# Engaging in the future of e-learning: a scenarios-based approach

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## Abstract

e-Learning has been frequently heralded as a transforming influence on global education and corporate training. Despite such rhetoric, the adoption, diffusion and exploitation of e-Learning by educational institutions and organizations have been slower than anticipated. In this paper we attempt to examine the future of e-learning by adopting a scenario planning approach, which formed the basis of a recent major international conference held in Edinburgh, Scotland in February 2004. We set out the background of the study, the methodology used to investigate the future(s) of e-learning and reflect on the process and outcomes of the exercise to provide some assistance for practitioners in the field. Our general conclusions are that the scenarios have been a valuable starting point to engage in a more informed discussion of how e-learning may transform education and training markets and the ways in which people learn over the next decade.

## Introduction: the growth and diffusion of e-Learning

By the end of the 1990s, e-learning was predicted to become one of the fastest growing, knowledge-based industries in the developed world and the single most important transforming influence on education and corporate training and development (Sloman, 2001). The key market drivers underlying these developments were thought to be the following.

(1) The role of organizational knowledge and intellectual capital in the competitive strategy of organizations and the needs of organizations to learn more rapidly than competitors(Cairncross, 2003; Choo and Bontis, 2002).

(2) The failure of corporate training departments to demonstrate "bang for bucks" using traditional methods of delivery and the promise of e-learning to achieve major corporate savings in delivering fast and flexible training (Bassie *et al.*, 2002).

(3) The increased "network readiness" of many developed and developing economies, and the combined developments in information and communications technology and approaches to learning that could take advantage of online delivery of education and training (Center for International Development, 2002; Leavis, 2002).

(4) The cash crises in the western university sector (Economist, 2002) and a number of innovative examples of universities and businesses in the higher education sector that had clearly demonstrated radical improvements in the effectiveness and efficiency of learning, such as the University of Maryland, MIT and Stanford in the USA, Edinburgh Business School, Heriot Watt University in Scotland and Southern Queensland University in Australia (Howard *et al.*, 2003; Leavis, 2002; Norris *et al.*, 2003; Seely Brown, 2002).

There were, however, expectations of different rates of adoption and diffusion between the USA and within Europe and Asia, in part because of greater American familiarity with technology-based learning and in part because of the supportive contexts for technology-based learning (Van Den Branden and Lambert, 1999). For example, by 1997, nearly 50 per cent of US universities were offering some form of online distance education, whereas apart from the British Open University, there were few significant examples of such online developments in Europe at that time (Martin *et al.*, 2003). In a major report (IDC, quoted in Hambrecht, 2000) the market for

e-learning content and services in the USA was expected to double in size every year, reaching approximately $11.5billion by 2003. At the same time as these figures were being produced in the US, industry reports were estimating that the e-learning market in Europe would have grown, from the 2001 figures of $0.8billion, by more than 120 per cent in 2001 to reach almost $6-10 billion by 2005, with the UK being the largest adopter (Hambrecht, 2000).

Yet, despite the rhetoric and excitement generated by these new form of technology-based learning that promised to revolutionize education and training, the growth and penetration of e-learning, even in the USA, has not fulfilled its predictions (Leavis, 2002). Even industry experts have recognised that the expectations of e-learning have been "unrealistic" and "overhyped" (Straub, 2002,). For some commentators this diffusion and adoption failure comes as something of a surprise, given the supportive institutional context of certain countries and the interventionist aspirations of others. For example, the cultural and institutional conditions of the USA would appear to be uniquely supportive of such developments in learning. These supportive conditions include the short-term time perspective of firms, heavy emphasis on shareholder value and consequent pressure to cut costs in training and education, long travel-to-work times, highly connected electronic and information infrastructure, vertical individualist culture and individualist approaches to learning, high value on hard work and self discipline, large-scale and expository approaches to teaching, and its focus on off-the-job, "schooled" training and education, and high proportion of young people who have grown up learning through digital media (Bower, 2003; Kostova, 1999; Martin *et al.*, 2003; Seely Brown, 2002). On the other side of the Atlantic, though perhaps lacking the naturally supportive contexts of the USA, the European Union has pursued an interventionist policy by investing heavily in e-learning to make Europe "the most dynamic knowledge economy in the world" (Reding, quoted in Martin and Jennings, 2002). Yet, even in a country as close to the US in institutional and cultural character as the UK, the most recent major study of training and development showed that, for example, British firms have been relatively slow to adopt e-learning (Sloman, 2001), that many students were reluctant e-Learners (Chartered Institute of Personnel and Development, 2002), and few British Universities have fully developed virtual campuses, with major programmes of online degrees (Leavis, 2002).

Thus general questions might be posed to all stakeholders in education and training: What is the future for e-learning and what factors are likely to help or hinder its adoption, diffusion and exploitation? Answering such questions has relevance not only to individual organizations and educational institutions but also to the emerging e-learning industry worldwide and, in particular, to national and regional economic development agencies in the European Union who are attempting to facilitate policy development in this important area[1].

## The background to the research and methodology

### Background
Scottish enterprise (SE) is one such national economic development agency that has taken major steps to implement the EU policy on e-learning and to provide a nurturing role for the nascent e-learning industry in Scotland. Having singled out the industry as a potential growth area and as one that was appropriate to Scotland's knowledge-based future, SE asked a number of questions on e-learning. They are as follows.

- How could it extend the "reach" of education in Scotland to remote areas and disengaged learners?
- How could it be used to develop the skills in the Scottish labourforce?
- How could it be used to create a more positive learning experience for individuals whose access to classroom-based education was limited or who were "turned off" by classroom-based education?
- How could it be used to increase business competitiveness?
- How could it be used to provide commercial opportunities for the emerging e-learning supply base in Scotland?
- How could it be used to attract much needed extra revenue into the education system in Scotland, given the key role played by educational exports in the Scottish economy?

In 2001 SE developed an "e-learning Programme for Scotland", which was aimed to "help Scotland become internationally recognised amongst the global leaders in the design, development, and application of e-learning". This programme comprised a number of inter-related strategic interventions, mostly undertaken on a partnership basis, to address the above questions. These interventions included the following.

(1) The formation of the Interactive University, which is intended to market and support Scottish further and higher education's e-learning provision.

(2) Funding the formation of the Scottish e-learning Alliance, an industry network body intended to help support a cluster of indigenous e-learning companies, educational establishments and customers.

(3) Bringing together international experts on e-learning and related industries to Scotland in the form of an annual conference, so that local participants could learn rapidly about promising practices and ideas being generated in the rest of the world.

This conference has been branded as e-Learninternational and was first run in Edinburgh, 2003. The first event brought together major experts in a conventional, conference-like format to examine current and future practices. It was felt, however, that the 2004 conference needed to be different in order to "move the conversations along" and should be designed around a large-scale, industry-wide scenario forecasting exercise, with fewer presentations by experts and more of a focus on active discussion about possible futures for e-learning. From SE's perspective this more research-oriented conference was aimed at achieving four key objectives that were intended to benefit both the international and Scottish e-learning communities:

- developing relationships between the Scottish and International e-learning communities;
- exploiting the knowledge held within the international e-learning for the furtherance of e-learning activity worldwide;
- provide a focal point for strategic-level discussions among the international e-learning communities; and
- by hosting such an event, raising Scotland's profile in the international e-learning community.

**The scenario planning approach**

Forecasting the future has a notoriously poor reputation, especially in forecasting technological breakthroughs an increasingly unknowable world (see Graham, 2004 in this edition; Fuller, 2002). However, it is simultaneously argued that policy makers and organizations need to ask sensible question in relation to their relevant future(s) so that they can anticipate problems and possible solutions. Creating strategic scenarios or scenario planning has become an accepted method of engaging with the future by asking such questions and using a more discursive approach than traditional forecasting techniques. Scenario planning has been used effectively in diverse situations such as by Shell Oil's attempt to deal with oil prices rises during the 1990s, to stimulate debate on the future of South Africa during the Mont Fleur scenario exercise during the same

period, and more recently to identify potential "white spaces" between the old and new economies and old and new industries.

Most of the expertise in this field lies not so much in the academic domain but in the large consulting companies. Thus it is worth quoting Global Business Network (2004) at length on strategic scenarios, since they are acknowledged to be one of the one of leading consultancy organizations in this field. This consulting company grew out of the well-known Royal Dutch/ Shell scenario planning group whose work in the 1990s promoted the use of this approach and were also the group that worked with key individuals in SE to develop its Edinburgh Scenarios:

Scenarios are tools for ordering one's perceptions about alternative future environments in which today's decisions might be played out. In practice, scenarios resemble a set of stories, written or spoken, built around carefully constructed plots. Stories are an old way of organizing knowledge; when used as strategic tools, they confront denial by encouraging, in fact, requiring, the willing suspension of disbelief. Stories can express multiple perspectives on complex events; scenarios give meaning to these events.

Scenarios are powerful planning tools precisely because the future is unpredictable. Unlike traditional forecasting or market research, scenarios present alternative images instead of extrapolating current trends from the present. Scenarios also embrace qualitative perspectives and the potential for sharp discontinuities that econometric models exclude. Consequently, creating scenarios requires decision-makers to question their broadest assumptions about the way the world works so they can foresee decisions that might be missed or denied.

Within an organization, scenarios provide a common vocabulary and an effective basis for communicating complex – sometimes paradoxical – conditions and options. Good scenarios are plausible and surprising, they have the power to break old stereotypes, and their creators assume ownership and put them to work. Using scenarios is rehearsing the future. By recognizing the warning signs and the drama that is unfolding, one can avoid surprises, adapt, and act effectively. Decisions which have been pre-tested against a range of what fate may offer are more likely to stand the test of time, produce robust and resilient strategies, and create distinct competitive advantage. Ultimately, the result of scenario planning is not a more accurate picture of tomorrow but better thinking and an ongoing strategic conversation about the future (www.gbn.org/AboutScenariosDisplayServlet.srv).

The specific process used to create the Edinburgh Scenario's comprised five stages (Figure 1). It should be noted that the particular approach to scenario planning used here differed from the norm: by combining the more formal scenario

**Figure 1** The scenario building process for the future of e-Learning

| Expert Interviews | Workshops | Validation & Development | Conference Summit | Strategic Discussions |

planning interviews with conference summit workshops, the process resulted in a more inclusive and, arguably, extensive form of qualitative, action-centred research. The approach was also used because of the wider learning objectives of SE outlined previously.

The first stage of the process was a series of in-depth interviews with 16 acknowledged international experts on e-learning drawn from different countries and from the different sectors of economy. These interviews were used to explore key uncertainties that were potentially important to the future of e-learning. Examples of the questions asked to these experts included:

(1) If someone could tell you what the world would be like in 10 years, what would you ask them?

(2) If you looked back in 10 years time, what would you like to have seen happen?

(3) If you looked back in 10 years time, what would you like to have seen not happen?

(4) What lessons have we learned from the past that we should bear in mind for the future?

(5) What factors are hindering the development of e-learning?

The second stage involved feeding back these data from the expert interviews to an expert panel of 20 individuals drawn from the Scottish educational and corporate sector in a day-long facilitated workshop to help validate the uncertainties and create the basis for the four scenarios. A similar exercise was held in the USA using a mixture of face-to-face and virtual discussion. Finally, a workshop was conducted with Scottish schoolchildren, who have been described as "digital natives" or "digital students" (Prensky, 2001; Seely Brown, 2002) – i.e. the generation that has grown up learning with computers and with digital technologies such as gaming.

The third stage of validation and development of the scenarios involved feeding back the scenarios to the experts interviewed in stages one and two, and hosting a major online discussion over a period of two months prior to the conference summit. This stage was used to flesh out and refine the four scenarios. The fourth stage was the presentation of these scenarios to the 250 attendees at the conference summit during a series of interactive workshops. Data from these conference workshops were recorded and used to further refine the scenarios. The fifth stage, which

is still ongoing, comprises a series of strategic discussions which are taking place internationally, both face-to-face and virtually. These discussions, and not necessarily the scenarios, are really the intended outcome of the process for SE and, in the case of the Scottish e-learning community, are being evaluated in terms of their impact on strategic actions by key participant in that community.
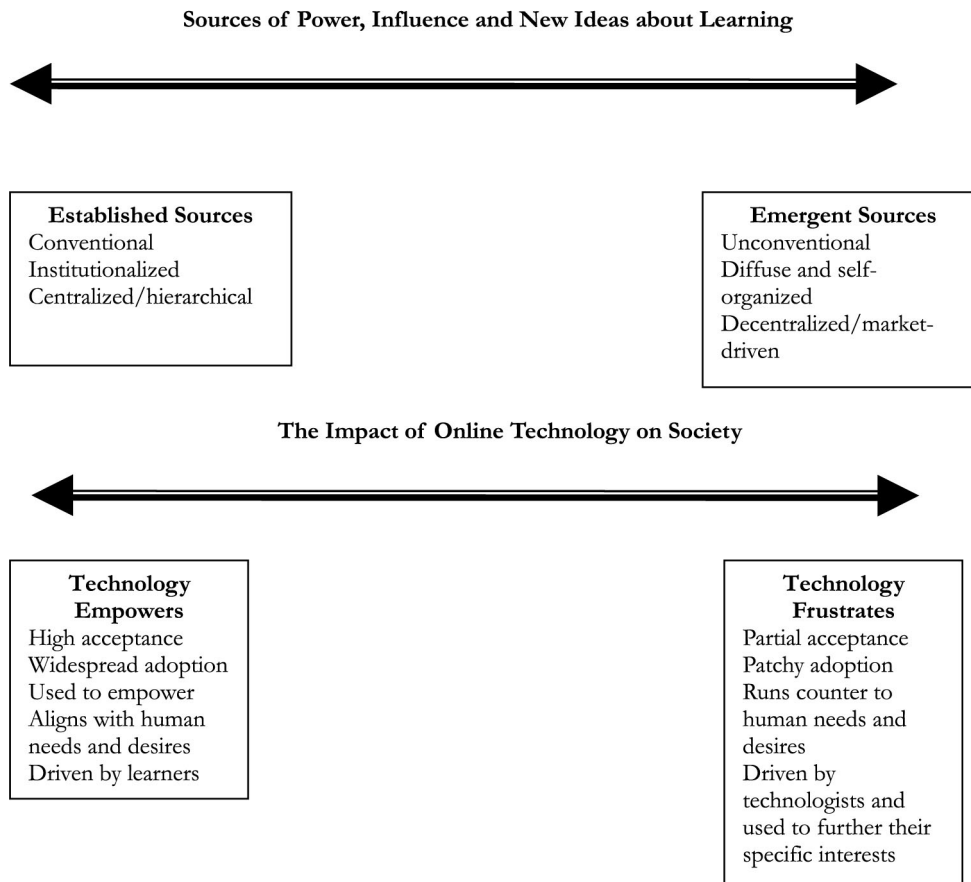
## The data and scenarios

There is no space in this short paper to provide details of the interviews data and workshops on which the scenarios were constructed. Instead, in this section, we restrict ourselves to reporting on the content of the scenarios themselves. First, however, we briefly discuss the major uncertainties that were distilled from the interviews and workshops.

One of the major strengths (and weaknesses) of the scenario building process is the identification of dominant themes or dimensions of meaning from the qualitative data. The usual process is to distil as much of the data as possible into two dimensions of meanings that can be orthogonally related to form a two-by-two matrix. Such a process allows participants to simplify a myriad of data to provide the basis for strategic discussions. There is a formal process for identifying dominant themes, which involves expert participants in the workshops to use nominal group techniques to isolate and "vote" for their key uncertainties. Using this technique produced two dimensions or axes of meaning (Figure 2).

The first dimension referred to the sources of power, influence and new ideas about learning. This dimension was based on uncertainties over who would have control or mediate access to learning; who is learning principally aimed at, who creates new content that facilititates learning; how influential will new players and developing countries be in changing the learning landscape; and to what extent will attitudes, motivations and learning styles change over time? The second dimension referred to the acceptance and rate of adoption and diffusion of online technology in society. It addresses questions such as the rate of adoption of online technologies in different societies and groups; the experience of real

**Figure 2** The two dimensions of uncertainty

**Sources of Power, Influence and New Ideas about Learning**

**Established Sources**
Conventional
Institutionalized
Centralized/hierarchical

**Emergent Sources**
Unconventional
Diffuse and self-
organized
Decentralized/market-
driven

**The Impact of Online Technology on Society**

**Technology
Empowers**
High acceptance
Widespread adoption
Used to empower
Aligns with human
needs and desires
Driven by learners

**Technology
Frustrates**
Partial acceptance
Patchy adoption
Runs counter to
human needs and
desires
Driven by
technologists and
used to further their
specific interests

breakthroughs in our understanding how we learn; whether technology will allow for greater interaction and connectivity; and whether technological and scientific progress moves in a direction that is aligned with fundamental human needs or accelerates in a direction that runs counter to many of our deepest assumptions, values and behaviours?

These two dimensions were combined together during the workshops to produce four, fleshed out scenarios, are described in Figure 3. The scenarios were used to create possible futures for discussion for four major interest groups – individual learners, the education sector, commercial organizations and their training departments and government. We rely here on the excellent summaries by Cross (available online at: www.internettime.com/lmct/archives/ 001121.htm), which we have adapted and exapanded upon in Tables I–IV.

## Discussion

Our aim in this paper has been to describe the process by which one national economic

development agency attempted to engage in an international discussion on e-learning with the aim of helping policy makers ask testing questions of the future. Although it was not part of the SE's remit, it may also be worthile reflecting on the usefulness of the scenarios themselves, in the light of views expressed at the conference, subsequent online discussion, and emerging evidence.

Reflecting on the process of scenario planning itself, there is a danger inherent in such exercises or, more accurately, in how scenarios are sometimes interpreted by the rationally-inclined mind. As is often the case with qualitative research techniques that produce quasi-rational representations of reality – the ubiquitous two-by-two matrix – the quadrants often take on a more concrete form than was ever intended by the researchers. In effect, they become the future. The dangers here are all too obvious: "give someone a hammer and every problem is likely to become a nail". As a consequence, we experienced a number of examples of either/or thinking, in which participants regarded the scenarios as predictions and simplifications of the future, usually with a view towards controlling it.
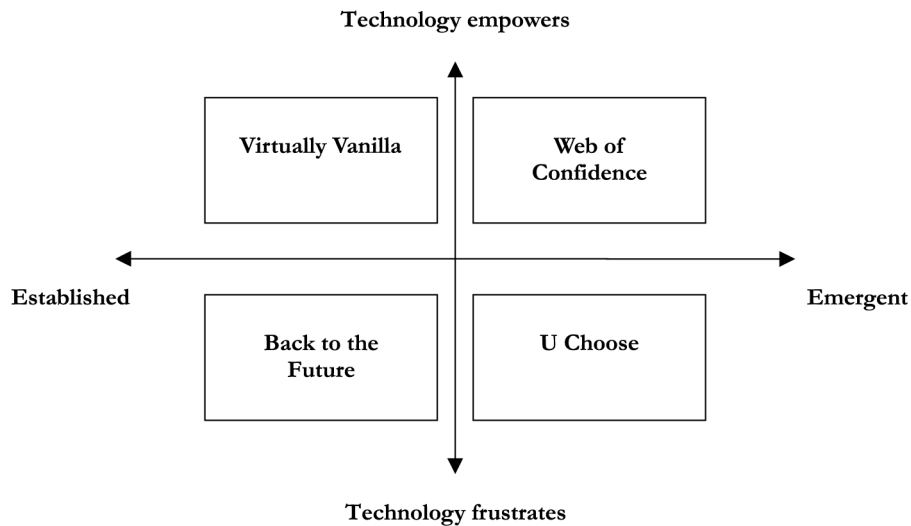
**Figure 3** The Edinburgh scenarios



**Table I** Back to the future (Technology frustrates, power retained by established players)

**This is a world where the confusion, fear and complexity of technology results in a loss of trust in the integrity of online learning. Powerful established institutions return to the more "traditional" values and methods of teaching and learning, seeking low-risk predictability in a turbulent world. Such a scenario has its roots in dialetical theories of social change, in which every thesis creates its own antithesis (Morgan, 1997)**

| | |
|---|---|
| **Learners** | Fearful of security problems with internet and identity problems/lack of interaction if they learn on-line |
| | Online qualifications remain/become a devalued currency to employers |
| | Acceptance of more traditional teacher-learner relationships, especially in hierarchical societies with high levels of respect for authority |
| | Learning experiences remain/become more predictable and traditional with less of a technology focus and less innovation in pedagogy |
| **Education** | Facing a funding crisis, education systems start to polarize as students and governments place more value in fewer, trusted and branded establishments |
| | Institutions rely more on traditional models of teaching to attract more students from across the world to their "brick universities" |
| | Invest in "brick" (new buildings and classrooms),rather than "click" (information infrastructure) |
| **Corporations** | Look for any route to cut costs in a difficult economic climate as narrow definitions of shareholder value dominates |
| | Reject many e-learning initiatives as they mostly fail to produce "bang for bucks" |
| | Revert back to far more traditional "in-house" training, "schooled learning" and outsource training and development functions |
| | Move towards concentrated, centralized, hierarchical structures of control rather than market forms of organization (e.g. cellular, networked, outsourced sub-contracting) |
| **Government** | Reduced funding for e-learning, as slower growth in Western economies leads to leads to cutbacks |
| | Focus more on control and ensuring security, leading to tighter regulation of many aspects of society: immigration, Internet, wireless, mobile etc. |
| | Pursue less innovative approaches to education policy, focusing on maintaining rigid quality assurance standards |
| **Storyline** | The consequences of the 1990s technology boom only became apparent a decade later. The spread of the internet leaves a legacy of crime and anarchy across the world as identity theft, viruses and hacking crippled any attempts to use communications technology for the wider good. These impediments to global economic growth fell particularly hard on the fast-growing Asian nations, dependent on global capital for their infrastructure investment. People looked to Western governments and their economic models for security and solace. They distanced themselves from many elements of technology, leading to a retreat to more traditional forms of learning. This suited many governments, who were becoming increasingly concerned by the lack of results from their significant investments in e-learning. Academics agreed, arguing than traditional modes have been around for 1000 years for good reason. Many influential figures argue that the Internet had "set education back" 20 years. Schools and universities that emphasized traditional values and methodology of teaching were back in fashion. Learning became a lot more conventional again — which had its advantages in a turbulent environment |

**Table II** Virtually Vanilla (Technology advances, power retained by established players)

**This is a world where technological advances create the potential to access all kinds of knowledge and new learning opportunities. Power, however, is centralized within established institutions, so access and use is mostly governed by large corporations, governments and global universities. This type of thesis is consonant with economic, business and knowledge systems which are based on hierarchical forms of organization and control rather than being market-driven (Fuller, 2002).**

| | |
|---|---|
| **Learners** | Enjoy widespread access to content, but only if they can afford it as individuals and organizations maintain strong control over intellectual capital to earn economic rent |
| | Rich provision of content because of high economic rent and some moves to third generation e-learning involving high levels of interaction and simulations |
| | Highly directed and controlled; limited amount of personalization |
| | Forced to fit with corporate and institutional requirements |
| **Education** | Greater concentration and mergers across the education sector following shake-out of poorer players |
| | Emergence of powerful and profitable consortia of global virtual universities, sometimes in combination with major technology companies or publishing houses |
| | Research and teaching approaches constrained by government and corporate need – relevance becomes defining criteria |
| | Drive towards high occupancy and high efficiency of buildings and resources |
| **Corporations** | Use e-learning as the default route to large-scale training, delivering frequently at high volume and low cost, particularly among multinational enterprises who seek to create strong employer brands |
| | Encourage the development of generic business skills and knowledge through business universities |
| | Large corporations have the resources to acquire smaller, smarter businesses |
| **Government** | Paternalistic attitude towards learners and citizens |
| | Invest heavily in alliances with large powerful corporations, e.g. eUniversities England and Sun Microsystems |
| | Pursue goals of greater access to education for all |
| | Regulates in favor of powerful institutions and intellectual property rights |
| **Storyline** | This is a world of technology progress and productivity. An economic recovery continued to fuel the relentless march of connectivity, as developments like pervasive broadband create an acceleration in the amount of content and interaction that happens over networks. Society also learns how to deal with and use this information more wisely, as science helps us understand more about how we learn. Access to online sources is widespread – but only for those who can pay. Powerful institutions – large corporations, governments and increasingly, global universities – set common standards and protocols for e-learning, and exert widespread control over intellectual property rights, ensuring that they see financial benefits in the rising demand for learning across the world. Online learning becomes the default way that companies pursue training – it is far more efficient as information can be accessed easily. But there is a general sense of commodification: while technology does allow for some personalization of the learning experience, it is still largely constrained by the imagination of the designers within the consortia of corporations, governments and universities that dominate the learning fields |

One comment from the online discussions over the scenarios illustrates this tendency eloquently:

> "My first reaction (which was reinforced by the comments) is that the probabilities expressed as polarities will generate polarized conversations. Pick a quadrant and debate from that corner"….The polarities expressed in this quadrangle are way too arbitrary. Unless they are challenged, the conversation is really a theoretical exercise. It gives us a chance to practice debating skills, but (is) not a fulcrum for solving real problems. The assumptions made in the scenarios all hinge on the validity of two sets of arbitrary polarities. I have strong doubts about the usefulness of this diagram as a reliable data model. For example, I reject the technology polarities expressed in the diagram. These are not inherent properties of technology. To express technology as a bipolar disorder between empowerment and frustration is very bizarre. These may be common folk psychology metaphors (maybe) but are they starting points to solve real world problems'

(Posted by SA, 3 January, 2004 on www.internettime.com/lmct/archives/001121.html)

As the earlier definition on scenario planning from GBN indicates, the scenarios were intended to provide multiple metaphors of realities, which we pleased to see, was the perspective adopted by the majority of participants in the face-to-face and online discussions. By drawing on "both/and" thinking, embracing paradoxes and drawing on the different metaphors embedded in the scenarios, policy makers and practitioners should be able to construct a more complex storyline or diagnostic reading for their organizations than is possible with even the most sophisticated linear forecasting methods (Morgan, 1997). The following quotes from postings on the online discussion highlight this constructivist attitude to scenario planning:

**Table III** U choose (Technology frustrates, power shifts to emergent players)

This is a world where people are frustrated by new technology and claims of technological progress, yet find new ways to challenge authority and gain greater influence over many aspects of their lives, including learning. This results in a world where the focus of attention moves away from technology and big institutions, towards issues of local importance. Such a scenario is reminiscent of a "catastrophist" thesis, which highlights the chaos and decay of modern societies and makes a claim for a return to a pre-Enlightenment virtue (Wheen, 2004)

| | |
|---|---|
| **Learners** | Many learners opt out of the formal state system, instead relying on more popular ommunity learning groups |
| | More emphasis on informal, unstructured, learning, with only a small role for advanced technology |
| | Adult learners focused on practical, work-based learning or none at all |
| **Education** | Institutions facing major funding problems with governments reluctant to provide adequate funding for state schools and pursue/rely on markets to meet supply |
| | Large numbers of traditional schools closed, and universities forced to merge |
| | Institutions begin to play a wider community development role to remain viable |
| | Far less investment in e-learning, as there is a renewed interest in a basic understanding of learning |
| **Corporations** | Smart organizations fill the gaps in funding for education, offering one of many alternatives to the state education system |
| | New brands offer traditional learning, e.g. more examples of private universities, such as Phoenix |
| | Established technologies are used and applied to e-learning: games, reality TV |
| | Provide learning and education as a means of attracting recruits |
| **Government** | Conducts a major rethink of education policy as more learners "opt-out" of the system |
| | Supports "citizen" organized learning and alternative learning environments |
| | Cuts back funding for e-learning programs, due to lack of demonstrated value. |
| **Storyline** | This is a world where technology-supported learning is under-utilized. Thanks to deep economic problems, evidence of corporate corruption and a seeming inability of governments to put these right, people have grown to mistrust the words and actions of Western political and corporate leaders. These doubts have combined with a general frustration about traditional models of education, leading to millions of people resisting the technological progress and more rigid enforcement of targets and standards. e-learning does not seem to offer a solution, and technology seems to frustrate rather than empower. The most effective users of communications seem to be organized crime networks; spam clogs the networks and hacking sap peoples' confidence in the security of the systems. People begin reassess the value – and means – of learning in society and seek to return to pre-Enlightenment values. Learning is conducted in small scale groups, more focused on the local needs of learners and the community. Technology is still used, especially to find out information. But online communities are an exception – the ties that pull people together seem to be very local |

Scenario thinking is not strategic planning and (is) not meant to be set in stone. The four quadrants of the matrix are like signposts on a road. You're not sure where you're headed, so keep looking down the roads every day to see what happens. Eventually one will look like the right road, and that's the one you might take. It's about being able to be slightly ahead of the curve of the future before the infamous tsunami rolls over you. Posted by DG, 4 January 2004 on www.internettime.com/lmct/archives/001121.html).

"There will be some measure of all 4 scenarios within any form of e-learning initiative, particularly at community colleges" SD, 3 January 2004 on www.internettime.com/lmct/archives/001121.html).

Concerning the usefulness of the scenarios, it was not the intention of SE's e-learninternational conference to provide a critique of the scenarios but to offer a platform and meeting place of "future focused" discussions. Having made that point, we are inevitably drawn into the debate on theorizing about the future, since the scenarios can be thought of as a form of inductive theory

construction. And, as we have seen from one of the comments above, there were some important questions concerning validity.

On this issue, we restrict ourselves to asking three questions concerning useful theory in this area. The first of these is: do the scenarios resonate with other related theorizing that might provide some cross validation for the scenarios? Our answer to this question is a qualified yes. In Tables I-IV, we have indicated how the four scenarios map onto existing theories in the field of organizational, technological and social change. For example, the Web of Confidence strongly resonates with current and popular theorizing about the key role of knowledge in society; the belief in technological progress; the power of information and communications technologies (ICT) to produce transformational and beneficial changes; and the consequent impact of ICT on new organizational forms, which heralds a move towards market forms of control and more flexible and postmodern forms of organization (Cairncross, 2003; Choo and Bontis, 2002; Clarke, 2001) On the other

**Table IV** Web of confidence (Technology advances, power shifts to emergent players)

This is an increasingly technologically-connected world, in which we see powerful, effective advances in technology, where individuals are able to work and learn together in new ways. Power shifts way from large organizations and as a result, new ideas come from various, unlikely sources. Such a scenario is consonant with newer theories of modern forms of work organization, in which technological progress functions to allow market forms of organization, e.g. outsourcing, cellular, networked, project and virtual forms, to become the models for the future (e.g. Cairncross, 2003)

| | |
|---|---|
| **Learners** | Empowered to control their own learning – using whichever means and models suited |
| | Willing to challenge the norms of the establishment |
| | Confident about their technology skills and resourcefulness |
| **Education** | Forced to confront fundamental questions about the style and quality of their teaching |
| | Compete with non-conventional rivals: businesses, charities and online community groups around the world |
| | Offering far more customized modular, innovative learning experiences, pushing more content and interaction online |
| **Corporations** | Flexible, innovative companies offer new forms of learning content and experiences |
| | Less pressure to conform over rigid standards of training |
| | Larger corporations struggle to match the ideas produced by start-ups and online groups |
| **Government** | Loses central power and control over much of the education system |
| | Reassesses it position: becomes a broker and infrastructure provider: "A friend with knowledge" |
| | Lighter regulation of the education sector, and moves away from rigid protection of intellectual property rights |
| | Encourage employees to enhance their creativity |
| **Storyline** | This is a world where intellectual capital dominates and where learning is widespread and helps individuals earn high levels of economic rent. However, it is barely recognizable from previous decades. If the 1990s saw massive leaps in ICT capabilities, the following decade showed us exactly how these changes would transform society. It was nothing short of a power shift: those comfortable with technology – the digital natives – found ways to create their own learning experiences that fundamentally challenged the prevailing power bases created by educational policy – and governments had virtually no levers to stop it happening. The most exciting developments were taking place in vibrant Asian cities, where the technology and market-oriented changes had a dramatic, direct effect on the nature of education in those societies. There was a serious mistrust of large institutions, who wanted to control many aspects of peoples' lives: what they bought, how they looked, and what they learned. Encouraged by instant connectivity, the examples of multi-player games, and some recent research indicating the powerful effects of informal learning, people found themselves with far more control over their learning than ever before |

hand, Back to the Future, reflects a dialectical theory of change (Morgan, 1997) in which the optimism and directions of the Web of Confidence contain within it the seeds of a growing cynicism, pessimism and opposition to technological progress and postmodern organization, a strain of argument often found in the literature on technical change. The early histories of China, India and Spain and their failure to capitalize on early technological, educational and business "know-how" advantages over Britain and northern Europe in the 17th century should tell us that such a scenario is inherently plausible (Fuller, 2002).

> '…**The recent emergence of new private players in the US higher education market is putting intense pressure on that market to fragment**…'

One must qualify this kind of cross validation, however, by pointing out that these scenarios are likely to reflect and well as reflect back on well-entrenched ideas, theories-in-use, assumption and values of the key participants in the scenario building process. In other words, one might legitimately pose the question: Do these scenarios add much new to what currently exists in current social and organizational theorizing? We think yes, because there are few attempts to use these more general theories to shed light on technology-based learning.

The second question that might be asked is: Do any of the scenarios have any early empirical justification or "traction"? Not surprisingly, participants at the conference tended to see the Web of Confidence as an aspirational scenario towards, since this was based on a strong narrative of optimism and progress associated with many technophiles. Evidence from the higher education sector suggests that this scenario is already with us, at least to some degree. The recent emergence of new private players in the US higher education market is putting intense pressure on that market to fragment, despite the existence of powerful players from the traditional and for-profit sector. For example, Couturier (2003) has pointed out that the growth of the University of Phoenix as

a challenge to the conventional university sector in America is misleadingly skewing the conversation towards dominance by a few large-scale organizations (Virtually Vanilla), since there are more than 600 degree-granting, for-profit institutions operating there, and another 4000 non-degree granting for-profit colleges. From the perspective of learners, there is also evidence of generational differences and the emergence of "digital natives" (Clarke, 2004) or "digital students" (Seely Brown, 2002), who prefer to learn through digital games than through conventional books. Seely Brown provides an excellent example of this trend in pointing out the huge impact of multiplayer online games (MMO), such as Everquest, which has more than two million players in Seoul. He has argued that the US military and major corporates are beginning to take this approach seriously by evolving new designs for learning around the ecology and community of games, which draws on evocative, bottom-up and highly participatory learning. The lesson for re-inventing universities, he suggests, is to think hard and laterally about what can be done off-campus and well as on campus. By using the virtual to help the physical, the reach of universities can be extended so that much wider and more effective communities of practice can be established. Such virtual networks help universities learn from communities and well as help nurture them; they also help universities stay in touch and learn from experienced alumni as well as provide them with a source of lifelong learning.

> '...**There is evidence of another form of merger, about which surprisingly little was developed and discussed in the scenarios, and that is the merger between e-learning and knowledge management**...'

At the same time, however, there is also evidence of a return to tradition among certain higher education institutions and, moreover, some competitive advantage in not following the herd. Brand advantage, based on exclusivity, tradition and trust in learning approaches and delivery mechanisms that have been in existence for a thousand years is evident in the attitudes and strategies of certain, prestigious establishments. There is also a strong argument that universities are not only "credentialling institutions" or "knowledge delivery mechanisms", which remains the focus of the major online and distance schools, but provide hugely beneficial learning communities in which students learn how to "be" (learn how to learn and learn complex social

strategies that cannot be learned in a virtual classroom). They also provide strong social networks, on which students can draw for many years in the future. For example, Seely Brown and Duguid (1996) have pointed out, the network of advisors that grew up around President Clinton, which had its roots in his group of Rhodes scholars at Oxford. Thus back to the future may also be a vision of the future for many of the world's elite universities for years to come and, to the extent that these universities act as role models for a nation's education system (such as Oxford and Cambridge in the UK), the forces of tradition may well act to restrain the "old world" in its adoption of e-learning.

As we have already hinted, Virtually Vanilla is yet another scenario that has a good deal of traction. Following some early false starts, there is evidence of merger, networking and concentration in the education sector to provide online provision, most notably among the more prestigious universities. These universities are also collaborating with major publishers, such as Thomson's and the Universitas 21 group, or with major technology companies, such as UK e-Universities and Sun Microsystems, or with publishers and technology suppliers, such as the Edinburgh Business School collaboration with Pearson Education and Blackboard (Couturier, 2003; Leavis, 2002). However, there are limits to this concentration. At the same time as the prestige universities are seeking to collaborate to provide "premium-branded", online content, which is the main source of their intellectual capital and ability to command premium fees, the costs of producing good-quality content and its perceived importance in third generation e-learning are declining, and the pressures towards open sourcing are growing (Garrison and Anderson. 2003). Link this argument of the declining value of educational content with the increasing desire of individuals to seek greater online interaction and you can foresee limits to strategies based on the publishing of content on the Internet. Perhaps the underlying message of MIT's online delivery strategy are important here – that you need to go to the brick university to get the real source of educational value, which, they would argue, is to create effective communities of learners, academics, practitioners and alumni. Universities, as we have suggested, are not merely delivery mechanisms, nor are students passive receptors. As Seely Brown and Duguid (1996, p. 14) have argued:

> Central to higher education is the way universities provide access to communities of scholars and testimony for a student's experience among these communities. Consequently universities should explore (online?) resources for bring people together, not, as some interpretations of

distance education suggest, for reinforcing their isolation.

In the corporate world, there is evidence of another form of merger, about which surprisingly little was developed and discussed in the scenarios, and that is the merger between e-learning and knowledge management. Study after study has shown knowledge management and organizational learning as a key driver of organizational strategy, the most recent being the study of international human resource management practices in global companies by Sparrow *et al.*, 2004). Creating and sharing knowledge in these firms through online communities of practice (Wenger, 2004) and global expertise networks (Brewster *et al.*, 2002) possibly represents the greatest potential for the e-learning industry as it seeks to become integrated into the core of business activities.

The third question is: Does the framework provide practitioners with some useful insights so that they can create more appropriate strategies for the future? There is little doubt that participants in the interviews, workshops, those who took part in the online discussion and those who attended the 2004 Conference workshops found this a valuable and engaging experience. Some early analysis of the Conference feedback has indicated that the Edinburgh Scenarios were well regarded as useful starting points for conversations on the future of e-learning and its impact on policy and practice in education and training (www.internettime.com/lmct/archives/ 001121.html). The question remains, however, will such a process lead to policymakers and practitioners to taking actions that are influenced by their reading of the future(s)? In the earlier section on the background to the exercise, we outlined the questions that SE had asked of e-learning, which seem, on the face of things, to have relevance to any economic region. With this in mind, we are conducting some ongoing research to gauge the impact of the scenario planning process and the conference on actions taken by Scottish policy makers and practitioners who took part in the exercise. Much public money is invested in events of this nature but little is usually done to evaluate their longer term usefulness.

## Note

1  We are grateful to colleagues at Scottish Enterprise who provided the stimulus write this paper and to commission the refereed academic track of their second annual conference on e-learning (see www.elearninternational.co.uk). Most of the articles in this special edition of the journal were developed from prize-winning papers presented at this conference or from presentations by keynote speakers.

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