

Research Paper 3-04

Learning to E-Learn Project: Rediscovering the Benefits of E-Learning

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Abstract

This paper examines the *Learning to E-learn* project and its findings. It asks why any corporate e-learning intervention should involve a unified approach to learning, performance, knowledge, service and change management.

Discussion will highlight some of the May 2004 key findings resulting from the 26-month research phase of the project. More importantly, the paper will challenge the current content and e-training paradigm and examine the foundations upon which e-learning must be implemented as a strategic activity within community and business organisations.

Introduction

What is electronic learning?

E-learning is learning that involves the acquisition, generation and transfer of knowledge using information and communications technology (ICT).

The current debate

Much of the debate on e-learning reflects uncertainty about the role that learning can play in both corporate and community contexts. This uncertainty is especially true of e-learning, the primary focus of the research discussed in this paper. Indeed, the present level of doubt is such that the fate of e-learning hangs in the balance.

A flawed approach

Unfortunately, e-learning has been widely simplified in order to accelerate its adoption. Many writers and service providers have tried to ‘dumb down’ the concept, or have narrowed their focus so that it is differentiated from e-learning; i.e. using online or Web-based training (Khan cited in Khan 1997; Beer 2000; Horton 2000).

Equally, while e-learning may be seen as a form of flexible and distance learning, not all flexible and distance learning necessarily involves e-learning (Rosenberg 2001: 29). As shown in Figure 1, e-learning exists in a wider field of endeavour and its relationships overlap with many different approaches.

The overlap and interrelationship of e-learning with other fields of learning cannot be ignored. Ignoring the link with existing or future learning approaches will ensure that the development of e-learning models and theory is both inadequate and incomplete.

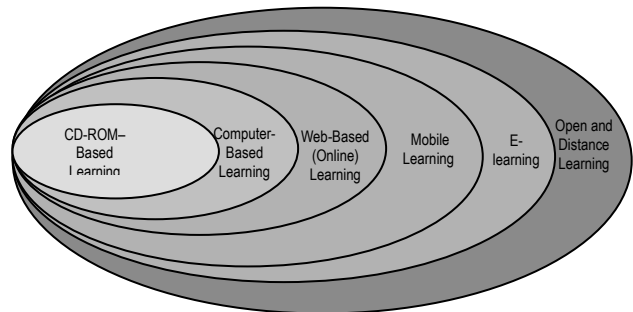


Figure 1 Learning technologies, modes and relationships (based on Urdan & Weggen 2000: 9)

The Learning to E-learn project

The Learning to E-learn project is part of a long-term project sponsored through the Unitas Knowledge Centre—a joint establishment of the Commonwealth Bank of Australia, the Tasmanian government, the University of Tasmania and the Centre’s research partners.

The project focuses on how to implement efficient and effective e-learning at a strategic level within an organisational or regional setting. It therefore takes a global and multidisciplinary approach to its research and encompasses a range of theoretical approaches

that can be applied to e-learning. This includes examining how theory and practice converge to affect the management of learning, performance, service, knowledge and human resources.

This holistic approach to the research was necessary because much contemporary literature on e-learning has become engulfed in a detailed debate over technical and educational issues. It was therefore vital that the project cast a wide net in order to draw out the implications of implementing e-learning in an organisation or a region.

The project's research confirmed that e-learning is widely misunderstood, which has implications for e-learning's current practices and future evolution.

Despite these significant problems, the opportunity exists to recognise the misconceptions and weaknesses, and improve e-learning theory and practice.

A grounded theory approach

The Learning to E-learn project adopted a 'grounded theory' approach for the selection of data and its analysis in the Investigative Research Report (Glaser & Strauss 1967; Strauss 1987; Strauss & Corbin 1990).

As e-learning covers such a diverse range of disciplines and views, grounded theory offered a methodological approach able to consolidate research into applied practice and so make a 'theory' actionable by managers within an organisational context (Locke 2001: 18).

Figure 2 depicts the fields of research and materials available on e-learning at the beginning of 2003.

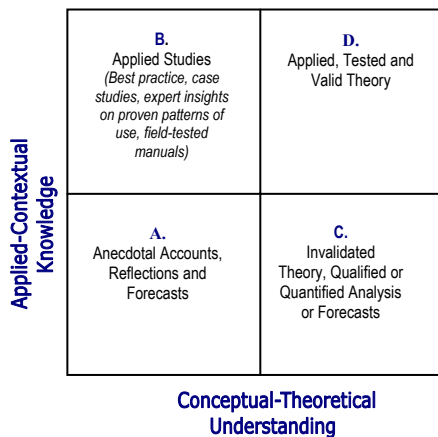


Figure 2 Classifying observations and understandings of key writers

Initial research

Initial research for this project suggested that much of what has been written on e-learning was unsubstantiated and anecdotal (A & C in Figure 2). In fact, the bulk of the literature uncovered only a few items where applied knowledge and theoretical understanding had both been advanced (D). Because research did not uncover any cogent basis for defining e-learning practice it was not possible to provide a proven, coherent, valid and reliable theory that could separate rhetoric from well-researched studies on e-learning (see Brennan, McFadden & Law 2001: 64).

This absence of applied theory meant that the grounded theory approach had failed to produce a basis for advancing a consolidated view on what constitutes improved e-learning practice.

A modified approach

By modifying the grounded theory approach, the collection of data and the analysis of literature could be tied to particular topics, issues, dimensions and variables. Each topic—and its associated variables—could then be presented and analysed in one chapter.

Each chapter was then constructed as a mosaic, providing substantial insights into all the main research dimensions and objectives. The result was the Investigative Research Report (Bowles 2003) that laid the foundation for ensuing field tests on core findings.

'The shock of the new'

The difficulty in understanding e-learning in any holistic sense can be attributed to its newness as a discipline, as well as its rapid and ongoing evolution. This state of flux is the reason critical understandings are still emerging.

An instructive tale

The model developed through research to compare and study e-learning practices can, perhaps, be best explained by the following tale.

Imagine a party of lost hikers trying to gauge their position from three navigation stations. The hikers want answers to a number of questions: *Where are we? Where do we have to go? What is the best way forward?* They can see a multitude of paths, but what represents the best way forward?

Firstly the hikers need to 'triangulate' their position. This will confirm current progress. To do this they must be sure the navigation towers are actually fixed points, consistent over time and communicating comparable information. Once the hikers determine their location, it becomes possible to estimate the

effort and capacity required to reach their goal (i.e. Readiness).

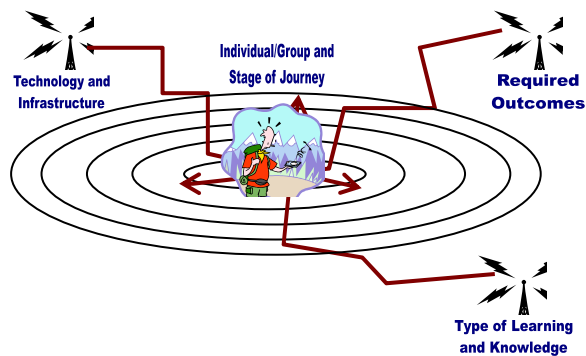


Figure 3 E-learning and the lost hiker parable

The hikers need to keep triangulating their course as the journey proceeds in order to have a coordinated and ‘strategic’ approach to their task.

The inability to isolate variables and compare needs of different individuals within their context has adversely affected the journey e-learning has taken.

What has become apparent from the vast body of research is that no one single common starting point can be assumed in the e-learning journey. The technology, infrastructure, type of learning and knowledge, and required outcomes will influence how different individuals with different levels of readiness progress on their journey.

The project research does not pretend to provide a blueprint for every journey—to do this would be to deny the diversity that is the hallmark of this dynamic field of human endeavour. Rather, the aim of this work is to offer a broad view of the points of reference so that organisations involved in e-learning can move forward more confidently and explore its potential to achieve tangible benefits for individuals, organisations and communities.

Key research findings

The Learning to E-learn project produced a major report on the investigative research (Bowles 2003), a suite of diagnostic tools, a manual, ten commissioned reviews, ten reviewed case studies (see www.portal.unitas.com.au) and a published book (Bowles 2004).

In March 2003, the research report established twelve principles that were at the core of strategic or policy frameworks seeking to implement effective and efficient e-learning within organisational or regional settings:

Principle 1. E-learning can be defined as learning that involves the acquisition, generation and transfer of knowledge using information and communications technology (ICT).

Principle 2. E-learning predictions for content, service and technology market segments lack comparability and reliability as no agreed scientific basis exists for the definitions used.

Principle 3. E-learning is an example of a convergent activity where maximising effective and efficient implementation lies in understanding complex system interactions.

Principle 4. E-learning has to move beyond the e-training focus on individual skills to incorporate capabilities which build shared meaning and a culture of collaboration.

Principle 5. E-learning has a strategic value enhancing knowledge capital through the transfer and generation of both codified, explicit knowledge and uncoded, tacit knowledge.

Principle 6. E-learning has maximum strategic impact when it deploys pedagogy appropriate to the individual learner while enhancing situated performance and thinking.

Principle 7. E-learning occurs most effectively when improved individual learning is the primary end and technology the means.

Principle 8. E-learning is both a process of learning transfer and a means for improving collaboration and knowledge generation.

Principle 9. E-learning can cause transformation while also enhancing an organisation and community’s means to respond to change.

Principle 10. E-learning can be implemented to enhance organisational learning and so improve business processes and competitiveness.

Principle 11. E-learning is an activity that inherently involves exchanges moderated by technology and therefore can affect service exchanges within and outside an organisation.

Principle 12. To implement e-learning efficiently and effectively, a quality instructional design process (e.g. Analyse, Build, Implement and Improve) must ensure a

continuous cycle based on rigorous evaluation at all levels.

These twelve principles may appear more like critical success factors than the usual statements that underpin learning. This is intentional. What underpins each of the principles is sound research focused on system-level strategic outcomes, not just issues of pedagogy and technology.

Reality 1: E-learning outcomes extend beyond learning to strategic outcomes

The research discussed here seeks to reposition e-learning as a strategic activity. It is essential that e-learning be understood to have both the potential to trigger transformation and the capacity to respond to change. As such, e-learning is not just a process to transfer knowledge to individuals, but also a means to advance business or socio-economic outcomes.

Understanding how e-learning may be deployed to effect a range of strategic activities requires a ‘common currency’.

A popular metric spanning human resource activity is human capital. Human capital links e-learning with technologies, processes and practices that support the drive to expand the overall capital value of the human resources within an 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. Fortunately, e-learning 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 strategic 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 well beyond learning outcomes. In an organisation this may involve e-learning being evaluated to determine its direct contribution to productivity and agility. In a community setting it may involve evaluating socio-economic benefits.

Capabilities can be defined as encompassing 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.

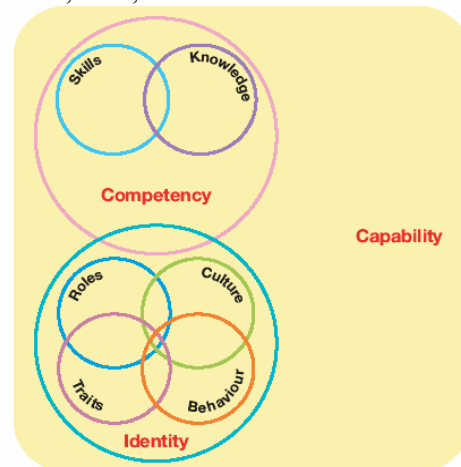


Figure 4 Competencies, identity and capabilities

As Figure 4 depicts, while each aspect may be related, together they provide a more complete view of the capabilities required to learn and perform: capabilities that an organisation can see justify expenditure beyond that ascribed to skills training. As depicted in Figure 5, this means extending our view on e-learning beyond competency acquisition to encompass the full range of attributes involved in the capability equation.

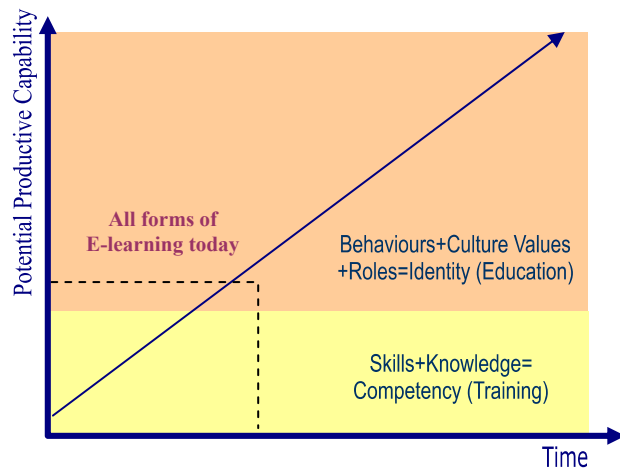


Figure 5 Moving e-learning beyond e-training

More importantly, organisations seeking to improve their human and knowledge capital can deploy e-learning to target capabilities and thence build specific forms of knowledge or intellectual capital.

Reality 2: E-learning is much more than e-training for skill outcomes

When designing and implementing e-learning, it is vital to define why variables exist and where they come into play (see Figure 3).

E-learning has much in common with other cross-functional activities such as the management of performance, change and knowledge. And there are similarities in the factors that inhibit or enable success. An important case in point is the rise of e-commerce or e-health where information and communication technology has stimulated convergence of disciplines, theory and practice.

To move forward, it must be properly understood that e-learning is a shared journey and a process that can be used to improve collaborative endeavour and orientation.

Cost-effective outcomes

In today’s commercial world, the need to make a return on an e-learning investment means the focus is on reducing costs or speeding up the acquisition of skills to attain the minimum acceptable threshold for potential productive capability (Fred 2002: 95). This approach emphasises the acquisition of competence to perform. It is an e-training paradigm.

E-training emphasises the transfer of information to achieve reduced costs and applied outcomes. Knowledge assets are sorted into two categories:

- Learning objects; and
- Information objects.

These assets can be transferred into learning components, such as curriculum, courses, modules, projects or knowledge ‘grabs’ that can be accessed on demand.

Knowledge capital

Figure 5 illustrates the need for a broad appreciation of the value derived from e-learning and how it can contribute to the potential productive capabilities of an individual, group or organisation (both the capabilities required to perform now and the capacity to achieve future outcomes: agility).

The total potential capability of an individual, group or organisation resides not only in competency but also in identity factors. It is not enough to train individuals to be able to perform tasks (competence); the motivation to do these things well depends on shared values and meanings (identity). Competence and identity combine to form the potential productive capabilities available to an organisation, which constitute its knowledge capital (or intellectual capital).

The knowledge capital of an organisation or community does not simply include skills that

contribute to task performance. It also resides in relationships and processes.

If e-learning is to maximise its productive capability, it needs to enhance the value, competencies and identity attributes across all the dimensions where an organisation’s knowledge capital may reside, including human capital, identity capital and structural capital.

This approach forms the backdrop to a parallel and equally important theme.

Tacit knowledge, not just explicit

Figure 6 depicts how e-learning may be used to address capabilities beyond those required to just perform tasks. Contemporary research verifies that tacit knowledge dominates an organisation’s capability requirements (identity, not just skills) (Bowles 2003; Tough 1999).

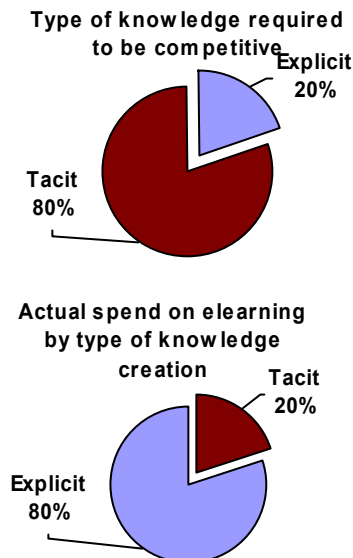


Figure 6 Balancing e-learning spend on knowledge required

However, investment in e-learning globally seems to be overly focused on delivery of content and knowledge with a known or codified purpose, i.e. explicit knowledge (see Figure 6).

Task-oriented corporate e-learning programs tend to reinforce a view of e-learning as simply a vehicle for advancing codified or explicit knowledge. Yet explicit knowledge is, as outlined earlier, only a small fraction of an organisation’s knowledge capital. Tacit or uncoded knowledge is far more important, even if it is harder to pin down.

While explicit or codified knowledge is tangible and easy to transfer, it is also ‘mobile’ and easily replicated by competitors.

On the other hand, tacit knowledge is often embedded in customer service exchanges, teamwork, collaborative communication, brand perceptions, community networks and business partnerships. This makes it less portable, both inside and outside the organisation.

A simplistic approach to tacit knowledge would be to make it explicit so that it can be ‘pushed’ across the organisation using e-learning technologies. This is risky though, as tacit knowledge would become more accessible to competitors. It is therefore crucial to devise modes of e-learning that embrace tacit knowledge without reducing it to a pre-packaged, codified form.

Reality 3: E-learning involves information and communication technology

ICT is central to e-learning. Yet it is apparent that e-learning often forces a suboptimal trade-off between pedagogy and ICT capacity (availability and ability to use the technology).

Process over outcomes

Content delivery systems and pedagogical issues have also tended to focus on how to convey skills to an individual learner more quickly and at less expense. This can create difficulties as process issues emerge. For example, early limitations of e-learning included the lack of capacity (bandwidth, technologies and software) to promote human interaction or collaborative, two-way learning exchanges. Interestingly, this has resulted in the outcomes being diminished even though the content was excellent.

The distinction between tacit and explicit knowledge has also been lost as technologies are designed to manage and report on access to learning objects and to codify knowledge so as to optimise its transfer.

The emphasis on the ‘transfer’ process inevitably leads to a focus on managing the content transfer process rather than on outcomes. This results in a process-driven evolution of e-learning. Assessment of the value of different types of knowledge assets is obscured and the importance of building relationships that support collaborative communication and service exchanges is downgraded.

From the ‘frothy sea’ to a second wave

The interplay between people and organisations interacting to develop, deploy and derive benefits from e-learning technologies is perfectly described by Barron as a ‘*frothy sea of competitors jostling for dominance*’ (2000). In the frothy sea we can see that core e-learning technologies have come to encompass content creation and management systems (LCMS), learning management systems (LMS) and learning environments or authoring tools. Nevertheless, research clearly indicates that no one stable set of concepts and technologies exists or has gained ascendancy.

Looking for a basis to understand key e-learning technology business drivers, the Learning to E-learn research confirmed the relevance of principles advanced by Crowley (2002). Crowley identified seven drivers that he translated into five design principles and implementation guidelines for e-learning architectures. The design principles are open architecture, scalability, globality, integration, and rapid and timely availability.

A ‘second wave’ of technologies has emerged from a long courtship between learning and technology. These advances are facilitating the shift from technology-centric to people-centric solutions.

A high degree of readiness to explore and invest in new applications and approaches seems to exist. However, it is important to maintain a degree of scepticism about how quickly e-learning initiatives can advance while the ‘older’ technologies and their design philosophies dominate the international marketplace.

Reality 4: E-learning is about people learning in a given context

For e-learning—and learning generally—to achieve maximum advantage for an individual, organisation or community, it must be based on a full appreciation of the individual’s capacity. This applies to all individuals involved, not least of all students, teachers, and instructional designers.

Learning must be able to deal with knowledge that may be invisible or unknown to the individual who is required to harness it. Given this, the type of learning may also vary. It may be structured to known learning outcomes or unstructured to achieve what is more akin to the communication of information.

The fundamentals about the relationship between learning and knowledge must be revisited prior to the

deployment of e-learning. In fact, it can be argued this review has to be done for each individual engaged in the e-learning process.

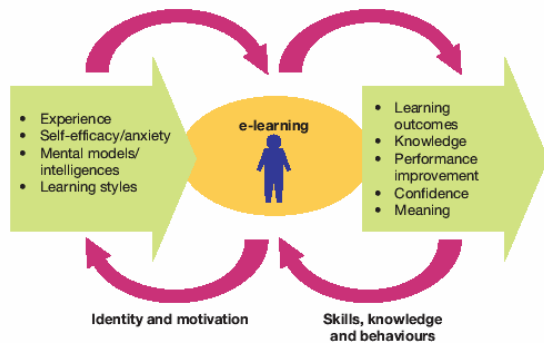


Figure 7 Individual e-learning trajectories

Learning has to accommodate the individual's needs and preferences before, during and after the e-learning transaction. Research confirms that, as depicted in Figure 7, to develop an individual's e-learning capacity, the learning context needs to be considered and learning processes must leverage how the individual thinks and acts, and their self-efficacy, self-reliance, learning styles and such like (Compeau et al. 1999; Wiig & Wiig 1999: 2; Bandura 2001: 12; & Wang et al. 2001).

Research strongly suggests that addressing the preconditions for learning and delivering learning sensitive to the individual's context can generate profound benefits to the organisation in terms of performance and behaviours (Ashforth & Mael 1989; Van Dyne et al. 1994; Lindsley et al. 1995; Stajkovic & Luthans 1998).

Reality 5: E-learning is a shared journey with no one common starting point

Having suggested that e-learning must centre on the individual and their context, paradoxically the Learning to E-learn research also illustrated the effectiveness of using e-learning to encourage collaboration and communication.

Collective learning was found to be shaped by the individual's learning background, as well as by perceptions of the purpose and benefits of completing learning.

However, e-learning can become a significant tool for stimulating collaboration, co-orientation of behaviours and alignment of personal capabilities to group, organisational or societal outcomes. Within this frame of reference, learning reinforces both the performance outcomes and a sense of identity.

Reinforcement is built on activities that hold meaning for each individual, as well as collectively. Where the individual's identity does not match learning that emphasises certain outcomes, suboptimal learning and performance can be expected.

As suggested earlier in Figure 3, the stage or progress and capacity of an individual, group, organisation or community to engage in an e-learning intervention will vary. As shown in Figure 8, the Learning to E-learn project developed a four-stage model to analyse, track and compare different journeys.

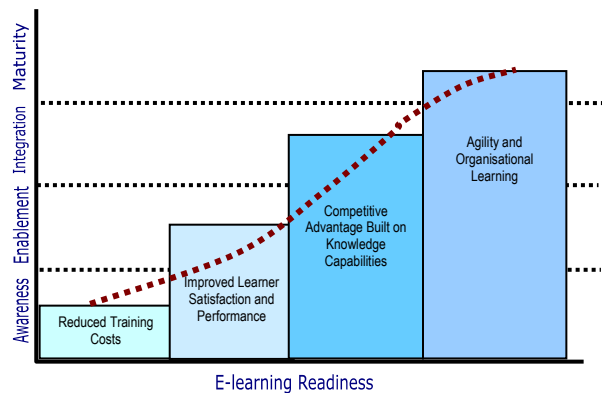


Figure 8 S-curve of e-learning readiness

Each stage can summarised as follows.

Level 1—Awareness: The organisation is aware of the need for e-learning but has made only basic advances. Information is transferred electronically using static web pages, CD-ROMs or computer-based instruction on stand-alone platforms. There is little or no networking of individual learning, and data cannot be captured and analysed in real time. The relationship between learning and knowledge management is inadvertent at best. The main focus is on cost reduction and wider distribution and access.

Level 2—Enablement: The organisation searches for interactivity and real-time data capture across networked electronic-learning media. Users can search and navigate stored content to access appropriate learning at the right time. Transfer of explicit knowledge between individuals increases as e-learning is used to enhance knowledge distribution, especially via self-paced content. At this stage, cost savings drive the advancement of the e-learning strategy.

Level 3—Integration: The organisation or its suppliers generate personalised e-learning products and services with integrated architecture.

Open architecture maximises the integration of front-end and back-end systems and permits learning to be translated into improved business processes and customer value. E-learning is integrated with knowledge management, performance management, personnel (human capital) management, and continuous improvement strategies. A conscious effort is made to enhance tacit knowledge in a way that promotes collaboration and further embeds knowledge within the unique context of the organisation.

Level 4—Maturity: Innovation and extended deployment of e-learning are used to leverage core business interests and help redesign core services, supply chains and business processes to better meet customer needs and preferences. E-learning is an essential component for building the organisation's unique competitive advantage and enabling improved agility and responsiveness to future contingencies.

The process of transformation towards e-learning requires a long-term view on return on investment, impacts on business strategy and staff capacity to transfer knowledge. E-learning technology is integrated into known business processes and management feel the interventions are 'under control'.

Summary

This paper has attempted to interpret the data and research from the Learning to E-learn project and provide insights into some of its key observations and findings. From the start, the research was intended to inform both business decision makers and governments using e-learning as part of regional development strategies.

The long-term success of e-learning will depend on how this research is adopted and implemented by key stakeholders. Early indications are favourable. Many case study partners have entered into major follow-on projects deploying the research. In at least two cases this has resulted in halting multi-million dollar e-learning projects and reorienting funds towards more beneficial strategies that actually involve larger financial commitments.

However, the project's goal was never to advance a definitive theory of e-learning. Its focus was to investigate and analyse existing e-learning literature. Findings were then tested in the field through case study and applied projects.

The results are sobering.

In terms of using e-learning, there is little method or intellectual rigor when it comes to maximising business, economic and social outcomes. A large majority of the publications are either speculative undertakings or mere descriptions on the art of e-learning. Neither advance the applied science in areas where e-learning has the most strategic value to offer organisations and regions.

E-learning has been condemned because of our own failings to substantially understand either the underpinning theory or applied practice. Now the Learning to E-learn research has confirmed that beyond the hype of the new there really are a number of variables that will consistently assist the successful deployment of ICT in learning. Knowledge of these variables is already being used to improve theory and to successfully reshape the foundations of e-learning strategies in companies and regions.

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