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E-learning in the corporate university

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Abstract

Purpose – To explore the development of e-learning within the context of corporate universities with the aim of informing the debate on e-learning and establishing key areas of concern for emerging corporate universities.

Design/methodology/approach – Three case reviews of large leading edge organizations in different sectors.

Findings – Whilst e-learning has potential, its success is significantly limited by context which influences the degree of sophistication and integration of e-learning and its ability to contribute to the corporate university learning processes and outcomes.

Research limitations/implications – Further research is required on both the learner experience and in the wider evaluation of learning outcomes beyond simple statistical evaluation of participation.

Practical implications – Key areas of difficulty are identified as: the focus on generic e-learning solutions; the barrier imposed by the base technology level of the organization; the overriding concern for ROI at the expense of learner experiences; and the extent to which pedagogical possibilities are not fully exploited.

Originality/value – Raises the often overlooked issues of pedagogy and learner response to e-learning as inhibitors to the contribution that e-learning can make to the corporate university.

Keywords Corporate ventures, Universities, Computer based learning, Learning organizations, Learning methods

Paper type Research paper

Introduction

There are now over 2,400 learning institutions worldwide using the title "corporate university" (Nixon and Helms, 2002). The institutions are not limited to a particular type of organization, but, within the UK alone they cover a broad range of organisations as diverse as B&Q (a home improvement store), the National Health Service (NHSU), and the Royal Bank of Scotland (Anderson, 2000; El Tannir, 2002). With the UK Government now considering granting award-bearing powers to such commercial organizations (Prince, 2003), this is clearly not a passing phenomenon in employee development. Since many of the organizations with corporate universities have a global, or at least multi-national, footprint, these institutions are likely to have a significant impact on the nature and direction of the education of the current and future workforce. It is important, therefore, to examine the purpose of these organisations, the learning paradigms that they incorporate and the educational opportunities that they offer. Within this context of the growth of corporate universities, there is also increasing use of e-learning. The CIPD note that e-learning has grown from 30.5 per cent of correspondents (CIPD, 2002) to 47.8 per cent in the CIPD annual Training and Development Survey (CIPD, 2003). This rise is forecast to continue in the future (Beamish *et al.*, 2002). Consequently, this article explores the growing use of e-learning within the corporate university framework.

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Through three case studies, each with international business interests, we focus on the contextual, strategic and technological drivers of e-learning within corporate universities, and the implications that they have both for learning and learners within these organisations. First, a discussion on the growth of e-learning provides an understanding of key issues in the adoption of e-learning. The growth and emerging sophistication of corporate universities, and the role played by e-learning, are then briefly discussed. Following a review of the cases, key issues are highlighted that influence the current use and future development of e-learning within corporate education, and further agendas for research are proposed.

Defining e-learning

The emergence of e-learning is well documented, but what constitutes e-learning is less well defined. The complexity of technology and the speed of its development mean that the potential and capabilities of information and communications technologies (ICT) supersede its documentation. Most definitions, of necessity tend to be restricted to a list of possibilities of what might be employed in using an e-learning approach. For example, Beamish *et al.* (2002, p. 105) define e-learning as:

> ... a wide set of applications and processes allied to training and learning that includes computer-based learning, online learning, virtual classrooms and digital collaboration. These services can be delivered by a variety of electronic media, including the intranet, internet, interactive TV and satellite.

Alternatively, a broad, all-encompassing definition may be used such as "any learning activity supported by information and communication technologies" (Sambrook, 2003, p. 507); this is often followed by a fuller debate on the nature and level of sophistication of the technology. For a useful overview of this debate see Sambrook (2003); and we follow her definition and use e-learning to cover any electronic learning material from CD ROMs on stand alone PCs to intranet/internet networked systems with down-loadable and interactive material.

Perspectives on e-learning

Definitions of e-learning do not address either the complexity of e-learning capability development and delivery, or the opportunities that e-learning offers to provide a strategic contribution to the organization. Indeed, while much of the content of the available literature concentrates on the advantages of e-learning, it tends to be presented with little discussion of possible disadvantages or problems, and under the banner of urging trainers and organisations to join the bandwagon, or be left behind (Rana, 2001; Sloman, 2001; Wilson 1999). Advantages are based around two main themes – the cost advantages and flexibility in delivery. Sora (2001) actually refers to e-learning (distance learning) as a force for profit and efficiency. Although he uses this term in the context of the traditional university, it is perhaps even more appropriate in the context of the corporate university.

Discussions on the cost advantages centre on reduced training time, the costs saved in travel and time away from the job, and the ability of e-learning to serve large numbers at one time, or over time, with relatively little additional cost (Schriver and Giles, 1999; Warner, 1999; Koprowski, 2000; Clarke and Hermens, 2001). In addition, there is a growing interest in the relationship between e-learning and knowledge management, which is increasingly seen as contributing to the competitive edge of the

organisation (Swanson, 2001). This raises expectations in organisations that introduce e-learning in terms of both the extent of the return on investment (ROI), and the period over which the payback will take place. A study of US businesses by Swanson (2001) indicates that 46 per cent of those surveyed are already seeing a return on their investment, whilst 94 per cent are expecting to see returns or further returns within two years. Hammond (2001) also notes that 80 per cent of *Fortune* 500 companies are using, or intending to use, e-learning, and expect a significant ROI. However, it is not apparent if this ROI is a real increase in profits due to increases in quality or productivity, or due to efficiency savings and cost reduction in training.

Discussions on flexibility tend to focus on two main issues: flexibility in delivery and flexibility in the pace and distribution of learning. The flexibility of delivery offers organisations the ability to deliver consistent learning experiences, independent of time and place. This offers great advantages to a geographically-dispersed workforce, those working non-standard hours, and those employees who work from a home base. It also enables learning to be offered easily to those beyond the formal boundaries of the organisation at relatively low cost; this would include customers, suppliers and contractors (Galagan, 2000). Flexibility in the pace of learning is represented largely as an advantage to learners in that they can learn at a time and pace to suit their own capability and life circumstances, and enable their continued marketability through lifelong learning (Sandelands and Wills, 1996; Caudron, 1999). However, flexible access to learning is accompanied by a shift of responsibility for learning to the individual and an increased expectancy of learning in non-working time.

Issues of learner style (Honey and Mumford, 1992) are not addressed and it is questionable whether e-learning, with its reliance on self-instruction and self-motivation, is suitable for a broad organizational constituency. Indeed, Dringus (2000) warns us that e-learners may be unable to sustain their momentum unless they have the skills for self-directed learning and technology management, unless they are self-motivated, and unless they are prepared for isolation. Salmon (2002), proposes a five-stage model of preparation for online learning including: access and motivation; online socialization; exchange of information; knowledge construction; and personal reflection and development to obviate some of these problems. It would be interesting to note how many organizations adopt such a comprehensive approach in their corporate university frameworks. A study by Masie (2001) further reinforces this message, highlighting that "learner acceptance" is not guaranteed and will require firms to address issues of marketing (to encourage participation), support (to aid retention), incentives (to provide validation of the training completed), and technology (to support collaboration and provide blended solutions). This theme of socialization is also addressed by Newmann and Smith (1999), who use Lave and Wenger's (1991) concept, "communities of practice", to note the significance of a supportive and interactive context of learning, highlighting the danger of the learners' needs being ignored in the enthusiasm for technology. Indeed, Govindasamy (2002) argues that pedagogy is the most neglected aspect of attempts to implement e-learning.

In terms of quality of learning material and technological capabilities, some authors sound a note of caution. Emurian (2001) questions what might be effectively delivered via e-learning and Angel (2000) suggests that whilst e-learning is good for communicating facts, areas of complexity and feedback might be better left to human trainers. Dobbs (2000) maintains that much of the off-the-shelf material available lacks

quality, inspiration or creativity, and is little more than online text books. Thus, while Warner (1999) emphasises the importance of tailor-made materials and on-line help, he also acknowledges that sophisticated learning materials are very expensive. This is a significant point that needs to be addressed in the payback debate, and the balance of quality versus the true cost of materials and their support is one that would benefit from further research. Thus, although the technological possibilities of e-learning are advancing at an exponential rate (Barron, 1999), McLennan (2000) provides a clear exposition of the technological complexity of e-learning and the areas in which problems can occur. Sambrook (2001) also explores the positive and negative factors that influence learners' perceptions of the quality of materials, highlighting how "user friendliness", presentation, graphics and interactivity of learning material and technology both help or hinder the learning experience. She also notes that since the user may often be isolated from support, this exacerbates the importance of these issues.

These issues of flexibility, cost, learner-centeredness, technological complexity, and pedagogy may seem obvious on reflection, but as Dobbs (2000) and O'Reilly (2000) point out, many trainers responsible for developing and implementing e-learning strategies are struggling within a new field. They possess some of the skills required, but lack experience and the "know how" of others, particularly the technical skills. Also, what is largely ignored in the literature is that e-learning sits within a broader context or agenda of employee development that mediates outcomes. There may be a number of, often competing influences such as: providing innovative fads at the expense of pedagogically sound training (Beech *et al.*, 2000); managers retaining faith with "traditional" training methods (Sadler-Smith *et al.*, 2000); struggles to balance competing individual and organizational priorities (Antonacopoulou, 2000); and the language of the democratization of learning, through employee-led development schemes, which it is argued increases motivation (Hamblett and Holden, 2000). Thus, given these concerns, it is important to consider how e-learning is contributing, and being incorporated into, the strategic objectives of corporate universities.

The growing sophistication of corporate universities

Walton (1999) suggests a developmental model of first, second and third generation corporate universities which focuses on both purpose and learning strategy. He uses the Disney University as a typical example of a first generation type, with a narrow focus on the adoption of organizational culture and values and mainly classroom-based activities. Citing Motorola as an example of a second generation university, Walton suggests they typically offer a wider range of activities, to a range of levels within the organization, and may be organised into curriculum areas to address functional skills, cultural issues and remedial learning. This type of institution is often characterised by partnerships with other employers, educational institutions and the wider community.

Third generation corporate universities, Walton argues, are those which seek to make the best use of new technology for learning, and are characterized by process rather than place, adopting the structure of a virtual organisation. Phillips (1999) notes that this is often a feature of corporate universities within the UK which, developing later than American-based institutions, are better placed to take advantage of developments in technology. The third generation corporate university is seen as the intellectual engine of the organisation, developing the human capital of all employees,

with a focus on developing creativity and innovation and driving strategic change. Thus, it could be argued that the increasing use of e-learning constitutes one measure of the level of sophistication of the corporate university, to encourage a learning culture. A further measure of development that emerges from Walton's model is the increasing integration of the corporate university with the strategic objectives of the organisation.

This link to strategy is incorporated into Fresina's (1997) categorization of corporate universities, which are divided into three types according to their purpose or strategic intent: as reinforcers and perpetuators of current cultures and competitiveness; as agents to manage and implement change; and as a force to drive and shape the future direction of the organization. However, Fresina does acknowledge that a particular corporate university is unlikely to fall distinctly into one category, but rather will draw parts from each. This is evident in the multi-layered strategy adopted by BAE Systems (Finn, 1999) addressing cultural, technical and strategic management training within their "virtual university" (BAE Systems, 2004). Barley (1997, p. 14) argues that this variety is positive and that the corporate university is "a flexible and adaptable vehicle", providing the opportunity to assess the needs of the organization and model learning accordingly.

In an alternative conceptualization of the corporate university, Prince and Stewart (2002) focus on processes rather than outcomes and structure. With attention to context, they incorporate four learning sub-process of organizations, that are co-ordinated and integrated by the corporate university in order to facilitate organizational learning. These sub-processes are knowledge systems and processes, networks and partnerships, learning processes and people processes. Here the focus is on providing "a descriptive and analytical device" (Prince and Stewart, 2002, p. 794) rather than an ideal type. Prince and Stewart propose that the future of corporate universities depends on their ability to manage the interaction and complexity of the learning subsystems. While e-learning is not specifically mentioned, it is possible that it could contribute to one if not all of these learning sub-processes.

While the rhetoric of the corporate university is built around learning and strategy agendas, it is also worth noting that some commentators have suggested that the development of corporate universities is also an attempt to re-engineer business processes for best value. Consequently, they represent not only a renewed corporate appreciation for education, but also "a desire to centralize resources to reduce expenses" (Arnone, 1998, p. 200). One of the key objectives of the process is cost-effectiveness and "the most important client of a successful university is the head of a business unit, not the participants" (Arnone, 1998, p. 200). The objective of training must be to ensure that the training not only adds value to the human resource, but that the value added is also beneficial to the employer paying the training bills. Indeed, almost all commentators (Meister, 1997; Peak, 1997; Arnone, 1998; and Stumpf, 1998) agree that this must be a key objective, and to lose sight of it would undermine the business/training relationship.

This drive for cost effectiveness is often where new technology or e-learning is seen as having a major role to play. It is more cost-effective to provide trainees with the tools and technology to continue the learning process in their work and social environments. As Arkin (2000, p. 43) states: "[t]he impact of technology, which is bringing down the cost of delivering some types of training is one of the driving forces behind the growing interest

in corporate universities". Although e-learning presents a route to achieve this, the potentials of technological systems are mediated by the way that they are shaped in use as well as by the capabilities and characteristics of the technology (Dawson *et al.*, 2003). Thus, the impact of e-learning will be dependent on how the technology is adopted and used within organizational contexts, and how well the technology supports the objectives, strategies and values of learning within the corporate university framework. Corporate universities aim to promote learning and a knowledge-rich culture at all levels within the organisation, whilst locating learning firmly within the organisational context and needs (Prince and Stewart, 2002). The utilisation of learning and communication technologies in creating local, national or global "communities of learning" is part of the emergent landscape of the corporate university.

The emerging questions and research approach

The development of e-learning and its use within corporate universities raise a number of interesting questions for the researcher. The first area is that of the technology itself. What do organisations actually do under the banner of e-learning in their corporate universities, and to what extent are both the human and the technological factors aiding or inhibiting success? The second broad area is strategic intent driving the use of e-learning and the extent to which this is purely cost-based or integrated with other corporate or HR driven objectives, currently and within envisaged future development. Third, issues of pedagogy, quality and control are significant issues for both the learner, and for encouraging a learning culture, which is important for the sophisticated corporate university. These three broad areas of enquiry formed the basis of the research. To explore and illustrate the use of e-learning in corporate universities, this research undertook to review the implementation of e-learning in three large organisations in different sectors within the FTSE 100. Company A is one of the big five high street banks; Company B is an engineering and manufacturing concern in the aerospace industry; and Company C is a major company within the telecoms industry.

Review material was collected through interviews with senior corporate university and e-learning development staff, through seminars involving academics and practitioners within two of the corporate universities, and through consultancy in the third, and by reviews of the e-learning material in use. The interviews were held with the senior development executive leading e-learning implementation and strategy within each of the institutions, and with e-learning managers. This information was coded through a process of conceptual analysis. That is, the data was analysed by looking for key ideas and concepts, with concept trees developed through coding, re-coding, linking and evaluation (Easterby-Smith *et al.*, 2002). In addition, this data was compared to information provided and recorded during seminars and the consultancy work. This information was also coded and compared to the interview data. Finally, a third set of data was taken through reviewing online learning material at the institutions, and through corporate university web sites.

Drawing data from a variety of perspectives allowed us to consider different views when constructing our interpretation and provided depth to the analysis. However, this attempt to triangulate within the data collected was not to establish "the truth". Indeed, researching with qualitative methodologies creates particular challenges in establishing the "truth" in any analysis of data (Lincoln and Guba, 2003).

Knowledge production clearly relies heavily on the researcher's lens to make sense of the data, and this study is no different. Consequently, we recognise that our findings and outcomes are our interpretations and, as such are fallible and revisable, and that alternative interpretations may be possible (Alvesson and Skoldberg, 2000; Schwandt, 2003). Indeed, as more data become available, it is incumbent on researchers to continually revise, or revisit their initial impressions and interpretations. This is particularly relevant to this topic given the speed of development of e-learning. Nevertheless, this approach is particularly useful for developing emerging issues that may warrant further, and more focused, research.

Case reviews

Company A

Company A is one of "the big 5" high street banks. Its corporate university sets the over-arching learning strategy as an overview, with learning approaches delegated to various "faculty heads", such as Risk, IT, and Human Resources. Within the faculties, training needs are assessed and solutions sought, which may include e-learning. Learning strategies are linked to overall business strategy through management board reviews.

Within Company A, the most significant factor driving the e-learning strategy was cost, both in terms of a reduced headcount within the training function, and in the unit cost of delivery. Currently, however, although return on investment is still a major issue, the key drivers are seen as accessibility and flexibility of delivery. While Company A still delivers face-to-face training, and has a suite of training courses for staff taken at the corporate university headquarters, the strategy is to move towards generic courses online. Higher level courses are still seen as requiring face-to-face interaction, although bulletin boards provide forums for corporate university students once residential course are completed, and for contact with training staff. One of their generic management development programmes has been outsourced. The provider company manages and supports the whole development programme online, as it does with programmes for a number of other clients.

Most electronic training is delivered through multi-media suites containing stand alone PCs offering CD ROMs. These have increased from an initial 450 to 2,100. However, they also have an intranet site which is available to 55,000 of the 78,000 employees, with some 25,000 pages of reference material. Their intranet system is also used, in the main, for online testing of re-licensing qualifications required for financial regulation. It does, however, include 247 bulletin boards which build up support via online questions and answers and which act effectively as asynchronous support. Training participation on the intranet is counted by hits per month, page requests and time online (an average of 13.5 minutes). The areas covered by e-learning include, training for change initiatives, generic IT skills, interpersonal skills, and sector-specific skills and qualifications. The courses are 50 per cent generic and "off the shelf" (mainly IT and interpersonal skills), and 50 per cent tailor-made at the request of faculty heads and project managers. The bespoke courses focus on company-specific initiatives, such as change projects. Company A employs a number of web designers to create customised training, since they found this the most cost-effective means of producing this material. An online directory provides an overview of all learning programmes within the corporate university.

Company A see the main barrier to the development of e-learning as technological limitations such as bandwidth and the need for an effective and compatible online monitoring system. In addition, a recent attitude survey revealed e-learning as one of the two most popular forms of learning within the lower echelons in the organization. However, business development managers and other key gatekeepers are reluctant to engage with online programmes. Resistance tends to increase the more senior the grade of employee. Since it is the senior managers and project managers who act as the commissioners of e-learning, this presents a significant issue. A further barrier is seen as the company culture, which is yet to fully accept e-learning. Company A's plans for future development include introducing online mentoring and the development of more blended learning.

Company B

Company B is an engineering and manufacturing concern in the aerospace sector. They set up their "virtual university" as part of their strategic review of learning in 1998. The aim was to provide a complete learning lifecycle from induction to executive training within their virtual university. The direction of the virtual university strategy is set by three key functional interests within the organization representing engineering, future systems, and strategy and human resources. In addition, the development of professional courses is defined by the relevant functional councils within the company.

The complete portfolio of courses within the virtual university extends to some 3,000 courses. The main focus of the virtual university is on leadership, professional competencies and personal effectiveness, the last of which is delivered online. The personal effectiveness programmes include online learning services (available on both the company's intranet and internet), and computer-based training programmes available through the company's network of site-based Learning Resource Centres. The virtual university is expected to deliver these services in conjunction with a partner organization that develops the online material.

Company B was concerned to ensure that the "backbone" of the virtual university was effective and then to evolve capability, to allow open access and manage by exception. They started with the intranet and provided support through learning resource centres. The intranet now serves over 80 per cent of a 130,000 workforce based in over 45 countries worldwide. There are approximately 400 online courses, the majority of which are "off the shelf". Bespoke online learning is only provided for specific business sectors or projects that identify a particular need. As such, their online provision is targeted specifically at personal effectiveness, which covers soft management and interpersonal skills. Company B's virtual university still offers traditional training, placements and a mentoring scheme, and has a number of initiatives for externally-accredited traditional university programmes to provide strategic engineering and management qualifications. In order to help students navigate learning opportunities on offer, there is an online learning and development guide. This provides the facility for searches for course options in a variety of categories such as future job roles, competencies, career plans, and technical knowledge.

Here, the move to e-learning was driven by a strategic review of the training and development function. The learning and development director stated that the aim was to "deliver learning solutions, share best practice and encourage a culture of lifelong learning". A "virtual university" was seen as an integral part of this vision. Company B

has developed their ambitious original aim still further. There are plans to develop and integrate the learning systems with the knowledge management system and to review the use of the learning resource centres. Their current aim is to develop an integrated strategy of knowledge management and learning, and the virtual university is seen as a key component of this strategy. Indeed, the aim is to provide career mapping that links from appraisal, through personal development plans to the online learning and development guide. Take up has been significant, and grown steadily. In the first year there were 16,000 students and 40,000 courses taken. Current take up is approximately 18,000 students, or 15 per cent of the workforce. Student support is through help material integrated into the learning packages, although there are some online forums for those who are attending engineering and management development courses, where part of that provision is online.

In terms of difficulties experienced, Company B also sees technology as one of the main barriers to the development of the e-learning strategy. There are bandwidth, hardware and processing capability issues. These are seen as limiting the use of the latest packages, and the level of interactivity and impact of the material. Further barriers were seen as the difficulty of integrated tracking across both online and offline learning needs and activities, together with the perennial problems of motivation to learn and the development of a learning culture. There is a move to counteract this by embedding learning as a key activity in all processes. Again, return on investment is a significant issue, but it is also seen as difficult to measure. Technology is considered a key solution to enable the learning process throughout the organization, with the virtual university as a key focus for value engineering the learning solutions.

Company C

In Company C the move to e-learning was driven by a strategic review of the training and development function. The strategic review focused on the performance and capability to deliver a consistent standard of face-to-face training, in the quantity and timeframe required, given the rate of technological development in product lines resulting from shorter product lifecycles. E-learning was seen as a means of overcoming these difficulties, for a large audience, and at an acceptable cost. The initial move to e-learning was handled on a zero cost basis, with the cost of introduction offset against the cost of training and development staff. Nevertheless, the introduction of e-learning was the first stage of developing e-learning as a part of their overall learning strategy. Consequently, in addition to generic training, the company set up a Virtual Academy for online master's level management courses in collaboration with two universities. Company C still offers face-to-face training at a company college. The college provides technical training to their own employees and, as an income-generating initiative, to other companies. Thus, as with the other case companies, online learning is part of an overall corporate university strategy, controlled and co-ordinated from the centre.

Company C's approach is to outsource their generic technical and soft skills training. Training packages here are provided "off-the-shelf" by leading e-learning solutions providers. Since this is a global corporation, the generic courses were causing some initial cultural problems, and the use of American English and "one size fits all" approach did not encourage its diverse population to engage with the learning products. Where bespoke e-learning is provided, this tends to be the most popular, but

is generally only commissioned as part of project delivery, where specific training needs are identified for project success. It is Company C's intention to go for total e-learning solution with an integrated learning management system with both company and individual access. Future development includes both individual- and group-based learning activities with digital links utilising learning facilitators to exploit the full potential of e-learning capabilities.

Take up rates grew very quickly from the outset. However, this must be set in the context of the withdrawal of face-to-face learning opportunities. Evaluation of training success was restricted to online immediate feedback sheets and to the number of hits, although this was expected to get more sophisticated with the introduction of a learning management system. In addition, return on investment was calculated against the cost of delivering previous traditional courses. Here there was a significant saving in terms of staff costs and time away from work. For example, an online accreditation course could be completed for £200, whereas previously these would have cost up to £4,000.

As befits a company in a high technology communications business, the capability of the technology was not seen as a barrier. There were, however, a number of other barriers. Culturally, training had previously been viewed as a "reward" with a few days away from the job, and, because of the generic nature of much of the e-learning, it was not seen as being linked directly to business needs. Thus, the move, first to distance learning, and then to e-learning, was seen by managers as a "cheap" option. Consequently, it lacked their support. Additionally, the company had grown through acquisition and merger and retained a number of different sub-cultures, all with their own attitudes to training and technology. While technology was not seen as a barrier, the design of learning materials was and the courses were not as interactive as they could be since the potentials of technology were not being exploited. The biggest barrier, however, was seen as getting people to understand how to e-learn and to engage in episodic learning as opposed to intense extended courses.

Commentary, conclusions and future research

E-learning adoption within a corporate university framework

All three case studies highlight how e-learning has been integrated into a complex corporate university strategy. At the basic level, e-learning can be seen as supporting the development of basic functional skills, akin to the simplest of corporate university agendas identified by Fresina (1997). It seems that a considerable amount of learning material is generic, and consequently not locally sensitive. Used in this way, it is difficult to see how e-learning can provide competitive advantage, particularly since one's competitors may be purchasing the same material. However, it is also important to note that the approaches to e-learning are embedded in overarching learning strategies. In this sense, e-learning is also being used as a strategic tool to provide learning access to a broad constituency, and to encourage a learning culture. That is, e-learning within these organizations exemplifies Walton's (1999) categorization of a third generation corporate university, where technology plays a significant role in training and development support in order to drive the company's learning agenda. Its use is intended to provide the impetus for continual change – for example its use in delivering new projects and in management development, and to stimulate the "intellectual engine" of the organization. It seems that e-learning plays a key role, and its use seems set, not only to continue, but to expand.

In order to understand better the adoption of e-learning in these corporate universities, it is perhaps instructive to turn to Prince and Stewart's (2002) conceptualization, highlighted earlier, which focuses on learning sub-processes in organizational contexts. From the cases we can see that e-learning is being used as a learning vehicle, but also in Company B, it is being integrated with learning knowledge management systems that capture information and make it available to all, providing a database of learning information and past experience. In all companies it is being used to create "virtual communities" through online forums, stimulating interaction between functions and people, albeit virtually, providing expanded networks of interaction. In Company C, its possibilities are being used to explore deeper levels of interaction through digital links. In Company C, it is also being used to deliver strategic management qualifications and key projects, and in Company A and B, bespoke material is being used to support change initiatives and projects. Thus, under the auspices of the corporate university, e-learning is a mechanism of organizational development and is being used, to varying degrees, to link to, and support, other learning sub-processes. However, what cannot be gauged from this research is the depth to which this is being achieved to stimulate organizational learning. Indeed, it is apparent that the organizational contexts are significantly influencing the integration of e-learning in each of the corporate universities.

All three companies' corporate universities exemplify organizations at the more sophisticated end of Fresina's (1997) categorization. We can see that e-learning is being used to deliver training that supports efficiency, change and strategic capabilities, or all three of Fresina's corporate university categories. Thus, while the corporate university may be a flexible and adaptable vehicle for human resource development (Barley, 1997), it appears that e-learning is also a flexible and adaptable learning tool that provides a mechanism to deliver training initiatives that support all of Fresina's (1997) models, and all of Prince and Stewart's (2002) learning sub-processes. In other words, the delivery of e-learning in institutions has the potential to vary considerably in terms of both breadth and technical complexity. This perspective is in line with Maule's view that "[e]ffective use of the collective media is often as much a function of information policies and organisational cultures as it is of technology" (Maule, 1997, p. 136). Technology does not shape the approach of the corporate university, but its use is dependent on the strategy adopted by senior staff, HR staff, and other key organizational gatekeepers.

Resources and return on investment

The decision to invest in the infrastructure for e-learning is dependent on more than the recognition of its potential contribution to learning. The solutions provided within these organizations were significantly dependent on calculations relating to the potential return of investment. While resource limitations will always constrain possibilities, the focus on financial returns does create a problem if the output of training is not measurable in these terms. In this sense, e-learning is no different from other training mechanisms, but as Company A stated:

> ... you need to take a long term view of the investment. E-learning was implemented on a zero budget here ... we had to make savings to justify the expenditure. This hampered the speed and the effectiveness of the e-learning solutions.

This was echoed by Company B who argued that return on investment was a short-sighted view of e-learning and more significant was the impact on

competitiveness and the development of a learning culture. However, evaluation systems only counted hits, pages read, and cost savings. Deeper questions about learning outcomes were not really being considered. For example, there was limited knowledge of how, and why, take up was achieved, or the level of contribution to strategic goals. Given the centrality of e-learning to the overall corporate university strategies in these organizations, this lack of sophisticated evaluation is problematic.

The evidence from the case studies indicates that, as suggested by Schriver and Giles (1999) and Koprowski (2000), the key drivers identified were accessibility, flexibility of delivery and cost, particularly cheaper delivery through reduced opportunity costs and reduced time away from work. More generally, for some companies the ability to reach a wider constituency – even the most remote employee – was seen as valuable. This latter point highlights how corporate universities can centralise learning strategy to address organizational-wide needs. However, perceptions about the potential benefits of e-learning suggested a lack of clarity or emphasis on how e-learning might contribute to increases in bottom-line performance, or how to measure the contribution of a learning culture. In this sense the adoption of e-learning is unsophisticated, and supports Arnone's (1998) comments that corporate universities are an attempt to re-engineer the learning function for best value and reduce costs. Indeed, the directions being taken by the companies, particularly in the early stages, tend to reinforce Newmann and Smith's (1999) concerns that the emphasis of e-learning is directed towards using technology to provide economic efficiencies. Issues of pedagogy and learner experience are not at the forefront of implementation.

Technology, pedagogy and learner experiences

Whilst technology is the enabler of e-learning, it is also in many organizations a barrier to the full realization of e-learning's potential. E-learning solutions can clearly only progress at the rate of the base technology of the organization, and this can slow down development, reduce the level of sophistication of the materials used, and create frustration in users and trainers alike. Indeed, in Companies A and B, the level of technology was significantly restricting product sophistication. In all, the learning material design or the technological capability did not seem to support either a high degree of interactivity, or the integration necessary to make e-learning sufficiently different from other distance learning materials. To provide increased levels of learner satisfaction, the technology needs to address those issues highlighted by Sambrook (2003) as key drivers of the learner's and HRD manager's perception of its quality, such as user-friendliness. Indeed, Horwath (1999) recorded anxiety in novice users when the technology failed to respond within 15 seconds. Thus, pursuance of an efficiency agenda highlighted above raises doubts regarding the adoption and utilization of the full potentials of an e-learning pedagogy.

The exploitation of this technical dimension will require consideration both of the possibilities of e-learning and of what is technically possible (Campbell and Dealtry, 2003). In addition some factors of learning, for example emotional engagement, will not be technically possible (Campbell and Dealtry, 2003). Nevertheless, while there is no substantive reason that e-learning should deliver a less effective alternative to traditional education or existing distance learning (Hodgson, 2002), issues of instructional design, technology and pedagogy (Welle-Strand and Thune, 2003) create tensions between cost and quality that must be balanced if e-learning is to achieve its

potential within organisations and to contribute strategically to the corporate university's agenda. Generic packages can be sophisticated, and bespoke material can be well designed, but time and cost may undermine the ability of organizations to reach the full potential of e-learning. To achieve this, training programmes must focus on encouraging critical thinking skills and provide the employee with the ability to examine individual and group working practices, and consider how they can be improved (Davies, 1997) and to share best practice and tacit knowledge. Consequently, while e-learning has the potential to contribute to the learning sub-processes co-ordinated and integrated by the corporate university in Prince and Stewart's (2002) model, the level of contribution is far from certain.

The level of technological sophistication also directly impacts on the learner's experience (Hodgson, 2002). However, in all of these case reviews, the learner experience is significant by its absence in the discussion. Only one company, Company A, cited e-learning as the most popular method of learning amongst its workforce, and even then this was only "front-line" employees. It will be more important to address the pedagogical possibilities in learning programme design to provide the levels of interaction and collaboration that will provide the learner with a stimulating experience (Masie, 2001). Moreover, to achieve the level of virtual interaction that Motiwalla and Tello (2000) highlighted as essential to improved learner satisfaction, technological capability will be fundamental. Resolving these problems is essential if e-learning experiences are to encourage a learning culture. Thus, on-going research is needed alongside companies to evaluate the impact of e-learning on the various stakeholders, particularly the learner (Roy and Elfner, 2002) and to identify key issues of "learner acceptance" (Masie, 2001). Only when corporate universities address more fundamentally the issues of pedagogy and learner response to e-learning will they be in a position to claim that e-learning makes a significant contribution to their corporate university's strategy.

Final comments

The significant development and implementation of e-learning in these case companies suggest that there is a shift towards the third generation of corporate universities suggested by Walton (1999), where technology plays a significant role in training and development support to a broad constituency. The corporate university models provided by Nevins (1998) and Fresina (1997), however, suggest a framework that depends on the institution's strategic and cultural contribution to an organisation's competitive advantage. While the intention is clearly there for these corporate universities to achieve that, the role of e-learning is equivocal. While the programmes are part of the learning strategy, and are linked to business strategy through board or "faculty" review, the emphasis on these programmes tends towards flexibility and efficiency. Thus, e-learning has the potential to be a strategic learning tool, but like other technologies, it is shaped by the contexts in which it is adopted. That e-learning has the potential to contribute to key learning sub-processes that Prince and Stewart (2002) identify is not in doubt, but how it is configured will enable or limit e-learning's contribution to the corporate university agenda.

The issues surrounding return on investment, technology implementation, and pedagogy suggest that the e-learning programmes implemented within these corporate universities may provide clear advantages in terms of efficiency, flexibility, and cost rather than providing clear links between learning outcomes and corporate strategy.

This echoes with Arnone's (1998) observations on the centralizing and re-engineering role of corporate universities. While the intention in these case companies is clearly to support either current strategies or, at an even deeper level, to support strategic change, issues of organizational context mediate the outcomes, and will need to be considered carefully in any e-learning adoption. Finally, since the aim of the sophisticated corporate university is to achieve changes to strategic direction and a learning culture within the organization (Walton, 1999), it is imperative that further research is conducted on learner responses to e-learning, particularly in terms of how e-learning is received, used and whether there is an impact on learner behaviour.

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