Learning and technology – what have we learnt?

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Abstract: This article considers the evolution of e-learning and some of the factors that have shaped its implementation. It draws on research conducted in the UK from 2001 to 2008 by the Chartered Institute of Personnel and Development (CIPD) focusing on training and learning in corporate organisations rather than courses offered to students enrolled in educational institutions. The article argues that throughout this period there has been insufficient attention given to the way learning takes place in organisations. It considers the emerging wave of enthusiasm for Web 2.0, concluding that successful current applications of e-learning simply use a more diverse range of tools and approaches.

Keywords: corporate e-learning; learning technology; Web 2.0; social networking; virtual worlds; Webinars; online support; 'stuff' and 'stir'

Introduction

We are now approaching a decade of e-learning. That is, for almost a decade, the term 'e-learning' has been used to describe "learning that is delivered, enabled or mediated using electronic technology for the explicit purpose of training in organisations", to draw on the definition used by the Chartered Institute of Personnel and Development (CIPD) in the UK (CIPD 2008a). It is an appropriate time to review progress, to ask how much has been achieved and to consider emerging future directions. The review presented in this article is evidence-based, drawing on what has been learnt about the application of technology to learning and work from seven years of data collection and analysis by the CIPD.

The predominant model of e-learning in corporate organisations in both the public and the private sectors has been self-paced e-learning. Individual employees access materials on their computers at home or at work, and are expected to work through professionally-designed content or 'modules' in a self-directed manner. The content may be purchased from suppliers or developed in-house by the organisation. The courses are usually delivered, managed and tracked using a course management system (CMS). Significantly, e-learning has taken a different trajectory in the higher education sector, where the characteristic model is facilitated online group learning for enrolled students.

The CIPD research reviewed in the present article was conducted from 2001 (which marked the early adoption of e-learning) to 2008 (which saw heightening interest in the term 'Web 2.0'). The CIPD is a professional association linked to an accredited qualification and has over 130,000 members involved in people management and development. Most of the members are based in the UK, where the qualification is delivered at a wide range of

universities and colleges. The strength of this business model means that the CIPD has been able to fund its own research, including annual surveys of members and their organisations. Of particular relevance to this discussion is the annual Learning and Development (L&D) Survey that the institute conducts annually, which attracts responses from over 700 professionals. In addition, the CIPD funds specific, targeted research projects of relevance to its members and maintains a Web site (www.cipd.co.uk) that houses topic-specific fact sheets and online tools, as well as supporting a number of virtual communities based on threaded discussion forums. Although the review of the CIPD research here focuses primarily on corporate settings, the findings and insights can offer a useful perspective on e-learning more generally.

Progress: waves and hype

If we include distributed technology products such as computer-based training (CBT) disks and CD-ROMs that do not depend on the connective capability of computers, we can argue that the corporate application of e-learning dates back several decades. The term 'technology-based training' (TBT) was used as early as the 1970s to describe the first experiments in computer-assisted learning (CAL) using mainframe computers.

Three distinct, if overlapping, periods can be identified in which new digital technologies were expected to have a dramatic impact on the way workplace training was delivered:

- *PCs and removable media:* The first era, which occurred in the first half of the 1980s, saw desktop personal computers (PCs) becoming widespread with floppy disks (and later, CD-ROMs) enabling the storage and distribution of digital information, including learning content.

- *The Internet:* The second wave was triggered by the advent and growth of the Internet in general and the World Wide Web in particular, which quickly began to change the way businesses operated. In the 1990s, suppliers of CBT products were full of optimism and were energetically exploring options for delivery using the Web. In September 1999, the US-based supplier CBT Systems rebranded itself as "SmartForce, the e-Learning company" and one month later held a satellite broadcast to announce the change. E-learning as a term had officially arrived (Torode, 1999; SmartForce, 2001; Overton, 2009).

- *Web 2.0:* The third and current phase is associated with the term 'Web 2.0', which broadly describes a movement towards using the Web as a platform for sharing and collaboration among peers, both within and between organisations. Web 2.0 and its associated social software tools emphasise a spirit of openness, participation and generation of content by the users themselves, and are believed by many to hold much potential for promoting connected, participative and collaborative learning.

The time sequence is shown in Figure 1.

Those responsible for managing training in organisations might quite justifiably argue that the advantages of e-learning have been consistently oversold by suppliers, commentators and governments. This was certainly true in the early 2000s, when the term 'e-learning' achieved its explosive rise to prominence. In June 2001, at the height of the optimism, Tom Peters, management guru and co-author of *In search of excellence* (Peters & Waterman, 1982) addressed a conference of the American Society for Training and Development (ASTD) in Florida. Urging his audience to progress more rapidly with e-learning, he notoriously declared that the goal should be to deliver 90% of all training in organisations electronically within the next two years (Peters, 2001). One of the main arguments advanced by proponents of e-learning at the time was that it was possible to achieve cost savings over face-to-face courses; this conveniently ignored the important question of learning effectiveness, ie it

neglected to carefully consider whether anyone would learn anything from the new approach.
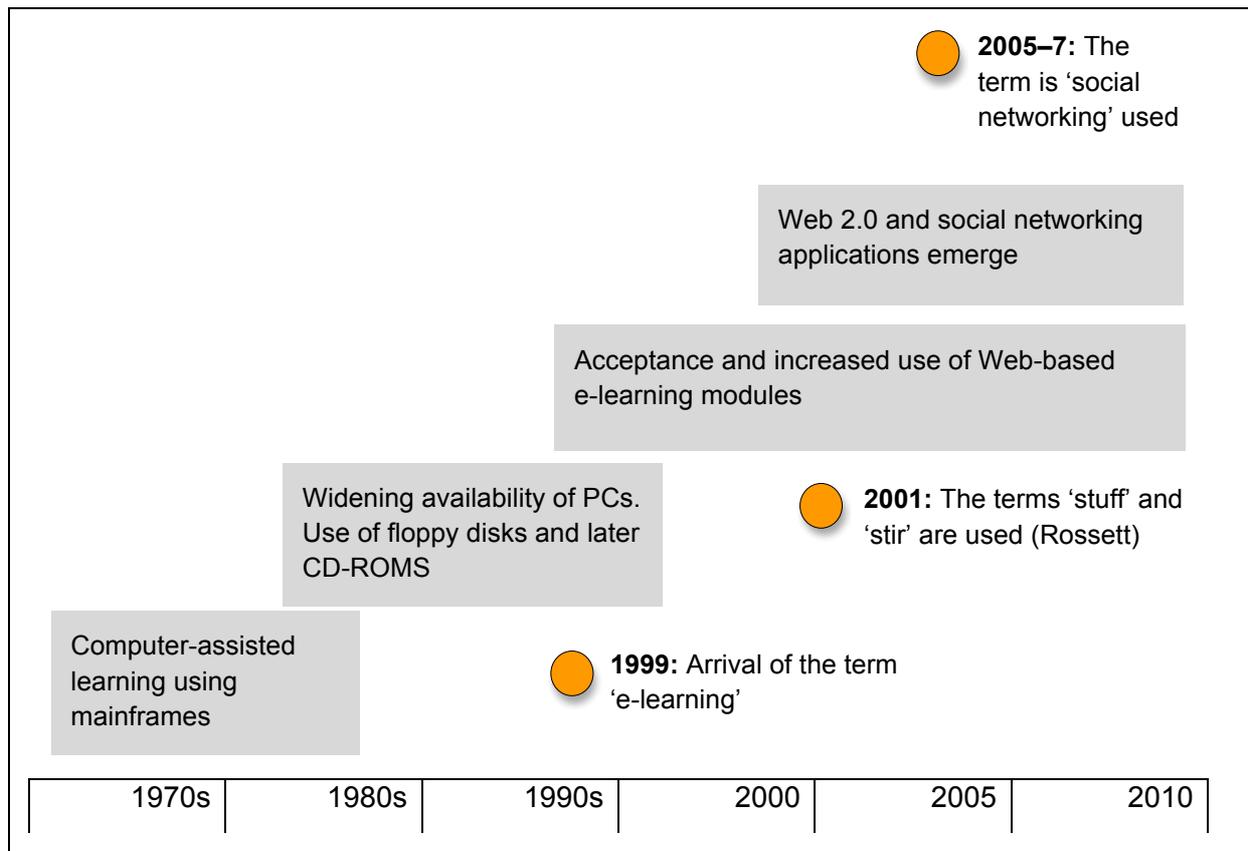
Figure 1: Stages in the progress of e-learning
(timeline not drawn to scale)

Although many of the practical challenges of implementing e-learning have since been recognised and more subtle arguments developed, it is of the author's opinion that there has been an over-emphasis on technology throughout this period, and an under-emphasis on the realities of learning and the learner in organisations. This may prove equally true of Web 2.0 (and 'social networking'), which the final sections of the article will address. The application of technology to learning is far more complex and multifaceted than the current debate would lead us to believe.

The next section begins with a brief look at the role of learning in the modern organisation, and questions what we have learnt to date about the factors contributing to e-learning effectiveness. The discussion draws heavily on the extensive research undertaken by the CIPD over a three-year period from 2005, summarised in a "Research Insight" report published in August 2008 (CIPD, 2008c).

Learning and the organisation

For the purposes of the present discussion, it is important to consider e-learning within the broader context of issues and challenges relating to the field of workplace learning.

Benefits of training

The CIPD's contention is that any discussion of training and learning in organisations should be shaped by one critical question: how does the acquisition and deployment of knowledge

and skills by individuals benefit the organisation? We are moving, particularly in those organisations where e-learning is likely to be deployed, to what has been described as a "service-led and knowledge-driven economy" (CIPD, 2008c, p. 1). The development and advancement of individuals' knowledge and skills ultimately help organisations add value and progress upwards along the value chain by offering goods that command premium prices or by delivering higher quality services. Organisations (and indeed entire economies and countries) strive to avoid being 'locked in' to the production of low-value commodity goods or services.
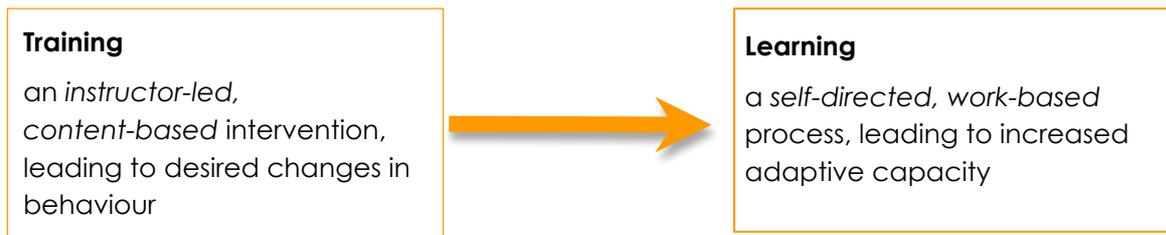
Skills for the modern workforce

Organisations need to determine what new or additional skills individuals and teams require, and what interventions are available to assist in the acquisition of these skills. The *Skills at Work* initiative conducted an extensive survey of work skills in Britain in 2006. The results were made available in the following year, together with a report summarising the pertinent findings (Felstead, Gallie, Green & Zhou, 2007). The data included 4,800 face-to-face interviews with a representative sample of working people aged 20 to 65.

The *Skills at Work* study identified a number of generic skills domains as a framework for analysis. Between 1997 and 2006 there had been a significant increase in skill usage across all of these domains, with the exception of physical skills; it appeared fewer people were performing work primarily involving physical or manual labour. Most importantly, there had been a dramatic increase in the number of jobs using automated or computerised equipment – over three-quarters of the British workforce now relies on such equipment at work. Interestingly, there had been a comparatively smaller increase in the last five years leading up to the study than during the previous decade, which suggests that the pervasive spread of computer technology may have reached a saturation point in terms of its deployment. On the other hand, over the last five years there had been a marked increase in the proportion of jobs in which computing was considered to be an essential component, with nearly half the respondents (47%) reporting that they fell into this category in 2006. The numbers reporting a 'simple' use of computers declined.

In addition, substantial increases in the importance of the following skills were reported: writing long documents, writing short documents, making speeches and presentations, persuading and influencing other people, and instructing and analysing complex problems in depth. These formed many of the ingredients of a composite skill index that the Skills at Work researchers labelled 'influencing skills'. Another set of skills, labelled 'technical know-how', had also increased substantially in importance.

From training to learning

So, what interventions can encourage a workforce to acquire and deploy this emerging modern skill set? Here it is useful to distinguish between training and learning. Reynolds (2004) illustrated the distinction in diagrammatic form, reproduced here in Figure 2. Training and learning are related but conceptually different activities. The important differentiator is that the ultimate responsibility for learning lies with the learner; it is only the learner himself or herself who has the power to learn. He or she can be made to sit in a classroom or work through an e-learning module, but effective learning demands engagement. Although the content of what is delivered (whether in the classroom or on the screen) may be similar across organisations, the learning process is heavily dependent on the context of the learning and on learner motivation. Moreover, it can be argued that the skill sets whose importance is growing most rapidly (using the PC and influencing others) are learnt by practice, including learning from peers and colleagues and through tailored feedback, rather than being acquired solely through instruction or using pre-prepared modules.

Training		**Learning**
an *instructor-led, content-based* intervention, leading to desired changes in behaviour	⟶	a *self-directed, work-based* process, leading to increased adaptive capacity

Figure 2: The shift from training to learning
(based on Reynolds, 2004, p. 26)

Learner preferences

The next set of considerations that should shape any discussion on the progress of e-learning concerns learner attitudes. How do people prefer to learn? Surprisingly, considering the importance of the question, there has been very little systematic research conducted in this area. The information available, however, offers uncomfortable reading for the promoters and proponents of e-learning.

For example, every three years the CIPD commissions a market research firm to undertake telephone interviews with people in employment in the UK. The 2008 survey, entitled "Who learns at work?" elicited the views of 751 employed individuals about the training they had received at work in the 12 months before the survey. Participants were asked whether they had received training, what they thought of the training they had received, and what methods of learning they preferred. The results on learner preferences from the 2008 survey were very similar to those obtained in 2005. As stated in the 2008 survey report:

> First, our learners are a pretty happy and positive group. Generally they feel the training they receive is beneficial, and that their employers offer them enough training opportunities. Many of them undertake training and learning in their own time. There is no evidence of negativity, and without reading too much into the data, one can conclude that learning and developing work-related skills are now seen as part of the job.

> However, individual preferences are for social rather than solitary learning. The unequivocally preferred method of learning is for being shown how to do things and then given the opportunity to practice. In our concluding section of the 2005 survey we commented that:

>> Learners prefer active to passive methods of learning. On-the-job training is the favoured method of learning for all categories of employee. This could be seen as a mismatch to the amount of classroom-based learning that is taking place.

> We can repeat this comment now, in 2008, without qualification. (CIPD, 2008d, pp. 11–12)

Solitary learning using the Internet was resoundingly identified as a distinctly unappealing option, even among those purportedly belonging to the so-called 'Net Generation'. To quote again from the same survey report:

> It is true that there was a slightly higher percentage of 16–24-year-olds favouring the Internet. 'Accessing learning materials on the Internet' was the most appealing method of learning by 3% of the population as a whole, and 9% of those aged 16–24. Access through the Internet was considered the least appealing by 21% of the

population as a whole and 6% of those aged 16–24. However, the numbers here are small.

Generally, there is nothing here to suggest we need to adjust our training provision when dealing with younger members of the workforce. (CIPD, 2008d, p. 8)

Progress in e-learning

Thus the emphasis on learning itself is growing, and there is a need to take careful account of learner preferences. Given the above learner reactions, it is not surprising that the CIPD's annual L&D survey, which seeks the views of trainers, has painted a generally discouraging picture for e-learning. For example, in the 2008 L&D survey, training managers were asked which L&D practices they considered to be the most effective, and only 7% chose e-learning. Despite this view, 57% of the organisations that responded had used e-learning in some way (CIPD, 2008b). Indeed, notwithstanding some negative attitudes and pessimism, wherever information is available it suggests that the use of e-learning has grown to such an extent that it is now an essential part of the pattern of training delivery. Survey data from the United States suggests that it may account for as much as 33% of training (by time) (reported in the ASTD's 2008 *State of the Industry* Report – Paradise, 2008). The UK figure (12%) is much lower but nevertheless substantial (estimate reproduced in CIPD, 2008a). Together, these data suggest that organisations (or more precisely, management and L&D departments) perceive greater and more benefits in e-learning than do learners and trainers, and uptake is apparently growing despite trainer resistance and learner indifference.

There have been many attempts to distil the key factors or ingredients needed to make for effective e-learning. Table 1 sets out a typical list, drawn from the CIPD's "Fact sheet on e-learning" (CIPD, 2008a).

Table 1: Designing and implementing e-learning – what has been learnt?
(adapted from CIPD, 2008a)

Good practice guidelines for e-learning in organisations
Based on experience gained over the last decade, the CIPD's view is that the following principles should underlie any e-learning strategy, program or intervention: • **Start with the learner:** Recognise the needs, preferences, strengths and limitations of the audience you are trying to reach. • **Relevance drives out resistance:** If an e-learning program is seen as relating to issues that matter in the organisation, people are more likely to use and engage with it. • **Take account of intermediaries:** Learners need both support and challenge. Much learning requires an intermediary to advise and direct the learner; this as true of e-learning as it is with traditional delivery modes. E-learning will not be successful if taken in isolation from other learning. • **Embed activity in the organisation:** This is a subtler point, but follows from the previous one. E-learning modules or content should be seen as but one element; where possible their use should be linked with instructor-led courses and other human resource management systems (eg performance appraisal) to ensure a holistic approach. • **Support and automate:** This final point reinforces and underscores all of the others. E-learning should not be viewed as providing a way to automate all learning processes. Instead, it should be treated as a powerful new ingredient in a wider mix that contributes to an organisational learning strategy providing a range of formal and informal support mechanisms for learners in the contexts within which they work and learn.

The preceding discussion on learner preferences raises important questions at a time when the e-learning debate is entering a new phase. Web 2.0 and social networking are the new hot topics. The next section of the article considers what and how much will be changed by Web 2.0. A number of current applications of e-learning are then reviewed, considering their potential and the challenges they present for people development professionals.

Is Web 2.0 different?

At the turn of the millennium, leading US researcher and commentator Allison Rossett (2002) of San Diego State University introduced the terms 'stuff' and 'stir' into the e-learning debate. She defined 'stuff' as the reusable Web objects that are deployed on a corporate Internet, the now familiar Web-based modules, and she used 'stir' to describe the communicative and collaborative aspects of e-learning. At the time, there were two categories of tools representing the 'stir': asynchronous online discussion groups (often loosely referred to as online 'communities') and synchronous virtual classrooms (Webinars using technology borrowed from the world of conferencing).

Most of the documented growth in e-learning since Rossett coined the terms appears to have been concentrated on the 'stuff', ie Web-based content modules centrally deployed by the organisation. However, in the last few years several factors have made collaborative learning using technology a more attractive option, including but not limited to the fact that many individuals are more comfortable with technology-enabled modes of communicating and working, and the fact that broadband Internet penetration has steadily increased. The second half of 2007 witnessed a large growth in the popularity of the term 'social networking', which is often used imprecisely and interchangeably with 'Web 2.0'. 'Web 2.0', a term coined to reflect the emerging changes in the way both software developers and end-users are conceiving of and using the World Wide Web, refers to a second generation of Web-based technologies and tools that enable greater collaboration between users; 'social networking' is intended to describe the user communities as well as the networked activities and practices enabled and supported by the proliferation of the technologies. In the words of its originator, Tim O'Reilly (2008, para. 4):

> Web 2.0 is the business revolution in the computer industry caused by the move to the Internet as platform, and an attempt to understand the rules for success on that new platform.

For the advocates, there has been a sudden emergence of new opportunities for enhanced communication, collaboration, co-creation and sharing of content. Wikis and blogs have entered the vocabulary of the L&D manager. Social networking sites like MySpace, Facebook and LinkedIn have experienced exponential growth, and are thought to have much potential for facilitating informal learning and relationship building. In a research report produced for the CIPD, Martin, Reddington and Kneafsey (2009) offered the following working definition of Web 2.0 for human resource management (HRM) professionals:

> Web 2.0 is different from the earlier Web 1.0 which focused on the one-way generation and publication of online content. Web 2.0 is a 'read-write' Web providing a democratic *architecture for participation,* encouraging people to *share ideas,* promoting discussion and fostering a greater *sense of community.*" (Martin *et al*, 2009, p. 2, emphasis in original)

Although the authors recognise the limited applications of Web 2.0 to HRM practice to date, they identify the following as one of five ways in which Web 2.0 can add strategic value to organisations:

> … supporting employees using Web 2.0, such as wikis, employee discussion forums and virtual reality sites, tools to help them to learn and share knowledge and experience. (Martin *et al*, 2009, p. 32)

So, does Web 2.0 mark a significant breakthrough in e-learning? Does it transform opportunities by creating an environment where Rossett's 'stir' becomes the dominant component? Amid the hype, some caution is warranted.

Thus far, the Web 2.0-based e-learning lexicon has arisen from the technology domain, as opposed to from training or learning. 'Blog', for example, is an abbreviated form of 'Web log'; the name 'wiki' (a Hawaiian word meaning "very quick") was chosen due to the speed and ease with which editing the content of such sites can be performed. These two terms and others are being used very loosely in learning contexts, as if the tools themselves are synonymous with learning, and under the implicit assumption that their use will automatically result in the achievement of certain learning outcomes or objectives. There is a need to develop and refine the vocabulary in order to allow L&D practitioners to better understand, discuss and articulate both the possibilities and pitfalls for learning.

Blogs offer a good example. A blog is a form of online diary or journal, an electronic narrative written by an author (or in some cases a group of authors) in which he or she might comment on, for instance, the challenges and issues of the day. Is this a useful intervention for learning? The only sensible answer is "it depends", and this dependence is mainly on two things, namely the expertise and capability of the blogger, and the needs and receptiveness of the learner (who may or may not be the same person). Effective, efficient and engaging learning will only occur in the presence of an appropriate combination of media, strategies and context (Merrill, 2008). The same note of caution must apply when considering community or discussion sites, the latest incarnation of which seems to be in the form of wikis. Originally this term had a more precise meaning that was related to the functionality of the software, in particular the capacity to allow multiple contributions by users and the facility to allow any participant to add to or amend existing content. Again, while there are many community sites that foster thoughtful and informative discussion and the active co-construction of information and knowledge by users, relying on the 'wisdom of crowds' is not without its difficulties and risks (eg in relation to information validity and reliability).

Another factor that inhibits thoughtful discussion, learning and knowledge development may be called 'clunk and wow'. This refers to the way in which individuals tend to be impressed – and oftentimes seduced and distracted – by the apparent capability and potential of new technology, however cumbersome may actually be to use in practice. In pilot activities on the use of collaborative technological tools for learning, participants often report that they lose access or that the system is unreliable and slow to respond, but they are so captivated by the novelty of what they have experienced that they are willing to suspend judgment on practicalities.

The current challenge

The discussion of the results of the CIPD research from 2001 to 2008 presented earlier offers two main areas of insight, one arising from monitoring progress of e-learning over the period and the other from considering conceptualisations and perspectives on the place of knowledge and skills in organisations. Drawing on both of these, it can be concluded that the following three factors determine the acceptance, effectiveness and value of (e-)learning interventions in the modern-day organisation:

- *Value:* Does the approach support the development of individual and team knowledge and skills that enable the organisation to deliver higher value products or better services to customers?

- *Satisfaction:* Is the learning opportunity delivered in a way that learners will embrace, engage with and enjoy?

- *Efficiency:* Can the deployment and delivery be organised in an efficient and cost-effective manner?

In line with the earlier discussion, these questions are about learning, not about technology.

Table 2 seeks to recapture the vocabulary representing the range of e-learning intervention types or methods at a time of excitement over the potential of Web 2.0. It aims to look at the newer technologies in terms of their applications to learning, while simultaneously bearing in mind the capabilities and affordances offered by older or pre-existing technologies . What is evident from this table is that there is an entire range of current applications in organisations whereby technology is used to assist individual learning ("supporting, accelerating or directing", to use the CIPD's preferred terminology). All of the intervention types are made possible because the individual has access to a networked and/or Internet-connected PC at work and is comfortable with its use. All can have a positive impact on learning in the organisation – if the right drivers and circumstances are present.

In many ways one of the most pervasive applications is so obvious that it seems to have been overlooked by most. This is what can be called the 'Googlisation' of learning, whereby a learner searches the Web for just-in-time information to support his or her work in a self-motivated and self-directed fashion. Here, the challenges and issues for the organisation involve organising and determining levels of access, scaffolding goal-oriented and purposeful information searching, evaluation and application/use, as well as capturing/articulating and harnessing the outcomes of informal learning and tacit knowledge development for sharing across teams, departments and the organisation. There is a fine balance to be struck between promoting employee autonomy and empowerment, and the need to manage abuse and minimise distractions or time-wasting activities.

Table 2: Current applications of technology for learning

Technology-based intervention to support learning	How it works
Information/content repository	A general electronic database is maintained that houses information and learning resources relevant to the work that users undertake. This can include both 'bespoke' modules or learning objects (written or customised for the organisation) as well as generic, off-the-shelf modules or learning objects.
Webinars	Participants sitting at their PCs are connected to other participants synchronously (in real time) via the Internet and receive a presentation from an expert speaker. In most current Webinar applications, the speaker uses a PowerPoint or similar slideshow as a visual aid, and two-way or multi-way audio to communicate with participants.
Discussion threads	Individuals offer text-based comments on an identified problem, topic or issue, bringing to the group or community a variety of different perspectives and experience that benefits other individuals as well as the group/community as a whole.
Expert opinion	An expert records thoughts, ideas and observations on workplace or industry-related problems, topics or issues. The comments are made available to more junior (or less experienced) members of the organisation so they may benefit from an experienced perspective.

Virtual world-based activities	Learners participate in activities within a three-dimensional virtual world by controlling 'avatars' (representations of themselves or their alter egos). They learn through exploration and immersion and by reflecting on their exposure to situations that are radically different from their everyday experience.
Online pre-assessment	Participants use online diagnostic self-assessment tools in advance of a learning activity or course so that, with the support of their managers, they are better placed to focus their attention and efforts on acquiring the skills and knowledge they currently lack or in which they require further development, practice or revision/reinforcement.
Online performance support	Sometimes referred to as Electronic Performance Support Systems (EPSS). During normal work processes employees are given direct and immediate access to a full range of information, job tools/aids and training via their PCs (and increasingly, mobile/wireless devices) in order to assist them in performing tasks through just-in-time learning.

One of the key outcomes of the CIPD's work in L&D and e-learning has been a compilation or assembly of case studies illustrating exemplary training and learning practices in a range of contemporary organisational settings. Over 100 of the case studies are on open access, accessible for free at the *Helping people learn* Web site (www.cipd.co.uk/helpingpeoplelearn/). Table 3 contains short summaries of a small number of the case studies, which have been selected to represent and illustrate each of the intervention types identified in Table 2.

Table 3: Current applications of technology for learning – case studies of good practice
Extended versions are viewable at www.cipd.co.uk/helpingpeoplelearn/

Information/content repository at Cable&Wireless

Cable&Wireless Europe, Asia and US is one of the world's leading international communications companies, providing enterprise and carrier solutions to the largest users of telecoms services around the world.

E-learning at Cable&Wireless is based around the implementation of a single, unified platform for learning. This has been delivered through an outsourcing arrangement with the e-learning company, SkillSoft. The core platform is a learning management system (LMS) that is available to Cable&Wireless colleagues as a portal labelled iLeARN. All training delivery channels are linked to this portal.

An underlying principle of the Cable&Wireless approach to training is 'search and learn'. This makes use of a facility on the iLeARN platform. Any colleague (the company's preferred term for an employee, signifying that all staff are peers or partners on equal footing for the purposes of work and learning) within the company, wherever or whenever he or she is working, can type a search term (for example, "project management") to retrieve relevant 'nuggets' of learning. These could be drawn from e-books, e-learning modules or other performance support aids.

Learning specialists at the company estimate that the library of generic material includes some 15,000 items. By contrast, only approximately 60 custom (or 'bespoke') modules have been commissioned, although this is a growing area of activity. Customised e-learning is viewed as essential to support the transformation journey the company is undertaking.

Webinars at The Park Lane Hotel

The Park Lane Hotel is a luxury business hotel overlooking Green Park in Piccadilly, London. It is part of the Starwood Hotels & Resorts Worldwide group, which is headquartered in White Plains, New York.

Webinars are a growing feature of communication and learning at the Starwood group. Some 50 managers and associates at The Park Lane Hotel participate in at least one company-wide Webinar during the course of a given year. Typically, such a Webinar session lasts about 60 minutes. Some Webinars are run for the purpose of disseminating updates and information on new procedures, while others have a more distinct learning element.

Anne Marie Zammit Lupi is responsible for the *Kaizen* quality and productivity improvement processes for Starwood's London hotels. She is a Six Sigma 'black-belt' and participates in a Webinar involving her ten fellow European project leaders every quarter. The expert presenter can be based anywhere in the world. The main advantage of this mode of delivery is clear: it allows people to communicate and training/instruction to be delivered without the need for travel. For this reason, it is extremely cost effective. Zammit Lupi believes the technology is now sufficiently mature and reliable so that it does not act as a barrier or deterrent. Nevertheless, there is a backup telephone conferencing number to allow participants to hear the commentary without the need to reply using voice-over on their PCs.

Discussion threads at Allen & Overy

Allen & Overy LLP (A&O) is an international legal practice with 29 offices in major cities worldwide. It has almost 5,000 staff and 500 partners who provide legal counsel/advice to governments, banks, major corporations and institutions throughout the world. Like all large law firms, A&O is a knowledge-centric organisation where the greatest knowledge asset is its people.

Parents@A&O is an initiative that uses social software to bring together in a virtual community a large and diverse global group of A&O staff who share common needs and interests in that they are either parents or about to become parents. The site has more than 250 people registered as members – estimated to be approximately one-third of the total number of parents based at the London office – and membership is growing rapidly. As is the case with all internal community and social networking sites at A&O, members receive a daily email alert notifying them of new content.

Parents@A&O is a source of useful information for parents with children of all ages. While some of the content is produced by A&O (eg information about the company's maternity coaching program and dates for lunchtime parenting seminars), a considerable amount of information comes from the users (parents) themselves. For instance, users contribute and share with others links to favourite Web sites for buying children's clothing or suggestions on what to do in school holidays. The site has regular news feeds for the purposes of delivering notifications to and alerting busy parents about items they would otherwise miss. It also contains an interactive discussion forum where items of concern can be shared and dialogue generated. Most recently a monthly 'Ask the Expert' series has featured external experts who answer community members' questions on a range of topics. At one point there was, for example, considerable interest in the issue of how to safeguard children against cyber-bullying.

Expert opinion at the BBC

The BBC is a UK public corporation that employs some 24,000 people in 43 countries. The reputation it has gained for the integrity and impartiality of its coverage has made it the world's most respected broadcaster.

Vast numbers of BBC staff maintain blogs, and internal surveys suggest that one-third of all intranet users in the company read at least one of the internal blogs on a regular basis. These blogs are diverse in nature. Their development has been encouraged by the company, with the more 'traditional' or 'orthodox' blogs tending to offer readers insight on issues pertaining to editorial broadcasting, technology and organisational change. No limits on scope are imposed,

and contributions of any form are possible, but all contributors must identify themselves so 'anonymous asides' are not allowed (see also BBC, 2005).

A particularly popular blog is one maintained by Richard Sambrook, Director of Global News at the BBC (http://sambrook.typepad.com). This is an excellent example of a widely respected thought leader in the corporation getting a message on current topics across in a timely manner and in an accessible format. Sambrook started his blog in 2004, when he was first appointed to his current role, with the intention of establishing a means of communicating and sharing ideas with news staff across all locations. He sets out to write a blog entry (posting) two or three times a week, focusing mainly on the way the Internet and Web 2.0 are changing broadcast journalism. He inserts links to relevant material and media on other sites, and actively urges his readership to look outside the company for ideas. In his view, this offers educational value in what can sometimes be an inward-looking organisation due to its size.

Virtual world-based activities at Duke Corporate Education

Duke Corporate Education (Duke CE) was founded in July 2000 as a not-for-profit company to deliver custom corporate education to clients throughout the world. According to Steve Mahaley, Duke CE's Director of Learning Technology, the latest developments in technology provide rich new opportunities for learning; some of these technologies have immediate application, while others are still at the early stages of development, uptake and adoption. Currently, there is significant focus on three-dimensional, multi-user virtual worlds and games as environments that can serve L&D ends. This thinking has led Duke CE to create and develop a presence in Second Life (SL at www.secondlife.com), the best known and most popular of the virtual world platforms available, which was created in 2003 by Linden Labs.

One of the main attractions of learning in a virtual world is that it can bring users together from different locations and create a feel of physical proximity that most other e-learning technologies are not able to achieve. It also allows for a unique level of shared experience from the richness and realism of the visual environment, from the ability to build and share objects through avatars and from the capability to create and join affinity groups. Considering applications of virtual worlds to education and training, Duke CE describes a continuum of designs from 'scripted' to 'open access' learning opportunities in SL. The difference lies in the extent to which the virtual environment is controlled, with learning activities guided by instructors or facilitators and/or structured and scaffolded by programmatic instructions governing the behaviour of the environment and objects therein. A scripted opportunity could involve a controlled, guided tour of locations in SL and their facilities/features that are relevant to the subject or topic at hand. Following exploration of the virtual world and/or the completion of other in-world activities, a discussion forum might be used to focus dialogue and scaffold joint reflection on the topic.

Online pre-assessment at Bracknell Forest Council

Bracknell Forest Council is a unitary local authority in Berkshire, South East England. It employs some 370 staff working in adult social services, a profession that is highly monitored and regulated – For example, all new staff are expected to demonstrate capability against common induction standards.

The traditional method of ensuring new staff members' competence was an instructor-led course that all inductees were put through. However, such a 'one-size-fits-all' approach was found to be inefficient, since the prior knowledge of new entrants to the adult social services department varied enormously. A common classroom module that catered to the needs of all participants was difficult to achieve, and impractical to deliver. At a meeting of the six unitary councils in Berkshire county in the summer of 2006, the use of online testing was suggested as a solution to the induction problem. This was then developed by four of the six councils in cooperation with a software house, Common Induction Standards (CIS at www.cis-assessment.co.uk). As this was viewed by CIS as a product development opportunity for the company, no costs were incurred by the councils beyond the time of their L&D staff.

The approach used is simple. On arrival at the organisation (or ideally, before) the new member of staff accesses Web-based assessment exercises based on six standard elements. A series of

questions is asked in each module, with the module corresponding to each element taking eight to ten minutes to complete. At the end of each module, a short report is generated that compares the list of correct answers by section with the individual's answers. The overall percentage of questions correctly answered is also presented. When all six modules have been completed, an overall summary report is generated, which the individual discusses with his or her line manager. This is important because factors other than lack of knowledge may account for an incorrect answer, eg misinterpretation of a question. The discussion is an additional measure for avoiding unnecessary costs in that it helps to ensure that unneeded training is not provided; it also encourages managers to accept responsibility for affording their staff appropriate support and guidance, and becoming actively involved in the professional learning and development of their staff.

Online performance support at Moorfields

Moorfields Eye Hospital is a UK National Health Service (NHS) Foundation Trust. It employs 1,300 staff. A patient administration system (PAS) is used throughout the hospital to record basic data about patients as well as to track their progress from the time of admission.

Traditionally, staff training on the use of the PAS was conducted through a series of classroom modules delivered by IT trainers. Although these face-to-face sessions continue to be a feature of the training provision, a new initiative was introduced in Spring 2007 with the deployment of MORSE (Moorfields Online Resource for Support and Education). In addition to serving as an authoring tool for e-learning modules developed in-house by Moorfields staff, MORSE is able to provide online performance support for any software package. It also incorporates a facility for searching content across all MORSE resources to facilitate just-in-time learning.

Importantly, MORSE has been used to support the rollout of the revised PAS. The system works as follows: A small, friendly 'owl' is a feature of the top right-hand corner of the user's screen. When the 'owl' recognises the software being used – as is the case in all PAS applications – it changes colour or lights up, indicating that immediate guidance is available in the form of a drop-down cue card. The user can click on the owl to see a short list of explanations, tips or guidance, some of which link to detailed e-learning modules authored with the help of subject matter experts at the hospital.

Each cue card contains less than 100 words, and Moorfields' learning team has developed over 100 of these cards that are linked with particular aspects of PAS. The team is currently considering introducing a new feature so that when a minor update in system capability or procedures takes place, the 'owl' will automatically generate a message about the change and provide appropriate guidance when the user accesses the relevant PAS screen.

The examples in Table 3 demonstrate the wide range of options now available for taking advantage of modern information and communication technologies to promote learning in corporate and workplace settings. However, the fact that these applications are technologically possible does not imply that every organisation should necessarily adopt the new practices irrespective of business objectives or operating environment. To place the range of options into perspective, Figure 3 depicts the relative placement of each of the e-learning intervention types along each of two dimensions, namely the degree to which learners are required to possess the characteristics and competencies of *knowledge workers* (self-confident professionals who are motivated to learn and can manage their own learning with minimal guidance and direction) and the level of interactivity and *collaboration* (ie the 'stir' component) afforded. Although empirical research may be needed to validate this model, what the diagram illustrates – tentatively, like any initial attempt to capture emerging technology trends – is the rich range of choices. It is also imperative to acknowledge that the relevance and applicability of any learning technology will depend on many other contextual elements, including but not limited to the business drivers in the organisation, the learning task design and the readiness and receptiveness of learners.

To conclude, the fact that technology has advanced does not mean that the fundamental theories, goals, rationales and approaches to learning at work must be changed. Technology is an enabler in the learning process – It can be used to improve access; it can be used to bring about increased efficiency, speed and productivity in terms of the way information and opportunities for learning are delivered to the individual. However, if the basic questions about learning and its role in the organisation are not at the forefront of any discussion relating to e-learning, disappointment and frustration are likely to result.
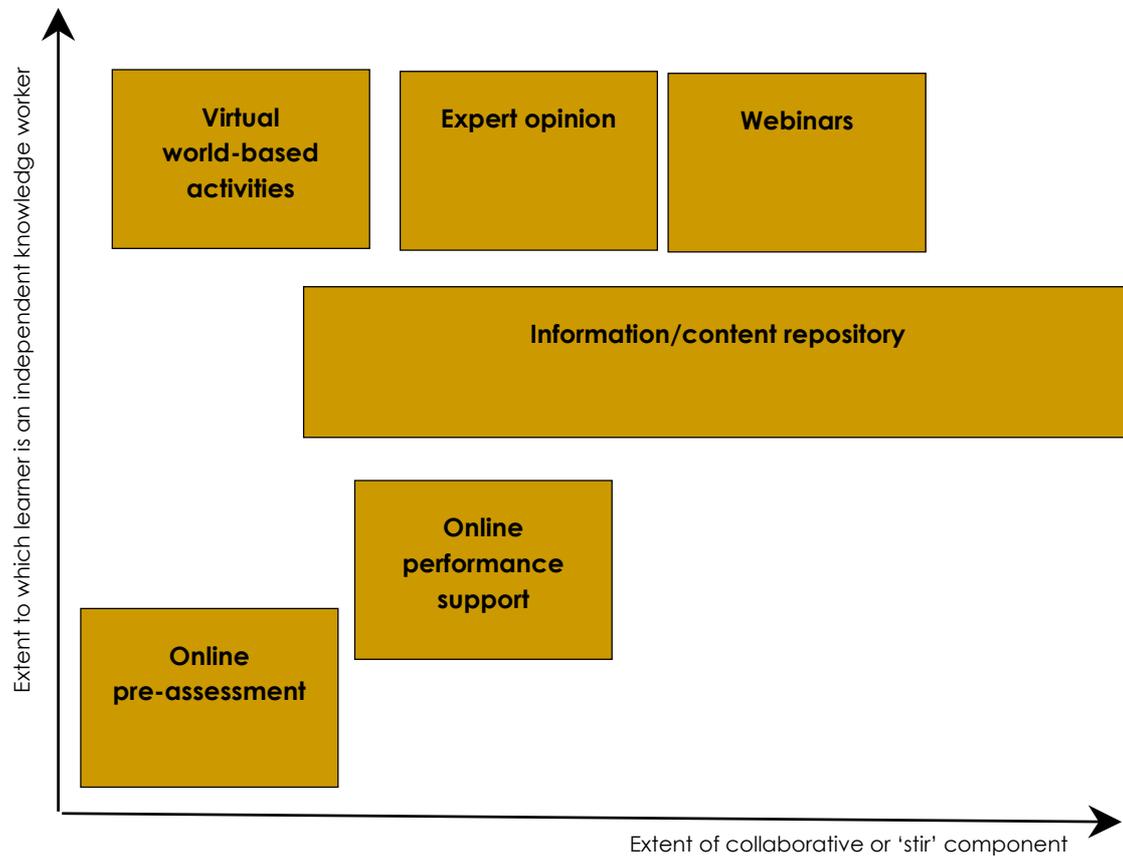
Figure 3: A perspective on current approaches to learning using technology

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