

# Why Content is Queen, Context Is King and Infrastructure God

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By Marcus S. Bowles and Maish R. Nichani<sup>1</sup>

## ABSTRACT

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This paper places context and infrastructure back into the academic and applied study of e-learning. The paper will focus outside the valuable debate over the central importance of people and pedagogy to focus on technology. The reader will be invited to challenge current content-driven paradigms and will seek to broaden the parameters of what constitutes effective and efficient e-learning. It will do this by mapping how the contextual importance of tacit knowledge and collaboration, and the deployment of infrastructure, can and will maximise the strategic potential that e-learning can yield for individuals, organisations and societies.

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## INTRODUCTION

To successfully advance e-learning the old 'content is king' paradigm needs to be discarded and replaced with one that encompasses context and infrastructure. To do this, we need to accentuate the importance of e-learning not just as a medium that improves training for skills or classroom-based approaches to learning, but one that addresses areas where more distinct value equations lie. Many vendors and professional educators have a myopic view, limited to the electronic management of content development and delivery or to the storage, assembly, tracking and reporting of learning objects. Their mistaken belief is that content is king. Content, however, must, at the very least, be part of a triumvirate which also includes context and infrastructure. Without these other two parts, the value of e-learning is incomplete. E-learning's value is then only judged against what it is replacing: classroom-based training and print or non-networked media.

Given e-learning's lack of differentiation — prompting questions about its effectiveness in comparison to past approaches to distance learning — the whole field of e-learning has been widely challenged. These challenges have emerged in part because the capacity derived through deployment of information communication technology (ICT) in learning, in all its forms and guises, has been truncated. Theory and practices that extend or change the role of ICT in learning — not just to promote learning outcomes, but also to advance more sophisticated learning processes and pedagogies — have advanced slowly as noise and hype have distracted from more rigorous debate.

This paper will challenge the all-consuming importance of content guiding e-learning effort, and argue for broadening current paradigms by considering the relevance of

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<sup>1</sup> Dr Marcus Bowles is the director of the Institute for Working Futures Pty Ltd, based in Australia ([marc@marcbowles.com](mailto:marc@marcbowles.com)), and Maish Nichani is the director of Learning Strategy and Design at IKS E-learning Solutions, and web master of the E-learning post. He is based in Singapore ([maish@iksonline.com](mailto:maish@iksonline.com)).

context and infrastructure. We will examine the need for a common currency that more accurately depicts why skills and competencies are only part of the equation that determines individual and organisational learning needs. This study will then extend to confirm the balance between using e-learning to push codified, explicit forms of knowledge while ignoring the demand and real capacity of e-learning to build processes and collaborative capabilities where intangible, tacit knowledge can be generated and transferred. Stemming from this discussion will be the re-emphasis on learner-led and instructor-friendly approaches to deploying technologies that promote improved design and delivery of e-learning. This will culminate in the final point where we confirm the pivotal role that infrastructure plays in enabling e-learning that can enhance situated and contextually meaningful learning.

## **CONTEXT AND E-LEARNING**

Learning is a social activity. It is not simply a mechanistic function that can be switched on and off. Every human action involves learning because individuals adapt as they transact with people, with technology and with their environment. Perspectives may change as physical skills are acquired, transferred and deployed.

A focus on e-learning exclusively as a faster, more cost-effective means to achieve learning or performance outcomes may accelerate the adoption of embryonic e-learning interventions. Nevertheless, we contend, these imperatives are a very poor base on which to build viable systems and justify the true, achievable return on investment equations. E-learning not only can impart the necessary training to the organisation but also can be the vehicle to transfer corporate memory and experiences in the right contexts.

By examining e-learning in relation to knowledge management, change, service and strategic human resource (HR) activities, the true importance of expanding e-learning's focus on the transfer of codified content becomes blatantly apparent. This significance also holds true across individual, group, organisational and community levels.

The learning function cannot simply be oriented by an organisation and 'switched on' to transfer knowledge relevant to performance. Not only is it impossible to codify learning to make explicit all knowledge that an individual will need to 'perform', it is undesirable. Learning itself has to be encouraged in all its forms to ensure the capture, transfer and generation of knowledge that people need for work, lifelong learning and collaboration. E-learning is part of this equation. In short, e-learning is part and parcel of how organisations learn.

Given that e-learning involves both knowledge and learning, it can be considered teleological in nature. If those implementing e-learning underestimate the potential dimensions of knowledge and operational improvement, then there will be a corresponding lack of both resource commitment and value generation. As a result the contributions that effective and efficient e-learning can make at all stages of implementation will be limited. The following sections argue why value has been greatly underestimated.

## **CONTEXTUALISING E-LEARNING TO BUILD KNOWLEDGE CAPITAL**

To understand the importance of e-learning to knowledge (intellectual) capital and management in an organisation we need to understand the deployment of e-learning

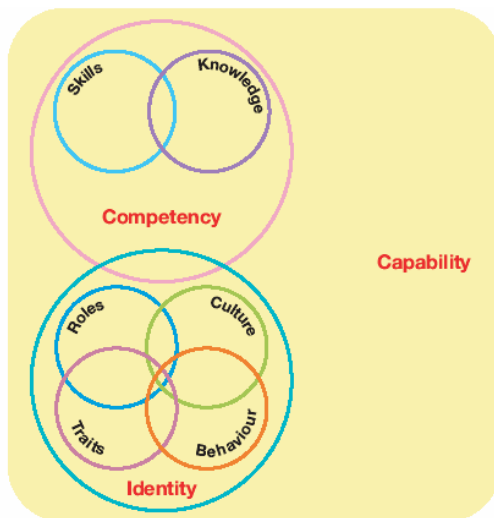
across a number of activities. This requires what can be termed a common currency. A popular metric spanning human resource activity is human capital. A human capital emphasis links e-learning with technologies, processes and practices supporting the drive to expand the overall capital value of the human resources within the organisation. This is often represented by the formula

$$\text{Learning} + \text{Performance} + \text{Knowledge Management} + \text{HR} = \text{Human Capital Management.}$$

E-learning intersects all the components in this formula and can usefully contribute as a strategy for reporting or stimulating outcomes across all dimensions of the human capital management equation. Reporting metrics have to identify not only an individual's precise learning requirements, but also outcomes in terms of organisational learning, knowledge, performance and HR issues such as human capital and overall knowledge capital gains. Where consistent metrics exist, e-learning can target outcomes and be evaluated to determine its direct contribution to an organisation's potential productive capacity and agility.

To measure the effectiveness and efficiency of e-learning, we need to use the common currency to judge success. To fully appreciate the contribution of e-learning to knowledge capital, a structure and taxonomy for defining and measuring capability must be created.

**Figure 1: Competencies, identity and capabilities**



As represented in Figure 1 capabilities can be defined to encompass the factors included in a study of competence (skills and knowledge) and identity (Bowles, 2004:63). Identity capabilities are distinct from competencies and may be constituted as cultural attributes, values, behaviours, traits, roles and so on. As Figure 1 depicts, these aspects, which may be related, together provide a more complete view of the capabilities required to learn and perform: capabilities that e-learning can target, transfer, generate and enhance.

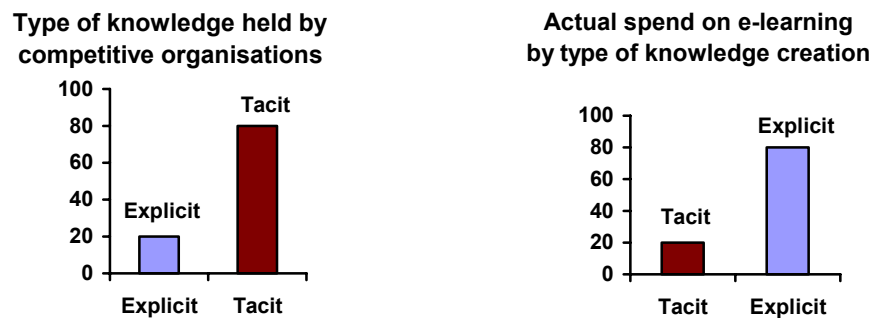
The common currency offers organisations a means for e-learning to extend beyond specific learning functions assisted by technologies such as Learning Content Management Systems and Learning Management Systems to actually integrate learning processes and reporting with career, performance, development, succession, service and other systems.

More importantly organisations seeking to enhance their human and knowledge capital can deploy e-learning to target capabilities and thence build specific forms of knowledge or intellectual capital. As represented in Figure 2, e-learning can target capabilities beyond those required to perform (competencies). Contemporary research confirms that tacit knowledge dominates an individual and organisation's capability requirements (identity, not just skills) (Kaplan 2002:1, Tough, 1999; & Bowles, 2003: 154). Unlike explicit knowledge that by definition is 'known', tacit knowledge is hidden, informal or not tangible. It is usually resident in relationships and utilised by

those involved in the exchange. In a real sense we don't know what we know. Because it is resident in specific relationships, networks or contextual exchanges between humans tacit knowledge is very hard to make mobile and transfer to another individual outside the given context.

Because it cannot be codified and made explicit does not mean we cannot target and build tacit knowledge. Organisations that do build tacit knowledge recognise that while it may be hard to measure and transfer, but it can result in unique, highly embedded competitive advantage. However, investment in e-learning globally seems to be overly focused on delivery of content and knowledge with a known or codified purpose that is easy to transfer in an electronic form, i.e. explicit knowledge.

**Figure 2: Balancing e-learning spend on knowledge required**



Identity capabilities and tacit knowledge have an identifiable relationship (Boisot, 1995:146; & Bowles, 2003:210). It follows logically then that learning exclusively associated with the transfer of codified, explicit competency, skills, knowledge or applied behavioural outcomes that exclude tacit knowledge will not develop all the capabilities required for work or life. Nor will codified content be as malleable or as conducive to innovation.

Restricting learning to explicit forms of capability also can limit an individual, organisation or community's knowledge base. Just as with social capital, identity capabilities extend beyond the human and explicit domain. By way of example, a feature of an identity capability could be:

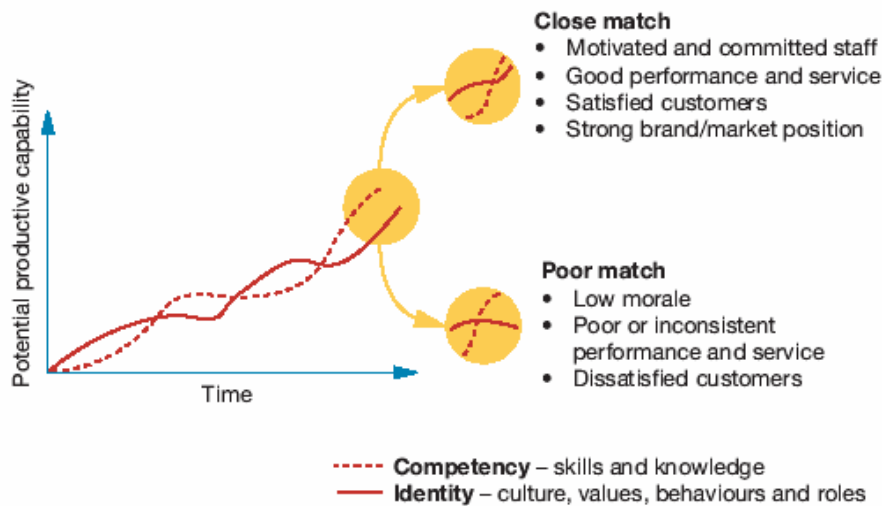
- It is context and environmentally specific;
- While actualised by individuals it is inherently held in the relationships or networks between individuals;
- It is highly embedded to the culture and values within a given context;
- It cannot be measured just through examination of learning or performance outcomes tied to operational activities;
- It is dynamic and may be governed by changes to behaviour and beliefs that individuals may express during a situated interaction; and
- It can isolate and restrict flow of knowledge to those not sharing meaning or obligations within a community or group.

## THE IMPORTANCE OF COLLECTIVE LEARNING AND SHARED MEANING

Another area where the value of tacit knowledge and the role of e-learning have been greatly underestimated is in stimulating collaboration and collective learning.

Collective learning is shaped by the individuals' prior learning as well as by perceptions of purpose and benefits from completing learning. Collaboration is a basic activity in human society.

*Figure 3: Promoting shared futures through e-learning exchanges*



Individual purpose and learning trajectories may vary. However, learning is a means not only for collaboration but also for the co-orientation of identity (culture, values, beliefs, etc.) and the alignment of personal capabilities to group, organisational or societal outcomes. Within this frame of reference or mind-set, learning reinforces not only performance outcomes but also a sense of shared identity. Reinforcement is built on activities that hold meaning collectively and for each individual. Where the individual's identity does not match learning that emphasises certain outcomes, suboptimal learning and performance can be expected (see Figure 3, from Bowles, 2004:106, used by kind permission).

Managing content delivery and focusing pedagogical issues on learning outcomes can create difficulties; issues emerge where the learning process simply lack meaning. Certainly not all communication or sharing of meaning can be supported through technology (i.e. non-verbal communication on an asynchronous environment). However, early limitations of e-learning included the lack of capacity (bandwidth, technologies and software) to promote human interaction or collaborative, bi-directional learning exchanges. This resulted in outcomes being diminished even though the content was excellent. The limitations were further compounded by poor cost-benefit analysis and by business cases that overestimated the outcomes resulting from deploying e-learning content, technology or infrastructure solely for skills training.

## THE IMPORTANCE OF CONTEXTUALISATION

The majority of knowledge held by an individual and organisation exists in the undiffused or tacit form yet many e-learning practitioners do not accept the true

implications of this fact (Bowles, 2003:22). They also do not appreciate that because tacit knowledge is hard to transfer — because it resides in people’s beliefs, shared understandings or mental models, contextual knowledge or experience, work procedures, or intangible networks — this does not mean it has to become explicit before it can be targeted. The prevailing effort to codify such knowledge may make it explicit and transferable. But that may not always be wise. Codified knowledge is easier to transfer through learning, which renders the knowledge more mobile and easier for competitors to replicate. Some forms of tacit knowledge, if left as shared mental models, experiences, practices and values, are far easier than codified knowledge to embed in the organisation and context. Tacit knowledge is much harder for competitors to replicate and transfer. As one of the major research outcomes uncovered by the Investigative Research Report — a 20 month reinvestigation of global e-learning (Bowles, 2003) — e-learning has focused on the transfer of codified, explicit knowledge, yet this may not be where e-learning has its greatest strength.

Neither technology nor the content is the end in and of themselves. It is important to recognise that e-learning is both a process and a means to deliver various types of learning. As both of these, e-learning can provide a whole new dimension on designing and delivering learning that can enhance both explicit and tacit knowledge.

## **PROMOTING LEARNER-LED LEARNING, INSTRUCTION AND TECHNOLOGY DESIGN**

Using technology in an electronic environment to mediate and conduct the learning transaction may be distinct, even a radical departure, from previous practices, but this does not mean it is divorced from previous practices. E-learning practitioners can learn from previous developments in education and training. In reality e-learning is just a means of implementing education and training. It is an applied response residing in various education models (i.e. flexible, distance, classroom-based) and pedagogical approaches (i.e. behaviourism and constructivism).

It is the attempt to dissociate e-learning developments from previous methods of learning and instruction that has disenfranchised many teachers and made the transition from ‘the known’ to ‘the unknown’ future of electronic learning more difficult to embrace.

E-learning development must be, first and foremost, educationally sound. A balance between individual needs, pedagogy and technology must be struck to both engage teachers and users (employees or learners) in the design process and ensure that e-learning builds on foundations of sound learning and instruction methods. Oliver and Dempster (2002) confirmed:

*Whilst the usability of the IT infrastructure and tools should match against these educational objectives (Dempster, 2002), engaging staff to make educationally sound changes to their teaching requires a genuine understanding of curriculum development and change management.*

In the design of e-learning, especially online learning, the packaging must be reconsidered. Old content simply repackaged into an online environment does not improve learning. E-learning requires new packaging: packages have to be labelled for specific users and the smaller nuggets of information and knowledge within them must be easily accessed. Therefore there must be a focus not just on the transfer of

skills and knowledge, but also on how the learning is packaged vis-a-vis how it is applied; in other words, learning and doing are linked (Schank, 2001:21). Online learning permits staff to learn in a safe environment, one where they can complete actions that fail. They can do this without fear or embarrassment. This ability enables electronic environments to extend the possibilities for educational practitioners to design types of learning that result in improved learning experiences (Schank, 2001:4).

Different outcomes require different types of learning and instruction. A proverbial 'jungle' of learning theories and typologies exist. E-learning challenges the more traditional behavioural view that instructional technology and electronic media are simply a learning stimuli or a mode of delivery. More recent approaches have shifted the emphasis of e-learning from a cognitive approach to education. These theorists stress that learning needs to avoid the concept of the learner as an 'empty vessel'.

### **MOVING BEYOND LEARNING OBJECTS AND STANDARDS COMPLIANCE PERSPECTIVE**

Learning objects have been popularly described as Lego® bricks that can be reused to build different structure or courses. This concept, which was based on the wrong ideology, is quickly losing ground. Thinking of learning as objects that can be manipulated is a hallmark of machine-era thinking. Learning is a conversation, and conversations happen in contexts.

Thus, while the kind of reuse that many had hoped for is impossible, another kind of reuse is achievable. This reuse will be purely from a business perspective. Here, the same learning will be reused as many different contexts under many different delivery paths – from e-books to PDAs to SmartPhones to PDF documents to e-mail and so on. Here content providers will ensure that learners get the right type of content when they want it and how they want it. Same content with multiple delivery options, just as a *Harvard Business Review* article appears in many different guises: as paperback books, OnPoint series, single downloads, etc.

The vision that the management of all learning objects and e-learning itself is inexorably moving to a controlled reuse and packaging capability that will enable both mass production and distribution across multiple technologies is flawed. Being able to uniquely identify a learner, package objects to the individual learner needs and deliver a personalised experience that can be monitored, supported, and assessed is a noble aim. However, it ignores the importance of context.

By definition anywhere, anytime, just-in-time learning accentuates the importance of understanding individual differences, the context of learning (real time, right now), the pedagogies (note the plural) used for individual and group interaction, and the influence of the human interface with the computer or technology used to delivery the content.

Creating huge reservoirs of objects and resources that can be moved and reused under tight control governed by international regimes may improve management of e-learning, but of itself compliance does not generate improved learning.

## **PROMOTING CONTEXT IN THE LEARNER'S EXPERIENCE**

So much e-learning content today is dry and barren. It is no wonder that most learners drop out of e-learning courses. Again, the problem is with not fully understanding the potential capacity of the Web as a medium. The Web is a social medium. It is used for reasoning and sensemaking. It is not a medium for reading long academic texts. In this we can take a few tips from IBM. While IBM publishes literally thousands of in-depth articles every month, it makes available online only the abstracts. The rest of the articles are available as PDF downloads. IBM knows that the in-depth text will be printed so it uses the most appropriate medium for electronic print: PDF.

E-learning content has to embody the living organisation. This means that narratives and the informality that permeates the entire organisation should be captured. This is the context that creates useful and actionable e-learning, not the passive variety we are so used to.

The potential for contextual learning and personalisation is, without doubt, one of the major selling points of e-learning. Given that people are different, and that we can cater for differences in learning styles and learning needs, it seems reasonable that catering for a high degree of personalisation is an effective way of advancing the knowledge and performance of individuals, and thereby the organisation as a whole. This will be one of the most interesting areas to monitor as e-learning progresses, especially as learning increasingly moves from the classroom to the work environment.

## **INFRASTRUCTURE – CONVERGENCE AND CHANGE**

The e-learning spectrum is changing. Emerging technologies are altering how both the Web and the Internet are viewed as mediums for transferring information and knowledge. The growth of satellite and mobile applications and other technology has had a profound impact on characterisations of e-learning.

The parameters for the development and delivery of e-learning must accommodate past, present and future technologies. Stating the obvious, some countries will have 'emerging' technologies that other countries consider 'old'. For some of these slow adopters, the current technologies will be replaced with later evolutions that will actually enable the countries to 'leapfrog' over 'advanced' countries.

The emergence of non-browser-based Internet technologies to support small-screen mobile and wireless devices illustrates that definitions of e-learning restricted to online or Web-based delivery may promote mind-sets and actions that exclude innovations, and this in a field marked by extremely rapid evolution.

Satellites and mobile wireless devices can use TCP/IP (Transmission Control Protocol and Internet Protocol) communication language, which computers with different operating systems have traditionally used to communicate on the Internet. If the approach to e-learning is restricted to desktop computers and associated fixed or Internet network connections, then what constitutes 'electronic' forms of learning would be even more restricted. Technologies such as telephones (mobile and fixed terrestrial lines), television, Internet and computing devices all are increasingly converging. Given both the anticipated speed of this convergence and the increase in the number of users, the reach to multiple new points of access, even the most

conservative forecaster must recognise the incredible business, social and economic changes that this evolution will produce.

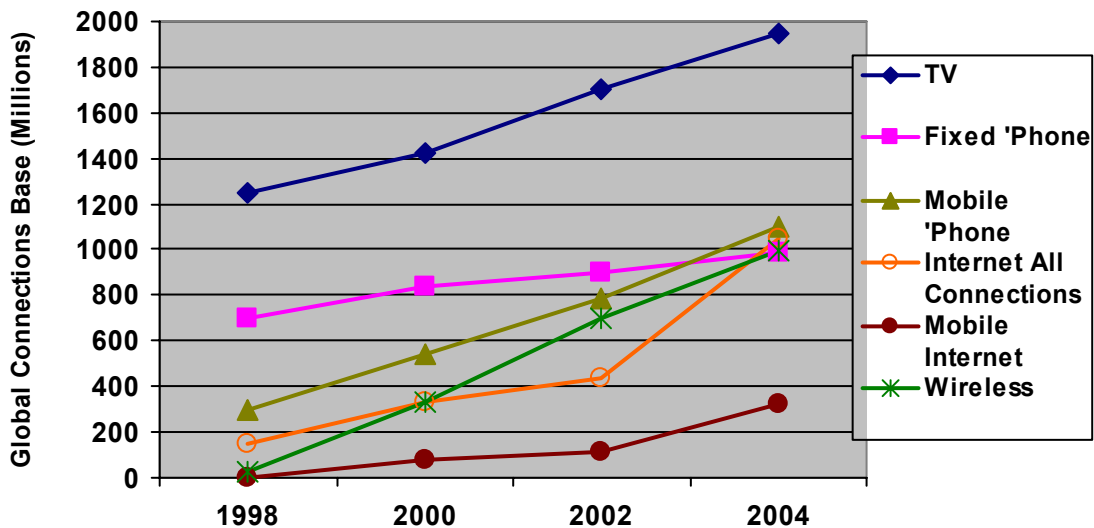
Looking back allows one to extrapolate and envisage future technology change and its impact on e-learning. It took a century (from 1900 to 2000) to connect the 850 or so million fixed (terrestrial) line telephone users globally. It is expected that at least double the number of connections will be required by 2015. In comparison to the infrastructure and connection limitations of terrestrial 'phone connections to the Internet, mobile and wireless networks offer rapid connectivity and accelerated access for users. There were estimated to be more than 560 million connections to mobile cellular networks and some 700 million wireless subscribers around the world in 2002 (Sabnani, 2002:3).

Very few forecasters in 2002 predicted accurately that by first quarter 2004 some 600–640 million people around the globe would have Internet connections. Based on growth trends it seems that more than 60 per cent of these have connected in the eighteen months leading to January 2003. In 2002, five billion emails were sent by 100 million people who regularly browsed the Web each day (NUA, 2003).

The next evolution, to mobile and wireless, is occurring even faster.

According to forecasts — both aggressive and conservative — of business opportunities, learning is expected to be a major 'product and service' across these networks. The impact of mobile and wireless on all forms of 'e'-learning cannot be ignored.

**Figure 4: World subscriber forecasts and impact of mobile communications**



(Chart based data from Ovum presented in Kitchen 2002, slide 10; ITU 2002: 9; Lucent Technologies cited in Sabnani 2002)

As shown by Figure 5 above, wireless and mobile devices not only are outstripping forecasted growth in worldwide subscribers, but also are expected to outstrip growth in more traditional technologies (Linder & Cantrell, 2001; Durlacher, 2000; Sabnani, 2002). As subscribers migrate from fixed terrestrial 'phone connections to mobile and wireless, the numbers of connections are expected to further exceed forecasts, and mobile and wireless features will stimulate mutual market growth (Jagannathan et al.,

2003:95). In effect, subscriptions in newer technologies are growing exponentially while traditional fixed connections are growing at increasingly slower levels.

The advent of mobile and wireless connections has fostered a shift in how people and businesses can communicate and learn. While access to the Internet had been dominated in the decade leading up to the twenty-first century by 'fixed' terrestrial 'phone connections, today some 30 per cent of global users access the Internet by cable, satellite, wireless or mobile devices. The access to the Internet via new technologies, including mobile and wireless, has seen worldwide Internet traffic (actual use of the Internet by users) double between 1998 and 2002, as depicted in Figure 5.

As recently as the late 1990s the technology being used to connect and carry 30 per cent of today's Internet connections had not even been envisaged. The types of applications and hardware advances and even new waves of network technology innovations are in a constant state of flux. Yet e-learning will certainly be one of the main forms of content across these devices, applications and networks.

### **SUMMARY — MAKING SENSE OF IT ALL**

The shifts in infrastructure will result in a change in current e-learning pedagogies. We know that learning is mostly social and mostly tacit or informal. Research has shown that 70–80% of all learning in business organisations takes place at an informal level. The shifts in infrastructure will boost informal learning.

The always on, always connected infrastructure coupled with the reasoning and sensemaking capacity of the Web will result in more money and effort being after action reviews (AARs), pre- and post-mortem reviews, discussions, chats, etc. Again, it will be these activities that will provide the context for e-learning content.

E-learning is a means to assist individuals, groups, organisations and societies to make sense of situations and problems they confront every day. In order to respond to new situations and plan for contingencies, individuals draw on previous experience and their repositories of explicit and tacit knowledge. Such responses include sensemaking, a process whereby an individual undertakes conscious, rational reflection on previous experiences to bring order to current unexpected, new or surprise situations. As individuals interact with their environments they generate and use knowledge. Absorbing this knowledge and transforming it into a capacity to more rapidly meet new contingencies is an important capability: a critical aspect is the sensemaking process.

Just as the process of sensemaking requires individuals to make sense of the non-routine or unknown so e-learning must deploy pedagogies that encourage learning that is experiential and problem based and stimulates individual reflection. This is highly situated and once again the focus is on deployment of emerging technologies such as wireless and mobile infrastructure to support e-learning in way that maximise situated meaning for the individuals involved. Equally, e-learning must allow learners to learn from their mistakes and the process of e-learning must expand beyond content to realise its real value as it enables contextual learning and collaborative exchanges.

For large organisations and societies, the 'low hanging fruit' for e-learning technologies — reducing training logistics, improving access and decreasing costs — may be an adequate and prudent first goal. Maximising the value equation for

individuals, organisations and societies cannot be achieved through content ‘push’ approaches to e-learning. It is critical to recognise the importance of context and the long-term folly of ignoring the influence infrastructure has on e-learning. Only then can one deliberately avoid designed-in obsolescence and further narrowing of the foundations upon which future e-learning effort can grow.

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