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Exploring e-Learning

E Pollard
J Hillage

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The Institute for Employment Studies

IES is an independent, international and apolitical centre of research and consultancy in human resource issues. It works closely with employers in the manufacturing, service and public sectors, government departments, agencies, professional and employee bodies, and foundations. For over 30 years the Institute has been a focus of knowledge and practical experience in employment and training policy, the operation of labour markets and human resource planning and development. IES is a not-for-profit organisation which has a multidisciplinary staff of over 50. IES expertise is available to all organisations through research, consultancy, publications and the Internet.

IES aims to help bring about sustainable improvements in employment policy and human resource management. IES achieves this by increasing the understanding and improving the practice of key decision makers in policy bodies and employing organisations.

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Contents

1. Introduction and Summary

Does your organisation want to extend its use of computer-based technology to provide training resources to your employees? Are you looking to integrate training and development with your knowledge management and performance support processes? Is e-learning part of your organisation's e-business strategy?

This brief guide to the world of e-learning is designed to help you pick your way through the e-learning maze. It aims to provide a practical overview of e-learning.

The guide is a product of the Institute's Research Club project to explore the world of e-learning. It is not an attempt to evaluate the many claims for e-learning, the veracity of which only time will tell. Nor does it investigate the technical aspects of e-learning or provide a comprehensive map of e-learning provision. Rather, it summarises current research and commentary on the provision of all forms of online learning, supplemented by information drawn from discussions with the Institute's member organisations. On this basis, it provides practical pointers to:

- what e-learning is all about
- the benefits that are claimed for e-learning
- the potential pitfalls of learning online, and
- some of the issues organisations need to consider when developing an e-learning strategy.

1.1 Key points in this guide

1.1.1 What is e-learning?

e-Learning is not new: it has been around in some form or other for the past ten years. However, interest is rapidly growing. A quarter of all learning is expected to take place electronically in five years time.

e-Learning involves the delivery and administration of learning opportunities and support via computer, networked and web-based technology, to help individual performance and development.

In its broadest form, e-learning encompasses:

- the provision of **information** via information or communication technologies in a very accessible and immediate way that can enable individuals to refresh or extend their knowledge and improve their performance
- the provision of **interactive** learning materials and packages designed to facilitate skills or wider personal development
    - The actual courses provided via e-learning currently mainly focus on IT skills and, to a lesser extent, on softer skills (people to people training) such as general management skills, or more specific aspects of management such as interviewing, negotiation, conducting meetings *etc.*
- At the third level, e-learning is **multi-dimensional** and embraces both the first two levels into a wider performance support framework. Here, it is coupled with processes to administer and monitor learning provision and outcomes, and to provide learners with various forms of support from experts and peers.
    - On administration, e-learning can provide access to learning resources, including, to a greater or lesser extent, previews, registration and tracking of use. This can be done either through passive portals (*eg* BlueU) or more active learning management systems (such as Lotus LearningSpace, or BT's Solstra).

1.1.2 Pros

The benefits claimed for e-learning include that it can be:

- just in time, just enough and just for you — e-learning materials can be accessed at the most convenient time, in short segments and can be customised to suit learner needs.
- cost effective — with significant reductions in delivery costs, reportedly in excess of 50 per cent.
- up-to-date — content can easily be updated from one central source.
- quick — the time needed to learn a particular topic or skill is reduced or 'compressed' as learning is tailored to that individual. Most reports suggest a 50 per cent reduction in learning time.
- retainable — the smaller and more relevant the learning the easier it is to capture.
- risk-free — people can learn in a relatively anonymous environment without the embarrassment of failure and/or any socio-cultural bias from personal contact.
- consistent — everyone gets the same standardised message from e-learning, which is valued by some organisations.
- interactive and collaborative — and therefore more fun.
- easy to track — as the administrative functions facilitate learner registration, monitoring of learner progress, testing and record keeping, without the need to develop additional systems.
- empowering, as it increases people's IT skills.

1.1.3 Cons

Some of the potential drawbacks are that e-learning can be:

- technology dependent — and learners need access to appropriate hard and software to benefit fully. Bandwidth is a particular problem.
- sometimes incompatible with other systems and materials, although the development of standards may minimise the potential fragmentation or confusion.
- unsuitable for some types of training — particularly some soft skill development that relies heavily on interpersonal contact such as team building, communication or presentations.

However, even in these cases, e-learning can be useful in pre-course preparation or post-course follow-up.

- unsuitable for some types of learners — e-learning can be seen as cold and impersonal and is thought to require high levels of self-discipline and self-motivation as 'learning' at a desk may not be seen as a 'legitimate activity'.
- somewhat less interactive than it is cracked up to be — some e-learning programs are no more than 'photocopied pages on the Web' (although quality is improving), and some e-learners have reported difficulties getting to grips with programmes, the absence of feedback, and other aspects learner support.
- expensive to set up — both in terms of providing the infrastructure (although this may be in place already, intranets *etc.* will have to be able to carry a lot of traffic) and the cost of developing content. Some studies have pointed to the 'hidden costs' of providing learner support.
- still dependent on human support — both to help people use the software and also to support their learning.

1.1.4 Issues to consider

This guide identifies half a dozen issues for organisations to consider in developing their approach to e-learning:

- do you need a bit of both? — most organisations are working on ways of blending e-learning with traditional classroom approaches to training
- do you do it yourself? — there are three main options for resourcing e-learning materials:
  - buying off-the-shelf programs, thought to be a good start, but unlikely to be sufficient
  - customising externally developed content, or finding an external contractor to develop materials from scratch — on the up at the moment, but expensive
  - developing materials in-house — thought by some to be the way forward.
- do e-learners need support? — The provision of support to learners is a key element of a comprehensive e-learning strategy and can take a number of forms:
  - automated support — advanced help facilities

    - expert support — synchronous (real time) or asynchronous (*post hoc*) contact between learners and tutors. The latter is felt to be better for learners with good self-discipline and an erratic schedule, while the former is suited to learners or learning situations needing more structure and immediate feed-back.
    - peer-to-peer support — contact between learners, either as a follow-up to particular learning activities and/or as some form of closed (or open) learning set or community. Either form may or may not need facilitating.
    - mentoring — one-to-one interactions between individuals.
- will the trainers be unhappy? — e-learning is likely to change the role and skills of trainers, but not eliminate their role altogether.
- how can you tell if it is working? — e-learning generally provides a host of functions to help evaluate not only use and throughputs of learning provision but also outputs. This can help both individuals to manage their own learning and organisations to manage their overall provision.
- getting it right — five factors are thought to contribute towards successful implementation of e-learning:
    - **analysis**: the identification of training needs, specification of learning objectives, selecting and understanding the audience, and deciding on the methods of learning
    - **design**: creation of own bespoke applications by selecting content, media, type of interactivity available to learners, and user interface
    - **development**: putting the design into action, which involves production of audio/video, programming of software, authoring of materials, and testing
    - **implementation**: promoting the programme, collecting management information, and appointing skilled mentors
    - **evaluation**: reviewing the performance of the programme against its objectives, in terms of take-up, efficiency, effectiveness, and return on investment (ROI).

2. What is e-Learning?

The world of 'e' is big business and the 'e' prefix is being attached to everything — e-commerce and e-recruitment, and the latest in the 'e' stable is e-learning. e-Learning is beginning to take off in the UK and the signs from the USA indicate it will be difficult to ignore. As one commentator noted, *'online learning is not the next big thing; it is the now best thing'*.

> *'e-learning is forever. Continuous education. The forty year degree. Daily learning. Work becomes learning, learning becomes work, and nobody ever graduates.'* (Donna Abernathy, Training and Development Magazine, quoted in Cross, 2000)

In 1998, 92 per cent of US organisations were planning to implement some form of Internet or intranet based training (Epic, 1999). In 1999, 20 per cent of corporate training in the US took place electronically. This is predicted to rise to 40 per cent by 2003, and in the next three years the US corporate e-learning market is expected to reach $11.5 billion (Urdan and Weggen, 2000). The UK market is more subdued. However, the IPD found that 40 per cent of establishments had intranets and Internet access for training purposes (IPD, 2000) and it is predicted that almost a quarter of learning in the UK could be online within five years (Epic, 1999).

Nonetheless, work in the UK by Knowledgepool (2000) found that e-learning is not yet fully embedded in the workplace — even where it is available. Three-quarters of employees in companies that had online training programmes were unaware of what was on offer. Fewer than one in five companies had an e-learning policy.

1.2 A broad or narrow definition?

Different people mean different things by the term 'e-learning'. Some see the concept quite narrowly, others more broadly. Most use the term to refer to the provision of learning opportunities in various shapes and forms rather than the process of learning itself. Generally, the differences between instruction on the one hand and learning on the other, or between knowledge acquisition and skill enhancement, are merged under a general 'e-learning' umbrella.

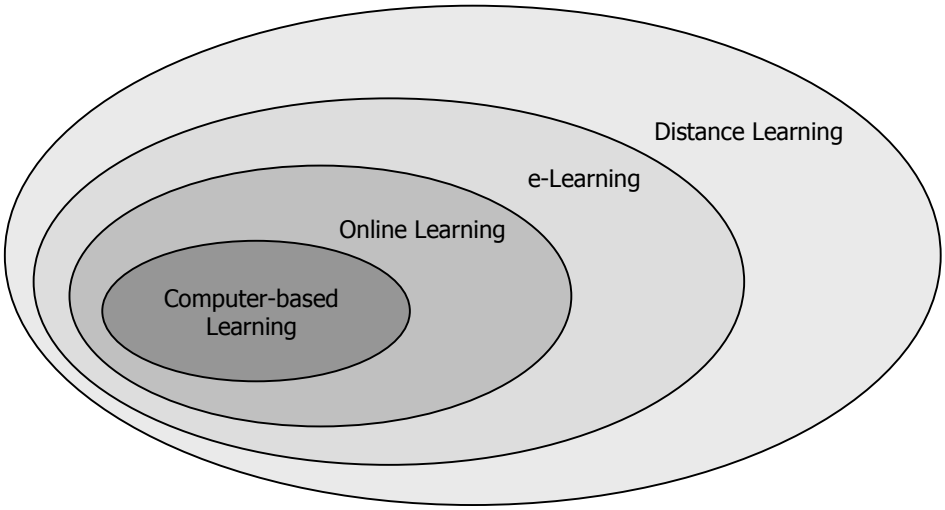
While a narrow view uses 'e-learning' synonymously with terms like computer-based training (CBT), others see the concept as embracing more than just the provision of learning opportunities through computer technology.

A useful introduction to the various terms used in e-learning is provided by Urdan and Weggen (2000). They define e-learning as the delivery of learning materials, packages or opportunities (*ie* content) through various forms of electronic media, including the Internet, intranets, extranets, satellite broadcast, audio/video tape, interactive TV, and CD-ROM. They use e-learning synonymously with technology-based learning or TBT.

They see e-learning as a subset of distance learning, as distance learning would include all elements of e-learning *plus* text-based and correspondence-based learning or courses. However, they seen online learning (or web based learning, WBT) as only one element of e-learning, describing only the Internet, intranet or extranet elements of e-learning. Therefore, online learning is set within e-learning, which in turn is set within distance learning (see Figure 2.1). Block and Dobell (1999) also locate e-learning within distance learning, which they define as interaction between a learner and a remote knowledge source physically separated from the learner. Epic (1999) acknowledge that web based training is only a subset of online learning, which encompasses educational applications, and wider networks.

An even wider definition of e-learning, which moves the concept beyond merely the provision of learning opportunities through a variety of media, is given by the US e-learning guru Elliot Masie '*e-learning is the use of network technology to design, deliver, select, administer, and extend learning*' (Cross, 2000).

Figure 2.1: Subsets of distance learning



Source: Urdan and Weggen, 2000

Most learners and many organisations associate e-learning with learning via a computer (see *TechLearn Trends*, October 19 2000). However, the concept is increasingly being given a wider focus, to embrace a wide variety of learning provision, both formal and informal, simple and complex, coupled to the administration of learning, and the provision of learning support.

One way of seeing this wider, more holistic view of e-learning is to see it as a three-level model:

- At the first level is the provision of **information** via information or communication technologies. This is in a very accessible and immediate way that can enable individuals to refresh or extend their knowledge and improve their performance.
- The second level involves the provision of **interactive** learning materials and packages designed to facilitate skills or wider personal development.
- The third level is **multi-dimensional** and embraces both the first two levels into a wider performance support framework. It is coupled with processes to administer and monitor learning provision and outcomes, and to provide learners with various forms of support from experts and peers.

IBM has a model of e-learning which has four layers.

The first level covers knowledge and awareness — *read it, see it, hear it* — involving information sites and web lectures.

The second level covers application — *try it, practice it* — including computer and web-based training and simulations.

The third level involves applied skill — *discuss it, practice it, with others* — and includes collaborative learning, team rooms, online mentoring.

The fourth layer is mastery — *put it all together* — primarily face-to-face activities such as workshops designed to consolidate skills development.

Example

At all levels, particularly the second and third, the consensus of opinion is that e-learning does not mean the demise of face-to-face or people-based interaction. One of the main themes that emerges from the literature and our discussions with organisations embracing e-learning in its fullest sense, is that technology cannot wholly replace the role of the trainer or the fellow learner in helping people to learn. However, if the rhetoric is to be believed, it can accentuate the provision of learning opportunities.

Below, we discuss each of these three levels of e-learning in a little more detail.

2.1 Level 1: Provision of information

This is really the most basic form of e-learning. Here e-learning is used to circulate information widely. An example of this use of e-learning would be to provide employees with online access to the company's mission statement or business strategy, and to provide information on the company's products. McCrea *et al.,* (2000) looked at applications for e-learning, and felt it was particularly suited to delivering a concise and consistent message during times of corporate change or restructuring.

Boots the Chemists delivered information regarding the launch of their loyalty card to staff via their networked CBT resources (one networked server in each store).

Example

2.1.1 Performance support

At a more advanced level, information is provided more interactively and immediately to support the individual in their day-to-day work tasks by:

- simplifying the complexity of a task
- providing information necessary to perform a task, or
- supporting decisions by helping individuals to identify appropriate actions (Ruttenbur *et al.*, 2000).

Carliner (2000) feels that the information, training, coaching, monitoring, and task handling provided online, enhances individual performance. He also notes that this use of e-learning may allow relatively inexperienced staff to perform work which in the past may have been carried out by a more experienced or specialised member of staff, or can enable an expert to make a better informed decision. Ruttenbur *et al.* (2000) discuss electronic performance support systems (EPSS) which they say allow users to learn while actually accomplishing a task — to learn from doing, which they believe '*allows just-in-time learning at its best*'. McCrea *et al.,* (2000) also note the importance of performance support, and refer to this aspect of e-learning as *'on-demand task related resources'* which are tactical, task-oriented learning; or quick, easy to find, on-demand packets providing tutorials on specific tasks.

Example

NETg's development of 'how do I … ?' training which consists of learning objects lasting between six and ten minutes (Epic, 1999).

Dell's visual work instruction system with large icons activating 20-30 bites of information conveying new procedures to workers (Hall and LeCavalier, 2000).

The package used at **Sun** to provide experienced staff with quick desktop reference material (McCrea *et al.*, 2000).

ICO Global Communications' programme to prepare staff for the launch of its global personal communications service, providing staff with a library of product and process knowledge in a variety of languages (Epic, 1999).

Cisco's Field e-Learning Connection (FELC) a website that aggregates, on one database, sales and product related information, organised by job title, work area, specific technology and product, to enable the salesforce to access the information they need quickly and easily (Anna Muoio, 2000).

A basic example of e-learning for performance support would be the 'Help' option in a software programme. A more sophisticated example are the programmes which aid doctors prescribe the right drugs and which take into account the effects of one drug interacting with another.

Some may question whether the following of 'instructions', as epitomised by the use advanced 'help' functions, constitutes 'learning' as such. However, such provision is generally included as advanced forms of the 'information' level of e-learning.

2.2 Level 2: Learning online

More interactive forms of learning constitute the next level e-learning and are most commonly associated with the term. Here, e-learning is used to provide a structured event intended to provide knowledge or skills. Examples include: teaching of common business applications, induction programmes (a major growth area in e-learning), sales and marketing, and management training. The market appears to be currently dominated by the provision of IT skills development.

Example

The **TUC's** online distance learning courses (*eg* employment law) is provided via its learnOnline platform in a virtual classroom environment. The course sets out aims and objectives, provides learner profiles and delivers course materials (including activities, assignments and background resources) It provides an environment in which learners can communicate with each other and with tutors in real time in an informal online discussion forum (NEC, 2000).

IBM's management development training, of which 70 per cent is delivered via e-learning (Hall and LeCavalier, 2000).

The **House of Fraser's** business and management skills course (covering motivation, feedback, delegation, time management and leadership) which is delivered online to improve the efficiency of in-store and head office training.

The **Bank of Scotland's** induction programme for new branch customer service staff, and their programme to provide compliance training for customer service staff (Epic, 1999). Jarvis Hotels also use CBT for induction training (IRR, EDB 123, 2000).

Boots the Chemists' programme to enable staff to upgrade their role to cosmetics advisers. Staff follow a CBT programme which is downloaded from the central mainframe to their store networked server (IDS 679, 1999).

Example

Northern Foods' programme on food safety which was delivered online to 22,500 staff and was warmly received.

BT's safety training programme which is wholly delivered online and involves a mixture of video, indexing of key documents, and interactive testing.

The British Institute of Innkeeping's marketing programme for its business development certificate training for pub managers (Epic, 1999).

Recruitment consultant **Robert Half International's** scheme which offers free online training (around 500 courses) to its temporary and contract candidates. The training provided allows nomadic individuals to update their skills when they may not have access to employer backed training (IRR, EDB 121, 2000).

2.2.1 Content

> *'While there is a lot of interest in new tools for creating and delivering learning, the real interest is in content. Almost every one of our contacts in major organisations has expressed the immediate need for technology delivered content in a wide range of topics. The point being that "Content is King".'* (Elliot Masie, quoted in Epic, 1999, p. 6)

Content refers to the actual courses provided via e-learning, and as noted above, content is the focus of much of the attention in e-learning. Content is the largest of the e-learning market segments (the others being technology and services — which take care of the administration side of e-learning, described in the next section). It accounts for two-thirds of the market (Ruttenbur *et al.*, 2000; Urdan and Weggen, 2000). However, the content market can itself be segmented into two broad product groups:

- IT skills, and
- business and soft skills.

IT skills (people with tools training)

Currently, the online training market (or corporate e-learning market) in the US is dominated by IT training, which includes training in application software and infrastructure software. IT training courses account for $0.87 billion. This is four times larger than the soft skills sector of the market (Urdan and Weggen, 2000). IT training accounts for one-third of all training delivered

in US organisations (*Training Magazine*, quoted in McCrea *et al.*, 2000).

IT training also seems to dominate the UK online training market. A study in the UK by Epic (1999) found the most favoured subject addressed online is IT user training. They note that IT user training is particularly suited to online delivery because:

- it is largely concerned with cognitive learning
- it is easy to simulate tasks (show me, try it approach)
- rich media is not required
- content needs to be regularly updated
- learners vary in the depth and breadth of training required, and
- large audiences need to be trained in a very short time.

McCrea *et al.* (2000) agree, noting that e-learning is particularly suited to training in new IT systems and IT certification, which they cite as the traditional use for e-learning.

Soft skills (people to people training)

Online courses involving soft skills include: general management, group management, customer relations, leadership, communications, diversity, interviewing techniques, team building, conducting meetings, negotiation skills, sales and marketing, human resources, and professional development/personal improvement. Although the soft skills side of the content market is smaller than the IT side, it is growing dramatically and is predicted to surpass IT online training by 2003 (Urdan and Weggen, 2000). Indeed, Block and Dobell (1999) believe that as bandwidth increases, more soft skills training, or people to people training (rather than people with tools training or IT training), will be available online. A study in the UK found that respondents predicted the use of online training for all major subject areas within five years (Epic, 1999).

2.3 Level 3: multi-dimensional learning

At the third level in our simple model, e-learning includes information-based and interactive learning, plus wider aspects of

knowledge management, learner support and learning administration.

2.3.1 Knowledge management

There is much debate about the merging of knowledge management and e-learning, since these learning strategies have different goals. Tom Barron (2000) argues that while knowledge management is about capturing and sharing real-time knowledge, the traditional approach to training (and therefore e-learning) implies the assessment of the acquisition of skills or proving what you know. Therefore, in using e-learning for knowledge management the focus should be about access and sharing of lessons learned, rather than assessment.

e-Learning can be seen as a way to share expertise by capturing, storing and organising the knowledge and experiences of staff, in order to make it available to others in the organisation. This could involve providing access to: documents which record lessons learned; stories from people on how they've used applications effectively; case histories; and formal documents such as reports, presentations and proposals. This form of e-learning may sometimes be referred to as online reference.

More interactive forms include online communities in which learners are supported or coached by 'experts', not necessarily skilled trainers but people with relevant experience or expertise which they can pass on.

Example

Shell Exploration and Production's online knowledge management system illustrates the knowledge management aspect of e-learning is. This involves a web-based expertise directory which runs alongside knowledge-sharing forums (Hall and LeCavalier, 2000).

Another example is the Knowledge Management Community developed by **Boeing**, which enabled employees to communicate and learn from each other, as the company underwent reorganisation (TechLearn Trends, 2000).

Another is **Ernst and Young's** Virtual Business School, which aims to build a web of knowledge, particularly through its connected learning element. This uses Lotus Notes based discussion forums for blue sky discussion, sharing of ideas, and reflected conversations (IDS 679, 1999).

There are several e-learning companies which are currently working on combined knowledge management and e-learning

solutions, these include: Pensare, Arista Knowledge Systems, gForce, and IBM (with its MindSpan Solutions) (Tom Barron, 2000).

2.3.2 Learner Support

Online conferencing and e-mail facilities enable the provision of various forms of learner support:

- between peers — *eg* course attendees can form communities to share their experiences and discuss issues once they return to the workplace — such communities may be closed (providing learners with the security of confidentiality), supported by a facilitator or open to non-course attendants
- between trainers and learners — for the provision of more formal support during a learning activity
- between coaches or mentors and individuals — for more individual and informal learning opportunities.

The development of collaborative learning communities within the IBM management development programme is an example of this form of e-learning.

Urdan and Weggen (2000) refer to *'surrounds'*, which they believe to be one of the *'hottest growth areas'*, as Internet/intranet meeting places for instructor-led classes that *'provide community, communication, and supplemental materials online.'*

This aspect of e-learning is discussed further in Section 5.2.

2.3.3 Administration

According to Masie, in Epic (1999), e-learners want:

- a single site access to all learning resources
- the ability to pre-view courses, to be able to preview programmes
- the ability to get detailed information on learning formats
- to register for learning online; to build and view a learning portfolio
- to get advice on the best programmes, and
- to get access to online testing.

These needs can be catered for through the administration side of e-learning — the systems and programmes that enable the management, organisation, and delivery of e-learning content. Two major aspects or devices of e-learning administration are:

- portals, and
- learning management systems (LMS).

Portals are passive, while learning management systems are more active entry points.

Portals

eLearnity define a portal as *'an access point to a set of services via a web-browser. an aggregation of learning services and associated products into a single (hopefully) coherent access point'* and note that Brandon Hall defines them as 'web sites that provide a combination of courses, collaboration and community' (eLearnity, 2000). Whilst Urdan and Weggen (2000) define them as *'provid[ing] consolidated access to learning and training from multiple sources by aggregating, hosting and distributing content.'* A portal therefore is an entry point to e-learning.

Portals are a relatively new addition to e-learning, and eLearnity notes that companies have only recently started to use them to deliver learning.

> *'The learning portal game is new, but exploding. We estimate that in 1999, about 100 learning portals went into business claiming to be the primary destination for learning on the Internet.'* (Urdan and Weggen, 2000)

Portals typically provide (and allow learners to browse) course catalogues, e-learning products and links to other learning resources. They may also provide course registration, search facilities to find content, event calendars, need assessment tools, and instructional support — all through one central location. Ruttenbur *et al.*, (2000) note that a portal is generally a marketplace for content developed by third parties. So a portal is a service provided by one company to another, which offers products from a range of other companies.

Portals can be either external or internal.

- **External portals** are public environments which can be accessed by many organisations via the Internet. However, they can be tailored to a specific organisation, so could be made to look like their existing systems. These external portal services are provided by Applications Service Providers (ASPs). As they are externally provided they free up space on company intranets but tend not to be able to generate data on the usage of learning materials (which could be fed into company systems).
- **Internal portals**, however, are private, organisation-specific environments available over a corporate intranet. As these are provided internally they can be integrated with the company's internal HR systems.

Example

An example of an (internal) portal is that used by **Sun Microsystems**. They have a portal delivered by their corporate university Sun University. It is personalised to the individual user's needs and has three main areas: my library, my training, and my job. The library links learners to news, research, databases and information, and provides access to purchasing other learning materials. The training area links learning opportunities with the individual's personal and professional development. It provides access to courses and reviews courses, provides access to competencies and development plans, and access to learning communities. The job area provides users with tactical performance-supporting job aids (McCrea *et al.,* 2000).

A popular learning portal is:

- BlueU (www.blueu.com) The website reports that BlueU is a leading creator of integrated, enterprise e-learning solutions. The site offers over 500 courses on IT skills, financial skills, and soft skills, and aims to *'bring the learning resources of the world directly to your desktop, in the comfort of your workplace or home'*. BlueU also offer Learning Management Systems.

Learning management systems

A learning management systems (LMS) may also be referred to as a course management system (CMS) or virtual learning environment (VLE). These can be provided via a portal but can also be provided separately. An LMS is the platform which deploys and manages learning content. It is a software package which:

- manages courses and course registration
- manages course information, course scheduling (timetabling) and administration

- provides access to learning
- tracks student registration, access and progress
- produces learning reports
- provides tools to communicate with other learners (collaboration tools)
- provides access to online help, and
- provides personal space for learners to store learning materials (eLearnity, 2000; Milligan, 1999).

An LMS can also interface with existing enterprise systems and can provide tools for authoring content (McCrea *et al.*, 2000). An LMS may also be used to manage physical classroom training.

Epic (1999) note that the LMS is increasingly seen as a key ingredient in successful online learning. They note that the LMS can help with:

- matching student competencies with organisation competency frameworks
- creating curricula and assigning students to groups
- managing student results, and
- providing learning and collaboration environments.

Popular LMS packages include (Epic, 1999; Milligan, 1999):

Lotus LearningSpace (www.lotus.com)

Lotus LearningSpace claims to support synchronous (real time), asynchronous (delayed collaboration) and self-paced learning. It has five features:

- schedule
- mediacentre
- course room
- profiles, and
- assessment manager.

The schedule presents the design and structure of courses. Learners are presented with the learning objectives, deadlines, course materials, exercises, and tests/quizzes. The mediacentre includes all course-related content, additional information to

support learners with their learning, and access to external sources. Information is in various forms, *eg* text, video, multimedia, graphics, spreadsheet and simulations. The courseroom is the interactive environment in which trainees work with each other and/or the trainer. It enables collaboration publicly or privately, synchronously (through Lotus Notes) and asynchronously. The profiles area contains information about trainees and trainers such as contact information, photographs, and biographical information. It allows users to create a home page of information about themselves. The assessment manager is an evaluation tool to test and give feedback to learners, and review learning.

Example

Lotus LearningSpace is to be used by **American Express**, to provide learning to 70,000 employees around the world (Epic, 1999).

BT/Futuremedia Solstra (www.solstra.com)

Solstra claims to provide a complete solution for administering, delivering and creating online learning. The system has been developed by BT who argue it is the first 'multi-vendor' system on the market. It has two main parts: Solstra Administrator, and Solstra Developer. The administrator holds the company's training materials, provides support and instruction, organises employee records, and allows administrators to track progress and test results. The developer is an authoring tool which allows the creation of content for online delivery.

Example

BT uses Solstra as a way of providing access to a large library of online courses and to maintain records of student progress (Epic, 1999). Some 37,000 of BTs employees are registered users of Solstra and BT hopes that in time all 130,000 employees will have access.

Other packages include:

- **Asymetrix Librarian and Ingenium** (www.aysmetrix.com)
- **Macromedia Pathware** (www.macromedia.com)
- **WBT Systems TopClass** (www.wbtsystems.com) and
- **SABA** (www.saba.com).

Hall (2000) provides advice for organisations considering purchasing an LMS package. He suggests organisations should

not only focus on the look and ease of use of the product but also the provider's development methodology, their upgrade philosophy, their approach to content, and the security and support provided. A list of LMS vendors is provided in his report, available at http://www.brandon-hall.com/learnmansys.html.

2.4 In conclusion — a definition

The term 'e-learning' may have emerged in the UK in the last two years but organisations have been using computer based technology in various forms to deliver learning for over ten years. SRI Consulting looked at how learning technologies have changed, moving from classroom instruction, through video and audio, through non-networked computer based training, to technology-based training and, in the future, to digital and satellite based training. (Ruttenbur *et al.*, 2000). While elements of e-learning have been around in some form or other for over 10 years, the development of information and communication technologies have meant that e-learning has now come to mean much more than just learning from a computer.

On the basis of a review of the various uses of the term in the literature, and among the organisations we have examined, we define 'e-learning' as:

> *The delivery and administration of learning opportunities and support via computer, networked and web-based technology to help individual performance and development.*

3. The Benefits of e-Learning

Much of the literature concerned with e-learning extols its virtues, which is unsurprising as most of the literature is produced by companies providing e-learning products and services. However, our discussions with organisations suggest that many of the benefits described do seem at least partly genuine.

3.1 e-Learning is …

3.1.1 … just in time, just enough and just for you

One of the main and most often cited benefits of e-learning, is its flexibility, *ie* e-learning provides a learning experience which can be accessed at the most convenient time, can be provided in short segments, and can be customised to suit a learner's learning needs and learning style.

Accessible

e-Learning is described as 'just in time' rather than 'just in case' — a criticism often aimed at conventional training. e-Learning provides immediacy of information, that is accessible '24/7' anytime and anywhere (providing there is a computer or other suitable terminal nearby). A recent survey in the UK (Campaign for Learning, 2000) found that one of the main benefits of e-learning was seen as its accessibility:

> *'e-learning makes it possible for people to study at home, in the workplace or at a community learning centre. This gives new opportunities to many millions of workers who should soon be*

able to access high quality learning material with the approval and support of their employer and union.' (NEC, 2000)

e-Learning can provide training at exactly the right time rather than

- too early *'and the chances are that the learner will have forgotten the content of the programme by the time it is required …'*
- too late '*and the learning will already have taken place by trial and error'* (Adrian Snook, 2000)

Modularised

e-Learning is claimed to provide 'just enough' training. Training is provided in small chunks or learning objects (the elemental units of learning — a small chunk of learning content that focuses on a specific learning objective) which the learner can take separately, one at a time, or combine with other objects to provide a longer learning experience. Learning objects are self-contained, reusable, can be aggregated with other learning objects, and are easily identified.

Learner-centric

e-Learning is 'just for you', in that it is learner-centric. As Block and Dobell (1999) note: *'the learner is not a passive participant but a proactive searcher and finder of information'*.

Here, learning is organised for the convenience of the learner, fitting in with the learner's lifestyle, learning style and ability. Material is presented in the form that the individual learns best. Learning is no longer organised for the convenience and needs of the instructor or training institution (Cross, 2000). e-Learning imparts more responsibility to learners by allowing them to customise their own learning experience, by choosing different learning objects within an overall package (Milligan, 1999). e-Learning allows learners to work with their unique learning profile:

'Learning is idiosyncratic. What I want and need to learn, how long it will take me, at what times of the day or night I'll be able to focus on learning, whether I'll do better with a book or one-on-one coaching — that makes up my unique learning profile.' (Nancy Weingarten in e-learningCenter.com, 2000)

> *'The true power of e-learning lies not in the anyone, anyplace, anytime model, but rather in its potential to provide the right information to the right people at the right time and places.'* (Ruttenbur *et al.*, 2000)

However, although e-learning providers and employers recognise the flexibility of e-learning and its ability to be tailored to meet the needs of individual learners, a recent survey in the UK (Campaign for Learning, 2000) found that very few learners recognised this benefit.

3.1.2 … cost effective

Another much proclaimed benefit of e-learning is cost effectiveness. e-Learning is said to be much cheaper to deliver than traditional instructor-led/classroom training as it reduces delivery costs (*eg* trainer salaries, classroom booking fees *etc.*) and training recipient costs (*eg* travel, subsistence and opportunity costs [time away from work]).

> *The biggest benefit of e-learning is that it eliminates the expense and inconvenience of getting the instructor and students in the same place. According to Training Magazine, corporations save between 50-70 per cent when replacing instructor-led training with electronic content delivery.'* (Urdan and Weggen, 2000)

Although most e-learning commentators agree that e-learning reduces the costs associated with traditional training, the actual reported amount of the reduction varies. Hunt and Clarke (1997) looked at the different ways of calculating the costs of technology-based training, and investigated the factors and costs which need to be considered. They found that studies in the EC and UK show cost savings of about one-third (30 per cent in a European Commission report, 1994, and 32.3 per cent in an Employment Department report, 1991). Studies in the US are more generous in their assessment of cost reduction. Asymetrix reported in 1997 that costs of e-learning are up to 75 per cent less than those incurred in traditional training (reporting figures from a Multimedia Training Newsletter Study). Hall (2000) reported that Price Waterhouse's multimedia audit training programme substantially reduced training costs — with technology-based training costing only $106 per learner compared to $760 per learner for instructor-led training. He also reports savings of 47 per cent by a US hardware company, Storage Technology, due to

compression of training time and reduction in travel expenses. Another US organisation, e-learningCenter, reports that Nabisco uses e-learning effectively at a cost of 50 per cent below the industry average (e-learningCenter.com).

Scalable

Another benefit of e-learning, which is related to cost efficiency, is that it is scalable. There are vast economies of scale with e-learning; as Milligan (1999) notes, there is no difference in providing access to five or five thousand learners.

3.1.3 … up to date

Networked technology allows the presentation of up-to-date material. Changes in learning content (perhaps made necessary by errors in the original material, changes in legislation or regulations, changes in learner needs, or product changes) can be made easily and immediately, in one place, thus ensuring e-learning content is current and that learning is not static. As Milligan (1999) notes, new material can be added and integrated seamlessly rather than delivered as a supplement.

> *'The beauty of online learning is that once a training course has been installed on a Web server, it becomes immediately available to anyone in the world with Internet access, a Web browser, and proper authorisation. When a training course needs to be altered, one simply makes the changes and updates the Web server with the new version.'* (Asymetrix, 1997)

3.1.4 … quick

Another benefit promoted by advocates of e-learning is that learning is faster due to compression. The time needed to learn particular topics is reduced as learning is tailored to the individual, thus the individual only needs to learn new material or select material which is relevant to them. Epic (1999) note: *'where you are using interactive, self-paced materials, then the time for learners to complete the programme will be at least 50 per cent less than traditional classroom learning'*.

Again, as with cost effectiveness, the actual compression or reduced learning time experienced varies from study to study.

- Cross (2000) reports learners learn 60 per cent faster
- Asymetrix (1997) report that decreased learning time can be between 20 and 80 per cent
- Hall (2000) reports how the Price Waterhouse programme for audit staff reduced the time needed to attain the required level of knowledge by 50 per cent, and
- work in the UK by Technologies for Training finds training time is reduced on average by 26 per cent (www.tft.co.uk briefing 19).

3.1.5 … retainable

e-Learning can help retention of learning. Delivery is more consistent and parcelling learning into small chunks helps learners to concentrate and retain the learning points (Urdan and Weggen, 2000). Asymetrix (2000) also highlight the benefit of higher retention engendered by the rich learning environment, immediate feedback and personalised learning experience.

3.1.6 … risk free

e-Learning is relatively risk free thus encouraging self-conscious learners, minimising bias, and empowering learners.

> *'Students taking an online course enter a risk-free environment in which they can try new things and make mistakes without exposing themselves …. After a failure, students can go back and try again. This type of learning experience eliminates the embarrassment of failure in front of a group.'* (Urdan and Weggen, 2000)

Block and Dobell (1999) note it allows the shy learner, the insecure learner, and the verbally challenged learner to flourish in the 'blindness of the learning engagement'. Also Greg Kearsley (1997) argues that the computer-mediated communication involved in e-learning minimises discrimination and prejudice that arises naturally in face-to-face settings. In e-learning environments, learners have no idea about the age, gender, ethnicity, physical characteristics or disabilities of other learners or tutors, thus enabling discussions in online classes to be free from socio-cultural bias.

> *'Intranet-based training offers greater privacy than a learning centre or classroom, so people can take responsibility for their own*

development without feeling self-conscious about their choices.' (Xebec McGraw-Hill, 1999)

3.1.7 … consistent

In e-learning *'everyone receives the same message'* (Adrian Snook, 2000): e-learning is consistent. McCrea *et al.,* (2000) report how e-learning in Dow Chemical was used to rationalise duplicative training and to standardise course offerings across the globe. e-learningCenter.com note how the military have taken advantage of the consistency of e-learning:

> *'The US Army has very strict protocol for operation of all its equipment. Using e-learning, each soldier gets identical instructions to ensure consistent operation.'*

Another cited benefit of e-learning is the quality of the learning. An e-learning commentator notes: *'using reputable developers ensures that programmes are developed which apply recognised educational principles and incorporate competence assessment'* (Adrian Snook, 2000).

3.1.8 … interactive and collaborative

e-Learning is interactive. The Campaign for Learning (2000) note that e-learning moves learning beyond text and can provide an engaging and stimulating learning experience with different types of media, and simulations of real world events. e-Learning also allows, and encourages, collaboration with tutors and other learners.

Urdan and Weggen (2000) report that a study of online learning in higher education found that online students had more peer contact, enjoyed the learning more, spent more time on class work, understood the material better, and performed better than students taught in a traditional classroom (Shutte, 1996, *Virtual Teaching in Higher Education*, cited in Urdan and Weggen, 2000).

3.1.9 … easy to track

e-Learning incorporates administrative functions which allow registration, payment, monitoring of learner progress, testing and record keeping (see the section on administration above).

Block and Dobell (1999) note that e-learning software empowers administrators to track performance and measure rates of return. Asymetrix note (1997) that it can be difficult to measure the overall effectiveness of traditional training, as it is often difficult to verify that training has been completed, and the extent to which the information given has been understood. However, they feel that e-learning overcomes these difficulties and enables the tracking of learner performance, and therefore enables the certification of learning.

3.1.10 … increases IT skills

The Campaign for Learning feel that e-learning empowers individuals to learn, and equips them with IT skills. They note:

> *'Internet-based learning empowers people. Because learning online demands that students have at the very least a basic understanding of IT skills and computer literacy, as more people learn via this method, so will the number of people with relevant IT skills increase.'* (NEC, 2000)

This is a particularly important issue for the TUC who are particularly worried about the digital divide in the UK — those disadvantaged by lack of familiarity with IT. Indeed the TUC is currently focusing on education in IT skills and using online learning.

4. Potential Drawbacks of e-Learning

Unfortunately, despite all the hype, not all learners and not all organisations benefit from e-learning. Several potential barriers to effective e-learning have been identified. So when organisations are considering e-learning, they need to take the following potential barriers or limitations into account.

4.1 e-Learning can be …

4.1.1 … technology dependent

Learners need access to the right hardware and software to benefit fully from e-learning. Sufficient bandwidth is often cited as a barrier to effective e-learning (Ruttenbur *et al.*, 2000). Block and Dobell (1999) talk of how bandwidth can limit the size of files that can be used in e-learning, can affect the speed with which files are transported, and therefore can restrict the use of certain media — which they believe can jeopardise the learning experience. Joanne Childs (2000) also points to the frustrations and demotivational aspects of e-learning caused by technological limitations.

However, all the authors mentioned here, believe improvements in technology are on the horizon. They feel that better bandwidth will soon be available which should remove the barriers to rich e-learning. They also note that hybrid solutions, combining Internet/intranets with local CD-ROMs can reduce the problem in the meantime.

Other concerns include whether all employees have access to computer terminals. The TUC is also concerned about equality of

access to e-learning, and is working on widening access to all union members, to the unemployed and the disadvantaged. Their concerns centre on the 'digital divide' and the fears that e-learning may widen the gap:

> *'Too few people still have access to the Internet and computers … Individuals must have easy access to learning centres and other access points. … There are still a number of other key challenges to be resolved before lifelong learning over the Internet is a reality. There is the cost of being online and the price of computer equipment – so that the digital divide between the computer haves and the have-nots does not continue to accelerate.'* (NEC, 2000)

4.1.2 … incompatible

Currently, there is much debate around the compatibility of e-learning elements, and work is under way to develop standards. Standards will allow course content to be described, found, used, re-used, added to other course content, and tracked – regardless of the content and systems used. They will ensure accessibility, interoperability, adaptability, reusability, durability, and affordability. Ruttenbur *et al.* (1999) feel that standards will ensure e-learning is cross-platform, and will ensure all of the components are speaking the same language.

In the US, various organisations are developing standards, including the AICC (in the aviation industry), the IMS (in the higher education sector), IEEE (in the engineering industry), and ADL (in the defence sector) groups. Also, a group in Europe, the ARIADNE alliance, is working on these issues (eLearnity, 2000; Ruttenbur *et al.*, 2000). However, there are no consistent standards at present, and much confusion.

> *'A set of standards for the e-learning environment are essential …. We believe it is because of the lack of standards that the industry is so fragmented and immature as it is today.'* (Ruttenbur *et al.*, 2000)

4.1.3 … unsuitable for some types of training

e-Learning is not suitable for all types of training. The nature of certain content makes it unsuitable for technology-based training. Milligan (1999) feels that really online learning is only used when face-to-face delivery is not an option, whilst Urdan and Weggen

(2000) note *'certain content – because of its nature, relative value or importance – is not suitable for technology based delivery.'*

Training less suited to e-learning may include soft skills material that may need:

- hands-on application
- rapid decision-making
- strong emphasis on peer review and collaboration
- direct sharing of experiences
- continuous give and take, and
- perceptions of body language, eye contact and facial expressions.

These may include strategy training, team building courses, or communication, presentation or writing courses. Also, material which deals with emotional issues, such as outsourcing and dealing with redundancy, may best be tackled with face-to-face training rather than via e-learning (Urdan and Weggen, 2000).

However, even with these sorts of training content, e-learning may still be useful to either prepare trainees for the face-to-face training event, or to assess and/or refresh their understanding after the instructor-led session (see Section 5.1).

Festa (2000) believes e-learning is ideally suited to teaching soft skills due to its flexibility, accessibility, economies of scale and currency, and that traditional classroom training can be too daunting for some individuals to learn interpersonal skills effectively. He believes e-learning empowers individuals, helping them to take personal development into their own hands.

4.1.4 … unsuitable for some types of learners

e-Learning is not suitable for all learners, even though, as noted above, the flexibility and learner-centric nature of e-learning does mean that it can adapt to most learning styles. Greg Kearsley (1997), who looked at e-learning in higher education, noted that most online learning takes place via written messages, so writing skill and the ability to put thoughts into words become important skills if an individual is to get the most out of an e-learning experience. Kearsley was concerned that people with poor writing skills may be at a disadvantage.

Urdan and Weggen (2000) noted that those with an auditory or kinaesthetic style of learning learn better in the classroom. Technology for Training (briefing 19) reports that some learners view e-learning negatively, seeing it as cold and impersonal. Others, especially older people, may fear the technology involved, or are reluctant to give up the perceived perk of going away from work to attend an external training course. The manager of a communications company noted that traditional training courses were generally thought of as a bit of a perk. Indeed, as Tim Pickles (2000) notes in his article, some senior managers may not be willing to engage in e-learning:

> *'… the reluctance of some senior managers to embrace the networking and learning opportunities of the Internet serves to hinder the adoption of online learning as an acceptable and credible method within the company.'* (Tim Pickles, 2000)

There are also issues in some workplaces about access, with many employees not working at a computer terminal, or if they are finding it very difficult to switch away from their everyday workload.

4.1.5 … heavily reliant on self-discipline

e-Learning requires motivation and self-discipline to complete learning elements and finish a course of study. It requires greater dedication and discipline than traditional classroom learning, as generally e-learners complete learning in their own time, at their own pace. Cross (2000) notes the important role of managers in engendering the motivation to continue with online learning:

> *'Managers must go the extra mile to pat learners on the back, give them recognition, and encourage them to learn with their peers.'* (Cross, 2000)

However, not only do learners need the motivation, discipline and encouragement to learn, but they also need the space to learn — without interruptions. Epic (1999) and TechLearn Trends (2000) found that the most popular location for e-learning was the desktop, but as Cross (2000) notes: *'learning complex subjects requires concentration … most people's desks are less than optimal for learning'.*

'In some organisations, the desktop is simply too frenetic an environment for learning to take place comfortably.' (Epic, 1999)

To reduce interruptions and provide this 'learning space', NCR encourage its employees to display 'e-learning in progress' signs (Hall and LeCavalier, 2000). Other companies are turning to open learning centres or knowledge centres, but with poor take-up (Epic, 1999).

However, the future may be to learn at home. Some companies, such as Ford, are pioneering the provision of free home computers for their employees to enable them to learn at home. Epic (1999) believe that organisations view this approach positively and predict that the home will be a significant location for training within five years.

The TUC has raised concerns as to whether learners are not only given the space but also the time to learn. They are concerned that e-learning may cut into individuals' own free time:

'Unless there is a serious commitment by employers to provide day release from working duties to learn, lifelong learning may not truly come into its own despite the flexible technology on offer …. Online learning must not contribute to the UK's long hours culture. It should enhance and enrich people's lives, not add to their already rising stress levels.' (NEC, 2000)

4.1.6 … less interactive than you think

Some e-learning commentators believe it can be a less interactive training method than traditional classroom-based training. A recent UK survey carried out for the Campaign for Learning (2000) found some individuals found e-learning to be impersonal, frustrating and lonely. Hara and Kling (1999) in their qualitative study of web-based distance education at a US university found that students can feel isolated and especially frustrated with web-based learning. They found that frustrations included:

- being overwhelmed by e-mail (with the danger of falling behind in reading and responding to these mails)
- absence of physical clues in communications with tutors and other learners
- lack of prompt or immediate feedback

- ambiguous instructions, and
- technical problems.

The authors found that the frustrations suffered by their subjects inhibited their educational experience.

4.1.7 … expensive initially

Although reduced cost is cited as a benefit of e-learning (Section 3.1.2), it is really only delivery cost which is reduced by e-learning, in comparison to other more traditional forms of training. e-Learning does incur considerable developmental and support cost:

> *'The initial costs of developing e-learning are higher than most equivalent leader-led interventions. So, deep pockets help.'* (Brooke Broadbent, 2000)

Indeed, a recent survey by the Campaign for Learning (2000) found that these costs can discourage organisations. They found that almost half of the e-learning providers surveyed felt that set-up and development costs can be prohibitive. The work by the Marchmont Observatory (2000) looks at the costs of e-learning and critiques several costing models. They report that the rule of thumb is that TBT is more expensive to develop (involving research and feasibility studies, course design and programming, and pilot testing) but cheaper to deliver.

Some argue that the developmental costs of e-learning can be around twenty times greater than the developmental costs of traditional training. Work by Hunt and Clarke (1997) reports that it takes 200 person hours to develop one student contact hour of technology-based training, which compares to between 10 and 20 hours to prepare one hour of conventional classroom-based training (reporting MacFarlane, 1992; IRDAC, 1994; and Childs, 1992). A large financial company based in the UK, interviewed by IES reported a similar ratio. They report that it costs about £4,000 to design a day (seven hours) of face-to-face training but over twenty times more, at about £90,000 to produce a day's worth of online training.

Work in the UK by Sheffield Hallam University has found that the hidden costs of e-learning are largely related to the provision of learner support. Work in Europe by Moonen and the

Telescopia project found that this high cost (of supporting learners) can limit the volume of potential learners (Marchmont Observatory, 2000).

> *'Merely providing materials and basic support for learning online is cheap, but it doesn't work. Dropout or non-completion rates are high and the general quality of learning is perceived as being poor …. Good online learning requires far more imaginative design of materials, and far more effort in supporting the delivery of learning. This involves tutors, and tutors cost money to employ.'* (Milligan, 1999)

4.1.8 … still dependent on human support

Some of the organisations interviewed by IES reported using both internal support and externally contracted mentors to support e-learning activities. One public sector organisation spoke of the support received by IT skills learners from the e-learning content developer. Face-to-face support was provided initially by trainers from the content developer in a one-off, on-site, troubleshooting session, but then support moved online and became available at any time. This organisation also has internal support available. They have a system of Super Users (one Super User for every sixty staff), staff who are highly proficient in certain skills or have extensive experience in using particular packages who can provide personal coaching support.

4.1.9 … difficult to support with content

Several e-learning commentators report that the availability of e-learning content is relatively poor and raise concerns about the quality of the learning material.

> *'The quality of teaching material is now the major stumbling block. Many computer-based teaching programmes [are] all glitz and no substance; or content which reflects a rote-learning, right/wrong approach to learning.'* (Robin Mason, 1998)

> *'Content is still too heavily skewed towards computing and technology subjects. Employees have a wide range of learning needs … interactive online learning programmes need to embrace this variety in content … but at present, all too often, the online content is little more than photocopied pages presented on the screen.'* (Tim Pickles, 2000)

Elliot Masie notes in his TechLearn Trends (3 October 2000) that there is a growing perception of an e-learning content deficit. He quotes one manager as saying: '*I can buy dozens of systems to deliver content, but I only can find three collections of content on manufacturing techniques … and these are little more than page turners!*'

5. Issues to Consider When Developing e-Learning

Finally, we examine a few of the issues that we believe organisations may need to consider when approaching e-learning, issues that repeatedly emerged in the studies, surveys, reports, discussions and case studies around e-learning.

- a bit of both? — blending e-learning with traditional classroom approaches to training
- do it yourself? — to make or buy e-learning materials
- providing support — the provision of support for e-learners
- what about the trainers? — understanding how e-learning will change the role and skills of trainers
- how can you tell if it is working? — using e-learning functions to test learning
- getting it right — the factors that contribute towards successful implementation of e-learning.

5.1 A bit of both?

There is much debate about whether e-learning will or should replace traditional classroom-based learning. While instructor-led training currently dominates the corporate training market (representing more than 70 per cent), its share is expected to fall to about 35 to 40 per cent in the next few years, to be overtaken by technology-based training (Ruttenbur *et al.,* 2000; Block and Dobell, 1999; Aberdeen Group, 1999).

Traditional training is often viewed as old fashioned, static and expensive to deliver. Block and Dobell (1999) note that *'the*

traditional classroom is about learning around 'teaching to the norm'. But there is no one called Norm.' Hall (2000) notes how traditional training involves a discrete activity away from the work environment which provides a 'one size fits all' solution, at a time when the facilities and resources are available, and not necessarily when the training is needed. He terms this 'just in case' training. However, as outlined above (in the benefits of e-learning), e-learning potentially involves continuous learning which is targeted to an individual's needs and learning style, and is delivered when it is needed, *ie* 'just in time' training. However, e-learning may not be universally appropriate. It is particularly suited to cognitive learning, to presenting new information (and where the content is largely knowledge-based), stable course content, learning that requires practice and review, for those with reflective or theorist learning styles, where situations need to be simulated, and the where the media requirements are fairly simple (Epic, 1999; Hunt and Clarke, 1997). It is much less suited to psychomotor learning, affective learning, those with activist or pragmatist learning styles, for richer media (audio/video, voice or video recording), and where voice and/or body language is important (Epic, 1999).

Many commentators believe there is still a place for instructor-led training in corporate learning. The current term which reflects this thinking is 'blending' — the blending of traditional classroom-based instruction with e-learning. As Cross (2000) notes, *'the magic is in the mix!'* and eLearnity (2000) echo the sentiment, reporting that the classroom is important to an integrated e-learning solution.

> '*Corporate trainers report that e-learning and c-learning* [classroom-based learning] *are blending rather than one ruling out the other. That is, the strongest use of online learning seems to be an extension rather than a replacement for classroom learning …. We believe technology will be used to leverage and expand the reach of c-learning, rather than replace it completely.*' (Urdan and Weggen, 2000)

This point was echoed by a training manager for a large retailer we interviewed, who noted that traditional classroom learning was not ruled out, but other methods such as workshops, courses and workbooks, had the potential through the Internet for example, to become more interesting.

There is a general agreement that classroom and electronic learning should be combined. Traditional learning can be used to enhance e-learning. It can be used to prepare learners in an introductory session, in order to build a sense of community in participants before they embark on their independent e-learning (eLearnity, 2000). Conversely, e-learning can be used to enhance a traditional instructor-led session note:

> *'One of the hottest growth areas in online learning is the creation of Internet/intranet meeting places (surrounds) for instructor led classes to provide community, communication, and supplemental materials online …. This new learning model facilitates studying, note taking, class discussions, and catching up all of which enhance classroom instruction.'* (Urdan and Weggen, 2000)

Festa (2000) agrees and feels that e-learning can be used to impart theory before embarking on a classroom session, ensuring individuals start the face-to-face element at a similar level of understanding. He also believes it can be used to enable individuals to revisit particular sessions or as a reference or refresher tool, after traditional training events.

Example

Unilever have used e-learning to enhance, and indeed compress, the classroom experience. TechLearn Trends (2000) reports how Unilever converted a five-day workshop into a two-day workshop by shifting much of the content into self-directed e-learning components. BT are considering blending e-learning and classroom learning for the delivery of their interviewing skills training. They feel that the theory aspect of the training could be delivered online prior to the live classroom element which relies heavily on role play. They believe that blending in this way will shorten the length of the course.

It can be argued that classroom learning will always have a place in corporate training because, as noted earlier, some learning material and some learners are better suited to instructor-led 'bricks' training rather than electronic 'clicks' learning. Indeed, a recent survey showed that despite comparing well with traditional approaches to learning, *'neither employers nor providers think the future of learning lies solely with e-learning'* (Campaign for Learning, 2000).

> *'Internet learning may be exciting, but it will never replace traditional learning methods. Some people and some subjects will always be best taught in the classroom where students can learn and be encouraged by the support of their fellow students.'* (NEC, 2000)

5.2 Do it yourself?

The subject of many e-learning reports and some surveys, is whether an organisation should develop their own e-learning products (content and administration) or buy them, and what factors need to be taken into consideration when making this decision. Epic (1999) note that the main methods to obtain e-learning material are:

- off-the-shelf
- customise off-the-shelf content or use external contractors to develop bespoke materials, or
- develop bespoke materials in-house.

5.2.1 Off-the-shelf

Generally, the majority of e-learning provision would appear to be ready-made. Urdan and Weggen (2000) report that whilst 40 per cent of training budget is spent on customised training, the major portion is spent on off-the-shelf products. Surveys by Epic (1999) and the Campaign for Learning (2000) echo this finding. Epic (1999) note that when e-learning material is purchased from an external supplier, the number of tasks involved in developing an e-learning project are reduced considerably. They note that there are a large number of off-the-shelf materials available, especially in the area of IT skills, indicating a great deal of choice, though the quality and subject coverage available is disputed by some (see Section 4.1.9). Hunt and Clarke (1997) found that purchasing generic off-the-shelf material is substantially cheaper. Technologies for Training also point out several other advantages of off-the-shelf material. The amount of material available means that companies can shop around and may be able to negotiate discounts. Companies can also 'try before you buy', testing the product before they commit any resources, and may be able to lease rather than buy the learning solution.

Technologies for Training note that the British Association of Open Learning (BAOL) have responded to the demand for quality assurance of TBT materials, with support from the DfEE, and have introduced the BAOL Quality Mark. Organisations which meet criteria (based on the Business Excellence Model), that have been assessed internally and externally verified, may

use the BAOL Quality Mark on their materials. BAOL say their Quality Mark recognises organisations which achieve best practice in terms of materials development, information advice and guidance, and learner support. However, Hunt and Clarke (1997) noted that off-the-shelf material will be limited by its generic nature, and will probably only satisfy part of the training need.

Epic (1999) suggest that when buying off-the-shelf material, companies should look for:

- an easy to use interface
- effective design for learning
- professionally presented graphics
- clearly written text
- subject content which matches ones needs
- skilled accessible mentors where required
- ability to interface with the company's systems
- materials that will download quickly, and
- customer and technical support.

Technologies for Training recommend that organisations opting to buy off-the-shelf materials should first test the products with the organisation's systems and staff, check that the content is appropriate, check the learning fits with the organisation's culture, and check if tutorial support can be provided (and at what cost).

5.2.2 Customised or externally developed

Urdan and Weggen (2000) note that the demand for custom products is rising more quickly than that for ready-made courses. Technologies for Training Ltd note that contracting out the development of e-learning solutions places clearer boundaries on the time and costs involved in a project. They also report other benefits to using external contractors, noting that external contractors have expertise available, they will have a smaller and more shallow learning curve so can work faster, they will be more aware of recent developments, and they will not be influenced by internal politics. Epic (1999) note that when looking for an external contractor, companies should focus upon:

- proven track record
- understanding of the industry you are in
- stable financial base
- key skills in-house
- sound project management, and
- responsiveness to your needs.

5.2.3 Developed in-house

Epic (1999) feels that more and more materials will be produced in-house. However, such development requires expertise and incur costs. Epic (1999) note that when developing materials in-house, companies need to ensure that they have sufficient expertise in:

- instructional design
- interface design
- subject matter
- graphics/audio/video production
- writing
- web programming
- web authoring, and
- online mentoring.

Hunt and Clarke (1997) looked at the costs of developing materials. They noted that these involved:

- preliminary costs — those associated with needs analysis and preparing a specification
- development costs — project management, subject research and advice, training design, media design, programming, and testing, and
- distribution costs — the costs of copying, storage, support, and administration.

When developing an e-learning solution in-house, Technologies for Training Ltd argue that an organisation has control over the development process and the end product. Further more, undertaking the process enhances skills in the organisation (therefore making it easier to produce further in-house solutions);

maintenance will be easier; there will be fewer copyright problems; and the that final training solution produced may better fit the company culture.

5.3 Supporting e-learning

A recent survey in the UK (Campaign for Learning, 2000) found that e-learners feel a need for learning support, and that this need is not always fulfilled by employers. The importance of support for e-learners, whether it comes from tutors or fellow learners, is highlighted by many e-learning commentators. Epic (1999) note that there are many good reasons for adding the human element to e-learning. They believe it is especially useful to provide help when a course is otherwise entirely self study, when the course is lengthy to provide support and encouragement, and when the learner needs help to explore learning points or practice skills. Whilst Kearsley (1997) writes '*The single most important element of successful online education is interaction among participants*', and Cross (2000) reports '*The learning process breaks down when untouched by human hands. e-Learning is not training by robot*.'

> *'Providing sufficient support for the online learner … is crucial to the eventual success of any course delivered online. The online learner needs more support than a traditional learner, as they do not have regular informal contact with their peers.'* (Milligan, 1999)

Support through interaction and collaboration with tutors and peers would seem to be an important factor in a successful e-learning experience. Support can be provided over an elapsed time and is termed asynchronous collaboration; or can be provided in real-time and is referred to as synchronous collaboration

- In **asynchronous collaboration**, learners interact over an elapsed time period; and usually communicate in type written format via forums, discussion environments, surveys or group projects. This interaction is flexible (any time) but is slow, with some discussions lasting several weeks. Block and Dobell (1999) note this type of learning collaboration is for those *'who need the flexibility to learn anytime and anywhere but still want access to instructors, colleagues and other live, learning resources that are critical to their own learning process'*. Block and Dobell (1999) feel

that asynchronous learning is better suited to someone with good self-discipline but an erratic schedule.

- In **synchronous collaboration**, where learners communicate in real time, different communication methods are used: the microphone/camera; whiteboards; application sharing; and virtual classrooms. This form of interaction enables immediate learning and feedback but requires parties to be online at the same time. Therefore Block and Dobell (1999) feel synchronous e-learning is better suited to learners who need more structure to their learning but also need immediate feedback.

  'Synchronous Shared Learning could probably be most closely compared with a traditional classroom learning experience. The learners and instructor are all logged on to a live, web-based collaborative learning environment and are participating in the class at the same time.' (Ruttenbur *et al.*, 2000)

Block and Dobell (1999), who provide an excellent comparison between the classroom experience and the SCEL (synchronous collaborative e-learning) experience, note, '*there is more to learning online than adding some video and audio. This is not about creating a classroom-based simulation; this is about creating a better learning experience … the beauty of e-learning is that it allows us to rethink the classroom.*'

Despite the excitement engendered by synchronous support in e-learning, Urdan and Weggen (2000) note that, at the moment, less than a third of all Internet based training purchases include any synchronous course delivery (citing IDC 1999 data).

Getting learners together virtually, is important, but as Milligan (1999) writes, the task of building a community of learners must not be under-estimated. Block and Dobell (1999) also refer to a community and note it can be difficult to engender without a classroom.

5.3.1 Four levels of support

The provision of support to learners is therefore a key element of a comprehensive e-learning strategy and can take a number of forms:

- automated support — advanced help facilities
- expert support — synchronous or asynchronous contact between learners and tutors

- peer-to-peer support — contact between learners, either as a follow-up to particular learning activities and/or as some form of closed (or open) learning set or community. Either form may or may not need facilitating.
- mentoring — one-to-one interactions between individuals.

5.4 But what about the trainers?

Conventional trainers may be concerned about the implications of e-learning for the future of the their role. Hall and LeCavalier (2000) and Epic (1999) argue that e-learning is changing the demands upon, and therefore the role and skills of, trainers. Instructors are becoming the managers of learning, on-the-job coaches and facilitators, counsellors and mentors rather than deliverers of learning (Epic, 1999; Hall and LeCavalier, 2000; Childs, 2000). This may be difficult for some trainers who may be entrenched in their traditional roles and may fear perceived challenges to their status. However, those who are willing to embrace the new role will see several benefits:

- a chance to build long-term relationships with clients
- an opportunity to develop a consultancy role, and
- an avenue to demonstrate creativity and innovation.

Epic (1999) believe e-learning will raise the profile of trainers and move them to the heart of the organisation.

Much of the work which looks at the role of trainers in e-learning comes from the world of higher education. Gilly Salmon of the Open University (1998) talks about the changing role of tutors, rather than trainers, under e-learning. She feels that tutors now have a wider role and perhaps should be referred to as moderators. She feels these 'moderators' need to know and respect students, welcome learners to the system, create an atmosphere of openness and facilitate socialisation (stimulating and facilitating interaction), help students to explore their ideas and interpretations, support learners in their access to information, and encourage ownership of learning. In this way they can encourage students to become independent learners online. The moderator's key role is to enable interactive learning by encouraging purposeful collaboration. Which as indicated above, is an important element in successful e-learning.

Dr Alan Clarke (2000) also emphasises the importance of moderation, rather than instruction, for effective e-learning. He too notes the importance of collaboration, noting that tutors need to be proactive in encouraging self-help groups amongst learners, perhaps by managing mail groups and discussions. He also notes the importance of feedback, reporting that tutors need to provide good quality feedback.

A recent survey by TechLearn Trends (reported 15 May 2000) of over 2,000 respondents, highlights the importance of trainers in corporate e-learning, indicating that the trainer is still vital. The survey found that both learners and managers require a trainer to support e-learning. It reports that two-thirds of learners and managers would be more likely to select an e-learning class if a trainer were part of the package, and one-third of managers would be prepared to pay a small premium for trainer support. The survey found that learners wanted e-trainers to be available via e-mail, and that they wanted the e-trainer to evaluate their work and provide feedback and assessment, and to facilitate an online learning community.

5.5 Is it working? A testing time

One of the advantages of e-learning (see above) is that it enables learner tracking, learning evaluation and therefore learner certification. As Block and Dobell (1999) note, both managers and learners themselves benefit from knowing whether their learning was successful:

> *'Employees can use testing and assessment to show evidence of progress towards a specific career goal. The e-test process provides them with tangible proof that a specific skill set has been acquired – tangible proof that can be taken by the learner to his or her next position.'* (Block and Dobell, 1999)

e-Testing also allows for diagnosis of training needs and provides feedback. Technology for Training (briefing 28) note that e-testing can help learners find out what level course they need to take and can help them to test and reinforce learning, as well as its use in judging whether learners are ready for certification. It can also be used as a feedback device to boost learners confidence in the skills they have gained.

However, how do you measure 'success' in e-learning? And how do you ensure authenticity? One measure of traditional classroom-based training is course completions, but as Hall and LeCavalier note in their benchmarking survey (2000), these measures are no longer appropriate when evaluating the effectiveness of e-learning. As Masie notes (TechLearn Trends, 28 August 2000) in some cases learners may not want or need to complete an entire course. Learners may just wish to browse or take segments. In this case, would the learning be deemed a failure because they left the course early or didn't complete it? Hall and Cavalier (2000) found that best practice organisations are therefore moving evaluation to focus on measuring performance, competencies, and intellectual capital. Hall (*Dispatch*, 12 October 2000) notes in his benchmarking study that the most successful implementations of e-learning focus evaluation efforts on job performance measures using web-enabled competency management systems. Technology for Training, and Block and Dobell (1999) note that when evaluation is required for certification or formal qualifications, some organisations are developing infrastructures of secure test centres with invigilation which will ensure that the learner who is actually doing the work is the one who will receive the credit. Indeed, Technology for Training (briefing 28) note that online learning and e-testing is well established in NVQs.

But is e-testing or learning evaluation always appropriate? Tom Barron (2000) notes that when e-learning is used for knowledge management purposes (capturing and sharing real-time knowledge) the focus should not be about proving and assessing the acquisition of skills and knowledge. The focus should be on access and sharing rather than evaluation. Elliot Masie also notes in TechLearn Trends (October 16, 2000) that whilst a learner wants to know the kinds of mistakes they are making and how their skills are evolving, they want feedback rather than continuous testing. He reports that he often hears '*don't over test me*' from e-learners.

5.6 Getting it right

Epic (1999) provide a comprehensive review of the elements required for successful implementation of an e-learning project. They deem the five key stages as analysis, design, development,

implementation, and evaluation. All of these need to be considered and addressed for success.

- **analysis**: the identification of training needs, specification of learning objectives, selecting and understanding the audience, and deciding on the methods of learning
- **design**: creation of own bespoke application by selecting content, media, type of interactivity available to learners, and user interface
- **development**: putting the design into action which involves production of audio/video, programming of software, authoring of materials, and testing
- **implementation**: promoting the programme, collecting management information, and appointing skilled mentors
- **evaluation**: reviewing the performance of the programme against its objectives, in terms of take-up, efficiency, effectiveness, and return on investment (ROI).

The Epic survey (1999) found at least three-quarters of those surveyed felt that getting the right support and the right technology were particularly important in the success or failure of online learning. Their survey found that support from senior management; and attitudes of trainees, other employees, trainers and the IT department were considered very important factors. So too was the availability of sufficient network bandwidth and availability of networked terminals. Also considered important were the suitability of learning content and the general awareness of the benefits of online learning.

e-Learnity (2000) also looked at the critical factors for successful e-learning, and agree with Epic that support from senior management is vital. They also note the following factors as critical:

- sufficient staffing and budget
- integration with business objectives and with organisational culture
- recognition of barriers and organisational constraints
- understanding of the true learning objectives, the audience, and of learning models
- right delivery mechanism and suitable content
- content in bite-size chunks (easy to read and use)

- lots of interaction to increase learner motivation
- standards to ensure consistency and transferability of skills
- piloting and prototyping; and process guidance from instructors
- build training time into standard working timetable
- extended support hours
- development of learning communities/networks.

Hall (*Dispatch,* 12 October 2000) again identifies senior management support with successful e-learning. He notes that strong leadership from senior management and their close involvement are crucial.

6. Conclusion

This guide is based on a review of the literature on e-learning and discussions with organisations in some way involved in implementing e-learning in practice. We have defined e-learning as the delivery and administration of learning opportunities and support via computer, networked and web-based technology to help individual performance and development.

There are many advantages claimed for e-learning. However, many of the benefits are unproved and the excited hype surrounding e-learning makes it very difficult to unpick concrete evidence from assertion and aspiration.

The advocates offer a vision of e-learning as one of the pillars of a modern e-business. It offers a multi-dimensional suite of learning opportunities delivered by a range of technology media, from simple 'help' type menus to highly interactive programmes backed-up by a range of formal and informal learning support mechanisms. For individuals, learning becomes more accessible and easier as it is better integrated with everyday working activity. The benefits for organisations are that provision is more cost-effective and efficient. As individuals' performance improves, organisational performance also benefits.

However, to achieve this vision, organisations have to overcome a number of constraints. The technology, both hard and soft, needs to be available and accessible, to work and be affordable. People have to get used to new ways of learning at work. They will require high levels of self-discipline and motivation and support from their line managers to find space for learning in an often all too hectic workplace. Above all, they will need to see the value of learning, electronically or otherwise for their own development and performance.

Glossary

Asynchronous course delivery: participants can only communicate with a time delay, such as self-paced courses via Internet or CD-ROM, streamed presentations, or online chats and discussion groups and e-mail

C-learning: traditional classroom, instructor-led training (bricks as opposed to clicks)

Computer based training (CBT): course or educational material presented on a computer (CD-ROM or floppy disk) not requiring a network and not providing links to other resources (seems UK terminology may use CBT to cover Internet/intranets as well, so may be a broader term)

Distance learning: education where instructor and students are separated by time and/or location. Broader definition than e-learning

e-Learning or technology-based training (TBT): wide set of applications and processes including computer-based learning, web-based learning, virtual classrooms, and digital collaboration. '*Delivery of content via all electronic media, including the Internet, intranets, extranets, satellite broadcast, audio/video tape, interactive TV, and CD-ROM*' (Hambrecht, 2000). e-Learning is technology-based learning (TBT)

e-Training is a subset of e-learning, and refers to corporate training

Learning portal: website which offers access to learning and training resources from multiple sources

Multimedia training: computer based training which uses several types of media including text, graphics, animation, audio, video — to produce an engaging colourful programme

Online community: meeting places for learners on the Internet, designed to facilitate interaction and collaboration for sharing common interests and needs — share a sense of community with like-minded strangers

Online learning: is a subset of technology-based learning (TBT). It is learning via the Internet, intranet and extranet (Internet with various boundaries within and without the organisation). Also known as web-based training (WBT). Allows links to learning resources outside of the course, *ie* email, bulletin boards, discussion groups.

Synchronous course delivery: real-time, instructor-led online training — all participants logged on at the same time and able to communicate directly with each other

Training (learning or course) management systems: Internet-based software to deploy, manage and track interaction between learners and courses, and learners and instructors — *ie* student registration, learner progress tracking, recording test scores, indicating course completions, and assessing performance of students

Web-based training (WBT): instruction that is delivered via a web browser through the Internet or an intranet. One of the most widely used/understood terms (according to Brandon Hall)

Resource Guide

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Websites

www.brandon-hall.com – includes FAQs about web-based training)

www.elearningnetwork.org – an organisation that provides access to information, training, representation and support for all those involved in e-learning

www.baol.co.uk (British Association for Open Learning) — website which has an e-zone and summaries of 'open learning today' articles

www.webbasedtraining.com — this is the Web Based Training Information Site and has information on what is WBT, advantages and disadvantages, WBT design and development, and FAQs

www.imsproject.org — this is the IMS Global Learning Consortium site includes an article 'New Features for Learning Management Systems'

www.masie.com — includes TechLearn Trends newsletter plus a map of the online learning market place

www.tft.co.uk — Technology for Training, a nationwide advisory service developed by the DfEE. The web site which contains an number of briefings on the use of TBT.

Magazines/journals

Technology Training (www.trainingsupersite.com/ittrain)

't' magazine (www.tmag.co.uk)

e-learning (www.e-learningmag.com)

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