
• Electronic whiteboard	67%	44%
• Online resources	92%	88%
Practitioners are competent or advanced:		
• ICT user skills	77%	75%
• Using ICT with learners	65%	62%
Organisation has a strategy that addresses using ICT for:		
• Practitioner CPD	96%	68%
• Management and administration	94%	83%
• System security	96%	88%
Organisation allows remote access for learners	80%	38%
Organisation offers remote technical support	73%	14%
Practitioners using ICT to create individualised programmes	24%	n/a
Providers using online testing and submission of assignments	87%	90%
Learners with ICT skills to support learning	40%	n/a

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