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# E-learning in small organisations

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## Abstract

This paper focuses on the existing and potential role of electronic learning in small and medium-sized organisations (SMEs). Innovations in information and communication technologies (ICTs) could create new forms of learning, particularly appealing to small organisations, to overcome traditional barriers such as lack of financial resources, time, expertise and facilities. The paper draws upon research, conducted in North Wales, exploring employee perceptions of and employer attitudes towards e-learning. Small organisations in rural, peripheral regions such as North Wales can benefit from ICTs, not only to support e-commerce, but also to access new opportunities for learning and development, beyond the often-restricted local market. However, key findings from this research suggest that there are significant barriers to electronic learning, including the lack of hardware and software, and employer attitudes. A model is presented that identifies dimensions of, and factors influencing, e-learning from employer and employee perspectives.

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## Introduction

This paper focuses on electronic learning in small and medium sized organisations. Innovations in information and communication technologies, and the current growth in electronic learning, could create new forms of learning, particularly appealing to small organisations to overcome traditional barriers such as lack of financial resources, time, expertise and facilities. The purpose of this paper is to explore the existing and potential role of electronic learning in small organisations as a means of developing the skills of employees and owner/managers.

The paper begins with a brief definition and explanation of the key concepts: lifelong learning, work-related learning (learning as opposed to training) and e-learning, including the debate over what this constitutes, and the uses of ICTs and e-learning in SMEs. Then, there is a short description of a two-year research project examining computer-based learning in the SME context from employer and employee perspectives. The research was conducted in North Wales, a rural and peripheral area, and one where innovation and creativity in electronic learning could help overcome problems of isolation, such as lack of local provision. Findings from the qualitative studies are then presented. This includes identifying factors (both inhibiting and enhancing) that influence e-learning, particularly (but not exclusively) in the context of small organisations. Finally, areas are identified where further research is required.

## A focus on learning – lifelong, electronic and work-related

As HRD practices shift away from training and towards learning, the notions of lifelong learning, electronic learning and work-related learning are emerging in the growing HRD literature. However, much of this literature is built upon the understanding of these concepts in large organisations. This paper explores the relevance and usefulness of these concepts in the context of small organisations.

Lifelong learning is defined by Brandsma (1997, p. 10) as a continuous process of personal development for everyone, whether in work or not, encompassing formal and informal activities, and making demands



upon the social structures in which learning takes place. However, the OECD (1996, p. 15) suggests lifelong learning has broader objectives, including strengthening democratic values, cultivating community life, maintaining social cohesion, and promoting innovation, productivity and economic growth, and these are reiterated in the latest EU Memorandum (European Union, 2001a). Lifelong learning is a fashionable topic. Europe is becoming a “learning society”, (Brandsma, 1997; Gass, 1996). The UK government is encouraging lifelong learning (DfEE, 1998), highlighting the changing nature of work, the need for re-skilling as traditional industries decline and new technologies emerge, and the need for everyone to engage in ongoing learning. It has also, for example, created individual learning accounts and re-structured the provision of post-compulsory training, education and learning opportunities under the Learning and Skills Council (DfEE, 2000). In addition to the government’s initiatives, work organisations also provide opportunities for learning. As the pace of change accelerates, new learning is required to both keep up-to-date and compete – whether at national, regional, organisational and even individual level.

In an EU-funded research project investigating the changing role of HRD practitioners in supporting lifelong learning in work, a key reason cited for aspiring to become learning organisations was the need to cope with technological change, to compete (Sambrook and Stewart, 2000). Paradoxically, the technology that creates the escalating change can also create solutions, by offering new means of learning to cope with the change. However, not everyone has access to learning opportunities available in (large) organisations, given the number of individuals who are employed in small and medium-sized organisations, are self-employed or not employed. If lifelong learning is necessary for everyone to cope with change, this raises the question of access: how can those distanced from work-based training or external provision access quality learning?

The UK government is attempting to address some of these issues by developing a national infrastructure for lifelong learning. A key government initiative in the UK was the launch of the University for Industry (Ufi). The Ufi was established to help enhance the

competitiveness of British industry by stimulating demand for lifelong learning among businesses and individuals and improving access to relevant high-quality learning resources. The Ufi – now renamed “learndirect” to overcome the criticisms that it is neither a university, nor for industry – aims to encourage lifelong learning by drawing upon developments in education and training technology. This takes the form of establishing learndirect centres – located in public places such as libraries, local colleges and hospitals – and commissioning computer-based learning materials to be used in these centres. By providing such centres in local communities, existing and potential employees would be able to access personal and work-related learning, to enhance both their attitudes to learning and their personal knowledge and skills. A key issue is the ability to provide learndirect centres in local communities where there is little other opportunity for learning or training provision, particularly in rural, peripheral areas. A key element of the Ufi initiative is the use of electronic learning. As e-learning is becoming increasingly important to UK training policy, at the European level, researchers are now critically evaluating the European policy for e-learning (Attwell, 2002).

Electronic learning, often abbreviated to e-learning, can be defined as any learning activity supported by information and communication technologies – or ICTs. There are debates concerning the labels, for example whether ICT-based learning is the same as computer-based learning, or is the same as e-learning (Figueira, 2003). The differences are related to the different channels through which the materials are delivered. Online materials are Internet-based and use the World Wide Web channel. Intranet materials, which can look like those available on the World Wide Web, are delivered through an internal network of personal computers. Floppy disks and CD-ROMs are used on stand-alone personal computers – that is, not connected to a wider network. For this paper, e-learning is taken to mean any form of electronic technology – as opposed to chalk and blackboard technology – to support learning. At the one end of the continuum, this could include the simple use of floppy disks and CD-ROMS on stand-alone personal computers (PCs). For example, a health and safety course could be

purchased, and employees could take it in turns to work from the disk at their PC. Or, the material could be taken away from the workplace and used by sales people “in the field” or even at home. Moving towards more sophisticated technology, this could take the form of local intranet provision, delivered over a network of interconnected computers, but with no access outside this. At the other end of the scale, there is full access to Internet and World Wide Web services, drawing upon a full range of multi-media, such as interactive material, links to other sites and resources, downloadable streaming videos and communication systems, such as help lines, e-mail, chat rooms and video-conferencing. Here, material is installed on a network and can be accessed from several terminals. However, this might constrain learning, in that it has to occur at the place of work on a networked PC, rather than at home. Learning software, that is the training materials (content) and programming (process), is often referred to as learnware.

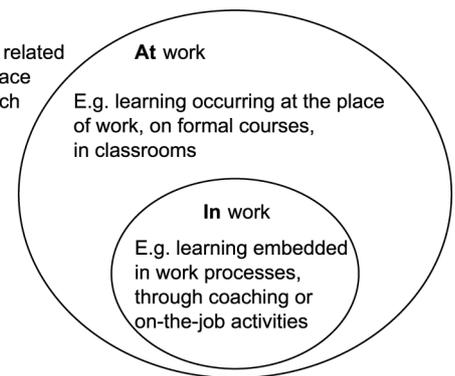
Electronic learning is often offered as a solution to training problems, for example, by helping to overcome problems of accessing training in small organisations, or in remote or disadvantaged locations. E-learning could also be “better” than traditional training in that it has the potential to offer tailor-made learning – tailored to both the learner’s knowledge and skills needs and their preferred learning style (Honey, 2001; Mumford, 2003). However, paradoxically again, it can also create further barriers to learning – such as lack of hardware, fear of technology, and learner isolation. With the surge of learning software (learnware) there is a further danger that learners are unable to select appropriate learning materials – that is, of relevant content and suitable level. This is especially important, given that even trainers find it difficult to judge the quality of training materials (Carr, 1999).

Along with lifelong and electronic learning, a further concept of relevance to this paper is work-related learning – that is learning relevant to work that takes place both in and at work, as well as outside the workplace (Sambrook, 2001). In addition to government initiatives, work organisations are important partners in the learning society. The term work-related learning is used to mean all forms of learning activity that take place within the work context (see Figure 1). It is

Figure 1 Work-related learning

**Outside work**

E.g. learning that is related to work but takes place away from work, such as at college or in training centres



interesting to note the subtle differences between conceptions of learning at work and learning in work (Sambrook and Betts, 2001). At the Second Conference on Human Resource Development Research and Practice across Europe, the sub-title was “Perspectives on learning at the workplace” (<http://www.ufhrd.org>). Several papers focused on (more formal) learning activities conducted at the place of work (rather than off-site). Others explored how (more informal) learning could be integrated with the actual process of working, thus helping to remove the barrier of workplace learning being viewed as solely “going on courses” and helping to recognise the value of “finding things out on-the-job”.

Much research about learning in the work context occurs in large organisations. Large organisations develop an HRD infrastructure to provide training and development opportunities internally and thus provide access to formal forms of learning. For example, the Learning and Training at Work 1999 survey (DfEE, 2000) demonstrates that the proportion of employers providing off-the-job training increases with the size of the employer’s workforce. Recent EU-funded research also suggests that there are new approaches evident in large organisations that also emphasise the shift towards learning, and more informal forms of learning – rather than training (Sambrook and Stewart, 2000). Such a shift might develop into what Watkins defines as a learning infrastructure (Watkins and Ellinger, 1998). However, the increasing pressure to enhance learning to achieve competitive advantage is also of import to small organisations, and whilst these seldom have any formal learning infrastructure, they

often emphasise informal forms of learning – or learning in work. Johnson (2002) notes that learning in SMEs tends to be informal, on-the-job and related to short-term business objectives or problems.

### Learning in small organisations

While large organisations provide much employment – and training – across Europe, in many areas it is the small firm that provides the majority of opportunities for employment, learning and development. Growth-oriented small businesses make a major contribution to economic development and employment generation within local communities and national economies (Smallbone and Wyr, 2000). For example, the European Commission recognises that the fate of SMEs is vital to regenerate areas where traditional industries have contracted due to fierce global competition (Commission of the European Community, 1998). Small firms play an important role, representing around 99.8 per cent of all businesses active in the European Union, and accounting for 68 per cent of total employment and 63 per cent of business turnover (Matlay, 2000). Yet, Matlay (2000) also notes the paucity of HRD research in small firms, due to a lack of interest, lack of funding and preference for investigating in larger enterprises. There are differences between training and development practices relative to organisation size, and there is limited use in applying “large firm” training solutions in small firms: small firms are not simply “scaled-down” versions. For example, Westhead and Storey (1997) found that training in small businesses was different to that conducted in large firms. Small firms tend to focus on the informal transfer of work skills and knowledge between individual employees, whilst large firms tend to engage in externally-provided training which leads to formal qualifications. So, whilst there is much research into HRD practices in large organisations, “there appears to be little agreement as to how much training should be or has been provided in small firms” (Matlay, 2000, p. 327).

The development of SMEs, through the development of owner/managers and employees, is an important subject. Gray and Lawless (2000) identify, however, that the most important constraint on small business

growth lies in the career motivations and personal expectations of each individual small firm owner and manager. For example, many owner/managers are in business for “lifestyle” reasons, rather than growth. However, there are other factors influencing HRD in small firms. Despite problems defining the terms “SME” and “training and development” (Storey, 1994), several studies have been conducted to explore training in SMEs. Abbott (1994) investigated employer and employee perspectives on training, finding that the SME sector is not homogeneous, with different sectors having different training needs. Matlay (1999) assessed the take-up of government initiatives such as Investors in People (IiP) and National Vocational Qualifications (NVQs) in the UK and found a lack of awareness of initiatives aimed specifically at small organisations. Hyland and Matlay (1997) also identified barriers to training, mainly time and lack of relevant provision. Matlay (2000, p. 334) identifies factors directly affecting the provision of training in small firms as the market position of the firm, prevailing economic conditions and the availability of relevant training. Factors indirectly affecting training provision include the cost of training, time constraints, lack of trainee cover, lack of in-house trainers, lack of trainee motivation and lack of trainee interest. Small organisations often lack any formal HRD infrastructure, and the training and development role is carried out, if at all, by owners/managers, although this is dependent on the management styles of the owners, managers and/or families involved (Gray and Lawless, 2000). Small organisations thus often have to resort to “formal” government initiatives to provide training opportunities, where the formality of provision is often incongruent with the informality and spontaneity of SMEs (Hill and Stewart, 2000).

The lack of relevant training and development provision noted by Hyland and Matlay (1997) presents an even more significant barrier to small organisations in rural, peripheral regions such as North Wales. A significant feature of the Welsh economy, as in Europe, is the proliferation of SMEs. Across Wales the proportion of SMEs is 90 per cent, yet in North West Wales this rises to 98 per cent, with 67 per cent of organisations employing less than 50 employees (Welsh Development Agency, 2000). In an economic

analysis of the North West Wales region (Welsh Development Agency, 2000), two of the key issues identified are relevant to this paper. First, there is a need to increase the skills and knowledge base – through employee lifelong learning and strengthened links between business and higher education, to help SMEs who lack their own HRD infrastructure. Second, there is a need for more effective use of ICTs to help overcome the problems of remoteness and to stimulate e-commerce and e-learning, given that around 90 per cent of small firms use computers.

Facing internal and external resource constraints, such as problems of lack of time and lack of local provision, the growing availability of information and communication technologies (ICTs) and computer-based learning offer potentially accessible, affordable and flexible solutions for learning and development within SMEs. Access to learning, training and development in small organisations is a major issue, and one which new learning technologies could solve, in that e-learning offers learning “any time, any place, any how”. However, “little empirical research has addressed the specifics of ICT adoption, implementation and use in the context of the small firm” (Brock, 2000, p. 384).

### The use of ICTs in small organisations

The use of information and communication technologies by small organisations has been regularly monitored by the Small Business Research Trust (SBRT) since 1985. The SBRT has reported the increase from 36 per cent of SMEs having personal computers (SBRT, Vol. 1 No. 3) to near saturation by 1996 (SBRT, Vol. 12 No. 12) (cited in Gray and Lawless, 2000). Brock (2000) notes that small firms use ICT more as tools to support organisational tasks like administration and accounting, rather than for formal, internal communications as in larger organisations. Similarly, Lymer and Johnson (1997) note that SMEs initially used ICTs merely for accounting, but there is now increasing use of the Internet for both sales and access to information, and for improving the value chain (cited in Gray and Lawless, 2000). Gray and Lawless (2000) also cite the work of McClure and Blackburn (1997), who

reported distinct differences in the use of ICTs between different sectors, and identified that small firms use ICTs for four distinct activities: administration, operations, electronic communications and small firm information systems. They also found that the larger the firm, the more ICTs were used – and for more functions. However, the size of the firm does not necessarily determine levels of ICT awareness, as very small firms can be highly IT sophisticated (Gray and Lawless, 2000). More recently there is evidence in Irish SMEs of increasing proficiency in e-commerce in general, with owner-managers the driving force (Barry and Milner, 2002). This may also be increasing in terms of e-learning. Figueira (2003, p. 7) suggests that “unlike many of the Web-based ideas for business and other activities, e-learning has survived the economic crisis of the two last years”. However, in a European study, researchers found that online courses for managers in SMEs are only effective if there are collaborative links between educational providers and enterprises (Oberski *et al.*, 2000).

Small organisations in rural, peripheral areas often face more limited markets, ranging from difficulties in accessing resources from suppliers to distributing products and services to customers, associated with the limited availability of local providers and purchasers. However, such organisations are increasingly benefiting from ICTs to support e-commerce by improving and extending communication with suppliers and customers, thus developing the supply chain beyond the local, often restricted, market. Small firms may also be more constrained in terms of the local training market (including both purchasers and providers of HRD) than in urban areas. Yet, extending the use of ICTs beyond conventional e-commerce could also achieve further benefits, such as developing the demand and supply (delivery) of learning and development. However, there is currently little evidence of this. For example, to provide small organisations with information and support, the European Commission has recently launched its Euro Info Centre e-Business campaign, to help small firms face the challenges of e-business (European Union, 2001b). However, this Web site does not mention e-learning.

Whilst computer-based learning offers potential solutions regarding access to quality

learning (through flexibility of delivery mode and location, for example), it also brings certain problems, such as the level of IT skills required by learners and fear of technology. A significant barrier is the ability to judge the quality of – and hence make informed decisions about selecting and using – ICT-based resources. Given the significant factors and potential barriers to training and development in SMEs, the emergence of new information and communication technologies (ICTs) might offer new, and more practical, opportunities for employees, owners and managers to enhance their skills levels. However, they also pose two key problems:

- (1) the availability of technological hardware within SMEs; and
- (2) the ability to judge (and thus select) appropriate computer-based learning materials.

It is the second issue that was the focus of the research project upon which this paper draws. However, research findings suggest that the former is a fundamental barrier.

### **The research project: computer-based learning in the SME context**

The paper draws upon a two-year research project funded by the National Assembly for Wales and conducted at the Centre for Learning Development at the University of Wales Bangor between 1998 and 2000. The author was project manager. The project explored perceptions of the pedagogical quality of electronic learning materials designed to stimulate lifelong learning, and specifically learning relevant to business. The overall research question focused on how to evaluate the quality of computer-based learning materials, and aimed to determine whether there was a relationship between “good quality” learning materials and learning outcomes. The research design incorporated both quantitative and qualitative methods, including a critical review of literature on pedagogical and quality issues associated with computer-based learning and the SME context, and three empirical studies seeking the perceptions of e-learning of higher education lecturers, trainers, trainees, and SME employers and employees.

## **Research methods**

This paper presents selected findings from the qualitative research that gathered perceptions of e-learning from two perspectives – SME employers and employees.

### **Employer perspectives**

Two sources of data gathered during this project help illustrate employers’ perspectives on electronic learning. Both were related to recruitment of research subjects. The intention was to recruit SMEs in North Wales that already used computer-based learning and ask employees to evaluate their actual work-based e-learning experiences. However, this proved problematic, requiring a re-design of the final study. Briefly, employer perspectives were gathered through two methods: an evening workshop and a telephone survey of 146 SMEs.

To recruit potential SMEs, first, researchers were invited to an e-learning workshop in North Wales, organised by the University of Wales Swansea, and attended by SME owner/managers. The focus of the workshop was to identify training needs in SMEs. A range of issues relevant to e-learning was explored, and owner/manager views were recorded in the form of hand-written notes. These are presented later in the paper. Second, a telephone survey was conducted between February and June 2000 to recruit potential participants in the research. Various sources were used to identify potential organisations within Wales, such as the Welsh Development Agency, the “fast growth fifty” network of growing enterprises in Wales, existing UWB databases and directories such as *Yellow Pages*; 167 organisations were randomly contacted, mainly in North Wales. Of these, 13 were higher education institutions, either using computer-based learning materials or engaged in relevant research projects, and who might be able to provide SME contacts. Thus the sample size was 154 organisations, although this also included eight large organisations, (see Figure 2). Of the 146 SMEs contacted, the sample represented a range of activities, including accountants, solicitors, training providers, manufacturers, IT and communications companies, financial services and health care. Due to the dearth of SMEs actually using relevant technology, eight large organisations were also contacted

**Figure 2** Summary of telephone survey results

- 12 were able and willing to participate – i.e. currently engaged in computer based learning.
- 8 were using some form of computer based training, but felt they 'did not use online as such' and declined to participate. An example of this was found in a firm of solicitors, using CD-ROMs for legal updates.
- 43 were unable to participate but were interested in participating at a later date – i.e. when they had the technology and/or appropriate learning materials. However, we were still able to gather some data regarding their perceptions of e-learning.
- 68 respondents did not use e-learning and were not interested in this subject. This is a significant finding, suggesting either the lack of awareness of the potential of ICTs or the lack of need for electronic forms of training and development.
- 23 organisations were unable to be contacted. Given the number of failed start-up ventures, these organisations may no longer be in existence.

later in the project as these were more likely to engage in computer-based training.

Only 12 organisations were able and willing to participate in the study, and three of these were large organisations from the financial services and energy sectors. Of the nine SMEs, five were training providers or local colleges, two were learndirect centres and two were other forms of SMEs – one a computer company and the other in financial services. However, a further 43 organisations (including four large) expressed interest in participating at a later date, for example, once they had installed appropriate technology. However, during the life of the project, several organisations had to withdraw their participation (due to re-structuring, workload pressures and lack of training, for example). This altered the shape of the final study, described below. This also highlights the problem of designing a “good” theoretical research question, but then finding a gap between this and the current empirical reality. It also points to the problematic nature of trying to acquire access to organisations from “cold”. Access is easier to achieve from known or “warm” contacts.

Due to the low use of e-commerce, let alone e-learning, the final research study had to be modified. Instead of using exclusively SME employees using existing work-based materials at their own place of work, other participants were recruited to engage in a study of SME-relevant computer-based learning materials.

### **Employee perspectives**

Employee perspectives were gathered during a research study conducted at the University of Wales Bangor. The study was conducted during June/July 2000, involving 159 participants, recruited from the North Wales area. There was a wide spread of age and experience amongst the participants. The

learners were either existing SME employees, recent graduates engaged with experience of working within SMEs or trainees engaged in vocational training and seeking employment, which in the North Wales area is mainly in SMEs. The learning materials employed during the study were all relevant to the SME context, including an introduction to information technology, more advanced computer skills, e-commerce, book-keeping, project management and team-building. Participants chose the learning material they wished to use, were given as much time as they required to complete the material and were then asked to complete one of the two learner evaluation tools (one paper based and the other electronic). This paper explores the qualitative comments offered by learners, and identifies the key factors influencing e-learning.

### **Research findings – employer perspectives**

From the workshop investigation of employer perspectives, the research identified mixed attitudes to training in general, and e-learning in particular. Lack of time and resources were cited as inhibiting factors. An important factor associated with computer-based learning is the difficulty in identifying the full cost. For example, it was considered easier to identify the cost of sending an employee to college for day release, or on a training course for a day, than using computer-based methods of learning. Or, as another owner/manager argued, employees could be sitting at the computer terminal but be surfing the Internet rather than engaging in work-related learning. This raises the issue of trust, as well as cost.

From the survey of 146 SMEs, only nine organisations were able and willing to participate – that is, they were currently

engaged in computer-based learning. Of those using electronic learning, there were several types. To ensure continuing professional development (CPD), the firm of solicitors was using CD-ROMs to provide updated legal knowledge. In the small financial services firm, e-learning was used to train field sales people. In the large financial services organisation, employees had access to a range of in-house courses, such as customer services, provided on the intranet, or on CD-ROMS which employees could take home to learn. A further eight organisations had the technology and were using some form of computer-based training but made comments such as “we don’t use online as such”, stating they only used CD-ROMS, or IT training, “training staff in Web skills but not online specifically.” This could highlight the difficulty researching this area due to linguistic and discursive ambiguities about what constitutes electronic (and) learning. Forty-three other respondents suggested their future use of e-learning, such as “online learning is embryonic”, and “we’ve only just had the Internet installed – very interested.”

Overall, it would appear that employer attitudes to e-learning vary. During the workshop discussion, although some owner/managers displayed positive attitudes to training in general, they were more negative about computer-based learning. However, during the telephone survey, although very few employers ( $n = 20$ , or 12 per cent) were currently using computer-based learning, 43 respondents (28 per cent) reported an eagerness to join the technological learning revolution. Many stated their interest in the project, but some thought the academic side was far too ahead of the practical context. Comments were made about the gap between the aims of the research project (judging the quality of computer-based learning materials) and the needs of the SME community (getting advice on how to set up and use computer-based learning in the first place). Some participants advocated a more SME-focused research agenda. Various comments were noted, including:

We’re interested in the project but not using online materials yet.

We’ve only just had the Internet installed – we’re very interested.

We’re about to appoint staff to explore online learning.

Online learning is embryonic . . . and something we’re trying to increase over the next five years.

Some respondents spoke about the specific problems they had encountered in trying to engage in computer-based training, and asked for help:

We want help setting up online training.

We’re currently having IT problems.

Other respondents, particularly training organisations, were interested in the evaluation tools to help them design and develop better learning materials.

We’re developing an online mentoring course and are very interested in evaluating it.

We have no online learning materials ready to use yet but we’re interested in the quality criteria for designing and evaluating materials.

Figure 3 identifies some of the key barriers to implementing (and researching) e-learning in small organisations.

These findings appear to contradict earlier claims that 90 per cent of small organisation use computers – at least in terms of learning, training and development. The findings of this random, although albeit small, sample, might suggest a surprisingly low use of e-commerce, let alone e-learning, among SMEs in North Wales. Alternatively, this might be a feature of the research design. However, to select or target known users would have obscured the extent to which electronic learning is employed in small organisations in this rural, peripheral area. This research provides a snapshot of the current reality, and although disappointing, it also reveals some reasons for not engaging in electronic learning – an important finding in itself.

### Research findings – employee perspectives

When asked to describe their e-learning experiences and evaluate the computer-based

**Figure 3** Barriers to implementing (and researching) e-learning in small organisations

- Lack of hardware
- Lack of e-learning expertise
- Lack of time
- Lack of resources
- Lack of trust
- Difficulty in determining full cost of e-learning
- Differences in terminology/language

learning materials, there were mixed attitudes from the 159 learners. However, the majority of responses were positive. Overall, 33 different factors were identified (Sambrook, 2000, 2001), and these can be categorised into three levels: those influencing learning in general, those relevant to learning materials in particular, and those specific to e-learning. The most significant factor influencing their experience was the extent to which the computer-based learning material was perceived as being user-friendly. The top 11 factors account for two thirds (66 per cent) of the total number of comments (see Figure 4).

This would suggest that the most important aspects influencing learners' judgements of quality are: user-friendliness; presentation; graphics; engagement; information; knowledge; understanding; level; type of learning; language; and text. The most significant factor was user-friendly, and this is especially important in the context of ICT-based learning materials where the learner could be alone and isolated.

From the quantitative analysis of frequency of mention and an exploration of learners' own words, research findings suggest that the same factors could be both positive and negative features, highlighting the complexity and subjectivity of investigating learners' perceptions of e-learning. Yet, learning (rather than training) and particularly e-learning are becoming important issues as the national and European governments attempt to encourage lifelong learning. Learnware producers are responding with the growing supply of computer-based learning materials, yet computer interface usability is a concern. A recent report suggests that e-learning companies will lose large amounts of revenue due to the unusable interfaces of their products, that is interfaces that fail to recognise issues of user-friendliness and

accessibility (Quinn, 2001). At an organisational level, with an increasing emphasis on learning to enhance competitive advantage, it is important for owner/managers as HRD decision makers, or other HRD practitioners, to be aware of the factors identified by learners to ensure effective e-learning. This is particularly pertinent in SMEs where – despite the lack of formal HRD infrastructure – computer-based learning can offer accessible and flexible learning opportunities, yet can also be greatly hindered by lack of technology, trust, time – and cost.

## Conclusions

This paper has explored concepts of lifelong, electronic and work-related learning. It has also identified factors influencing both employers' and learners' experiences of e-learning. Synthesising these two perspectives, it is useful to develop a model of factors influencing learning and development in the context of small organisations, presented in Figure 5.

These can be constructed into a hierarchy of influencing factors, from the overall orientation to firm and employee development and barriers to learning in general (from the employer perspective) to factors influencing learning in general, using learning materials and electronic learning (from the employee/learner perspective).

A key finding is that e-learning requires a positive attitude, from both employers and employees. In addition, SME/e-learning requires significant support in terms of assisting owner/managers, who might lack the specialist knowledge and skills, to: identify and acquire appropriate technological systems (hardware, specifications); engage in

**Figure 4** The top 11 factors accounting for two-thirds (66 per cent) of the total number of comments mentioned by learners using SME-relevant e-learning materials

- USERFRIENDLY – the extent to which the material is easy to use, with clear instructions
- PRESENTATION – clear and accurate, with no mistakes such as spelling errors
- GRAPHICS – the number and quality of pictures and diagrams
- INTEREST – whether the material generates interest or is found to be boring
- INFORMATION – the amount and quality of the content, whether there is too little or overload
- KNOWLEDGE – the extent to which new knowledge is gained
- UNDERSTANDING – whether the material is easy or difficult to understand
- LEVEL – whether the material is considered too basic or too deep for the learner's current knowledge and skills
- TYPE OF LEARNING – for example, whether deep learning or rote learning, memorising facts
- LANGUAGE – whether the language was difficult to read, using jargons or lacking definitions
- TEXT – the amount of text and the balance with graphics

**Figure 5** A model of the various dimensions of, and factors influencing, learning and development in small organisations from employer and employee/learner perspectives

	<b>DIMENSION</b>	<b>INFLUENCING FACTORS</b>
<b>PERSPECTIVE</b> ↑ Employer ↓ Employee/learner	Developing small firms	Owner/manager orientation to growth
	Barriers to HRD in general	Owner/manager attitudes to learning and development
		Owner/manager expertise in training and development
	Barriers to e-learning	Lack of relevant, local training provision
		Availability of – regional infrastructure, organisational hardware, relevant software, e-learning expertise (local and/or internal)
	Factors influencing learning in general	Issues of lack of resources – e.g. time, trust, financial
Difficulties – linguistic, determining the cost of e-learning		
Confidence, level, interest, type of learning, practise, pace, enjoyment, learner control, progression, knowledge, understanding, usefulness (relevance/transferability)		
Factors relevant to learning materials	Presentation, information (content), language, length, structure, explanation, examples, assessment	
Factors specific to ICT learnware	Userfriendly, graphics, text, navigation, interaction, IT skills, colour, links, hardware specifications, scrolling, interface, help facilities, feedback	

appropriate methods of learning/training (formal/informal, CD-ROM/Web); and identify and select appropriate learning materials (content, level, type of learning). It is both important and useful to identify the factors influencing e-learning to help training brokers, HRD professionals, owner/managers and learners themselves identify the various potential barriers – whether attitudinal, financial or technological. It is also important to help them better judge the quality of, and thus select, electronic learning materials. Selecting inappropriate learnware is a waste of resources and can discourage engagement in future learning. “Bad” experiences of electronic learning will do little to engender a positive employee orientation to learning, nor will they encourage employers to invest in this new form of learning. The most significant factor influencing learners’ experiences were the extent to which the computer-based learning material was perceived as being user-friendly. Factors influencing employers included the lack of trust, the difficulty determining the cost of e-learning and the physical lack of technology.

From this albeit limited research, it possible to suggest that the extent to which e-commerce and e-learning is used in North Wales is lower than expected. This is probably in part due to the lack of national

infrastructure, particularly in this rural, peripheral area. E-learning requires investment in infrastructure – both the technological infrastructure at a national and regional level, and the hardware requirements at an organisational level. Technology is changing at an alarming pace, and another new feature of ICTs is the wireless phone or WAP. This may open up the possibilities for m-learning – or mobile learning – but that is another research project, and we have only just begun to scratch the surface of SME/ e-learning.

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