



Sustaining elearning innovations

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The challenges of turning funded projects from elearning innovations into sustainable products and services have featured in the higher education literature for more than forty years. Various guidelines and strategies designed to facilitate the process have been developed and tested. Key challenges are identified and critical success factors proposed. Yet the problem persists in more or less original form, suggesting that most of the advice has been lacking in some respect. This paper examines the current raft of ideas and proposed solutions to the problem of sustaining elearning innovations. Preliminary findings from sixteen case studies are presented to see how experience aligns with the guidelines. While the evidence from these cases is not universal, it does support comment on the usefulness of existing guidelines and a proposal for an alternative approach to sustainable innovation based on this research.

Keywords: elearning innovation, sustainability models, organizational change, project processes

Introduction

Since as early as the 1960s, institutions and governments have promoted the use of educational technology through various strategic initiatives and a funded project model. This model typically offers support for two or three years, and in recent times, the expectation has been that new elearning systems or products will be widely disseminated and self-sustaining by the end of the funded phase. In some cases, second round funding has been offered to projects that can demonstrate initial success, however, this is an exception rather than a rule. Since many funded projects involve research and development for innovative systems, it often proves difficult to meet all the funding body expectations within an externally imposed timeframe. Furthermore, project teams with strengths in research informed design and development may lack the skills for dissemination and to build a business case for ongoing support. As a result, many projects with strong educational potential fail to find the means to continue beyond the funded phase, and a low return on investment is achieved. Apart from some research publications describing the experience, which many teams have limited time to produce, there is no efficient mechanism for sharing the experience gained in the research and development phase. The research described in this paper acknowledges that this problem has existed for many years, and presents a representative sample of literature to track other researchers' analyses and proposed solutions. Case studies were used to explore the practicalities of these solutions, and to identify emergent approaches to sustainable innovation.

The problem with funded projects

In a seminal work on the topic, White (2006) presents a summary of national strategic initiatives that were significant in driving the development of educational technology in higher education in the UK from the middle of the 20th century. As one of the pioneering regions in this field, the UK experience is something others can learn from. The predominant focus on funded projects within major initiatives is noted; along with the Teaching and Learning Technology Program (TLTP) evaluation report observation that 'management support and related investment' are important determinants of elearning project survival beyond the funded stage (HEFCE 1996).

On the matter of management support, White (2006) questions whether national strategic objectives that drive significant investment are well aligned with institutional ones, because with hindsight, local support has been slow, and in many cases, failed to materialize. While the funding council identified its own strategic objectives, it offered no direct help or direction for institutions to develop their own strategies. It acknowledged some of the challenges that might arise, and tried to anticipate the help and support requirements this would generate. In the circumstances, it may be reasonable to conclude that the vague nature of what 'management support' actually means and assumptions about senior management's ability to provide it may be part of the problem. In another study, Duke & Jordan (2008) found 'significant shortcomings in the capability of senior management teams in HEIs to identify and exploit the full strategic potential of technology.'

While funding rounds achieved significant gains in building elearning capacity across the UK higher education sector, from a single institution perspective, the project-based approach showed little success. For example, in six institutions involved in the *Scholar Project*, White (2006) reports that the observed effects may have been a result of changing external circumstances, i.e. the advent of the WWW, falling hardware costs and a general increase in the use of technology, rather than project activities. Little activity continued after the funded phase, and it was difficult to see how this could be maintained in the face of competing priorities such as research and the normal demands of teaching. Some initiatives report higher levels of success, (e.g. Anderson et al 2009). However, low uptake is common, and experience shows the opinion expressed by one participant that 'if it works the faculty will find a way to pay for it' doesn't hold true in many cases; certainly not when locally developed elearning systems and tools are made available beyond the host institution. There were cases where local developments had been adopted for institutional use, but frequency and processes through which this was achieved were not described. White's study also explored alignment of individual and institutional objectives, and concluded that improvement was needed, not just locally, but also for governments and their agencies. A distinction between teaching and research-intensive institutions was noted, as drivers of behavior, structure and management are different. Other researchers make a similar distinction (e.g. Czerniewicz & Brown 2009)

A final point of note in White's (2006) paper is that different capacity building strategies are required for early and late adopters of technology. While it is relatively easy for decision makers to identify early adopters, the challenge is to harness their energy and achievements as sources of systemic change. Both the need for this, and proposed processes to achieve it have featured in the literature for many years, but the success of such attempts has been variable. The question that remains is, what factors contribute to the situation where a seemingly simple process involving creative effort picked up by structure, strategy, policy, procedure and tactics has failed to achieve this objective? The parting comment from White (2006) is that institutions might usefully establish long-term strategic alliances to identify local barriers to change and critical success factors. While this kind of collaboration has run against the grain in a typically competitive institutional environment in the past, the case studies conducted for the current research suggest it is emerging as a practical rather than policy driven strategy.

Why initiatives fail

A high level perspective is offered by Demirkan et al (2010), who note that many elearning initiatives fail where substantial economic investment is required upfront, and the ability to adapt systems and services is limited. The case is based on an industry/university consortia reference model, which is validated through experiences of the Teradata University Network. The reference model addresses basic and advanced sustainability capabilities that integrate partner, application, faculty, student, and elearning service system issues. Validation of the model is by mapping to the literature on advances in elearning service system capabilities. One generally useful product of this validation step is a comprehensive set of capability assessment questions for use by national or institutional elearning initiatives. Broadly speaking, success depends on the ability to sense the environment and reconfigure systems to meet changing requirements; to assimilate or transform them to generate new ones; to manage interdependencies; and to integrate or adapt system elements to suit specific purposes. This high level view of systems and services is clearly important in a rapidly changing higher education environment, yet it is absent from most national and institutional elearning initiatives.

Further support for this perspective comes from a conference of researchers, policymakers, and practitioners focused on ‘scaling up success in technology-based educational improvement’ (Harvard University, 2003). The event synthesized insights from lead researchers working on challenges of transfer, generalization, scaling up, and adaptation of successful educational interventions. Participants included researchers and educators from case study sites, as well as national and state policymakers. The conference provided the opportunity to share insights, and to explore the missing links between theory and practice that undermine promising innovations. In brief, these links related to the need to adapt innovations to local contexts, and contextual factors that are often overlooked in research studies. The importance of a shared vision was noted, along with the increased chance of sustainable change where stakeholders have a practical problem to solve, and an innovation is the solution.

The lack of focus on adaptability and responsiveness to changing conditions is implicated in the failure of major initiatives such as the ‘learning object economy’ (Gunn, Woodgate & O’Grady 2003). Yet these attributes are uncommon in planning and implementation of most elearning projects. The open source community is a notable exception, with a model of adaptability that shows signs of making further inroads into national tertiary sectors.

Conditions for success

To address the barriers identified in various contexts, lead researchers have published frameworks they believe will support general capacity development in elearning, for example:

If higher education is to meet the forecast challenges of this century, initiatives in elearning will need to encompass more than the current focus on teaching strategies... This article describes a framework for developing the capacity to deliver elearning courses. (Alexander 2001, p247).

Alexander’s framework is representative of initiatives with similar aims, and includes:

- A vision for e-learning at the institution
- A technology development plan
- Development of faculty workload policies which relate to e-learning
- Maintenance of a reliable technology network
- Facility for providing technology support to staff and students
- Market research support
- Faculty development opportunities in student learning, good practice in course design, development and implementation, project management, team- work, evaluation and time management
- Provision of time release for faculty engaged in e-learning developments

There can be little doubt that attention to these factors would help to achieve the benefits identified in an earlier study by Alexander, McKenzie & Geissinger (1998), i.e. improved quality and productivity of learning, improved access to learning, and improved student attitudes to learning through technology. In an article on ‘institutional readiness’ Czerniewicz & Brown (2009) examine the track record of different types of institution in supporting elearning innovation and achieving engagement by a critical mass, and find the two achievements tend to be supported by different types of institutional culture. Another author describes the dynamics of institutional change around elearning based on a series of discussions about elearning diffusion with institutional representatives from across the globe. The author notes that ‘in some institutions elearning was an accepted part of everyday activity, while in others it struggled to gain traction’ (Nichols 2008, p598). There were common factors in institutions that had successfully engaged with elearning across teaching and learning functions, i.e. elearning was approached proactively, was scalable, and self- perpetuating even if not all staff were currently making use of it. There was a sense of flow for elearning, and more confidence in future plans. Unless this sense of ‘business as usual’ is achieved, it is likely that elearning will remain the focus of enthusiasts.

Uys (2007) is another author who describes ideal conditions for elearning to flourish. He proposes the LASO (Leadership, Academic and Student Ownership and Readiness) model to ensure enterprise-wide technological transformation through a strategically developed framework, based on a clear and unified vision and a central educational rationale. LASO emphasizes the need for ‘integrated and orchestrated top-down, bottom-up and inside-out strategies’. Sustainability requires the model to be complemented by a ‘distributed implementation

and support approach that advocates true partnerships between academic and support staff' thus providing the capacity for students or staff to initiate and participate in the technological transformation of an institution.

While many authors propose a formula for success, there are few practical examples where all factors are lined up and evidence shows that success has been achieved at a uniform level. It is more common for published articles on the topic to present ideas and works in progress than retrospective reports with evidence of successful diffusion and sustainable innovation. For example, Wiles & Littlejohn (2003) outline the progress of a national Supporting Sustainable eLearning Forum, funded by the UK Learning and Teaching Support Network Generic Centre. The aim of the forum was to move elearning from project-based innovation to embedded practice, and address questions around the scalable nature of elearning. Assimilated views of a wide range of support staff are presented, including ideas on how to devise strategies to support lecturers in the design, development and implementation of online courses; disseminate good practice in sustainable approaches to elearning; and contribute to the ongoing debate in the sharing and reuse of elearning resources. At the time of writing however, this was presented in the form of more great ideas with little evidence to show the outcomes of implementation.

Common challenges

Cox (2008) presents research to highlight common problems and contentions around elearning innovation. She quotes Salmon (2005) on two stages that elearning has gone through as, a) a new way of doing something familiar, and b) doing things that were not previously possible. The second stage is complex, requiring change at both practice and institutional levels, and a solution to the problem of fostering institutional learning about thousands of isolated examples of innovation where no support for systematic change is in place. To address this, she proposes identifying and promoting excellent sustainable, transferable practice and models of change.

Cox's study tests the first four of seven stages of the soft systems methodology described by Checkland (1990 and 2006a & b, cited in Cox 2008), and works with a definition of innovation derived from interview data, i.e:

Innovation can be defined as a new and useful way of solving existing educational problems, for example, improving student understanding of content. The innovation does not have to be a new tool it could be changing the way an existing tool is used. Importantly any innovation needs to be understood in terms of its context, (Cox 2008, p204).

After an initial data collection phase, Cox aggregated a root definition in the following statement:

Despite a lack of institutional support and encouragement lecturers find the time to innovate using educational technology in order to enhance their students learning experience as well as their teaching practice. However there is a concern here about who owns the innovation which needs to be investigated further, (Cox 2008, p205).

The next stage in her research was to take these definitions to the people interviewed and find strategies to address the challenging aspects of elearning innovation they had experienced.

Breslin et al (2007) identify many of the same issues as Cox (2008) and others seeking to integrate and sustain elearning systems and practices. Broadly, the issues are pedagogical, cultural and technological. A key point is that senior managers need to reflect on a range of related issues at a departmental or institutional level prior to implementation of new elearning systems. However, experience elsewhere shows that, although such reflection may prepare for many eventualities, there are almost always unexpected outcomes that require the flexible and agile organization identified above by Demirkan et al (2010) to generate an appropriate, timely response. It is unfortunate that these two adjectives – agile and flexible - are not commonly used to describe the organizational structure or processes for responding to innovations in universities.

Reuse of student-generated resources, which are added to a digital repository following review and addition of meta-data by specialist staff, is an example of pedagogical innovation cited by Breslin et al (2007). While this is becoming an increasingly popular concept among elearning enthusiasts, it seriously challenges tradition, and even professional identity for later adopters. Putting these cultural challenges aside for now, a question that remains unanswered is how the proof of concept stage for innovations is managed to ensure elearning systems are the best they can be in terms of educational potential and ease of use by different target groups. Breslin et al (2007) note that proof of concept was achieved, and designs refined through ongoing evaluation involving staff,

students and objective data, which suggests good process but would benefit from fuller description. However, the kind of 'special attention' afforded by project resources is not present in normal circumstances, so the fitness for purpose of most elearning tools may be less well refined than it was in the cases involved in the study. Other success factors that receive less attention without the boost of institutional or national funding include strong project management to overcome cross-disciplinary and cross-functional differences. Pedagogical integration is identified as the most problematic issue, and could be expected to present significant barriers to wider use where dedicated support is not available. Another major question unanswered by Breslin et al (2007) as well as other published works, is what happens after the (often substantial) project funding runs out? Support from central university services is proposed, and a business case anticipated, but not actually presented. The authors also note that usability issues would need to be addressed for wider use to become feasible. Integration with enterprise systems has been achieved, although any changes such as new versions or upgrades would need to be addressed. What is not clear is where the mandate or resources to address these and other significant issues will come from.

Dede (2003) reinforces the point about the positive effects of dedicated resources on the success of elearning projects. He describes an initiative where investment in digital infrastructure was a key enabler of general improvement in the educational and professional development prospects in an American school district. In a study of ways the initiative can be scaled up, the author also identifies key questions that need to be answered to claim general applicability. Two significant points are that common purpose and shared vision brought various stakeholders together to solve a practical problem, so barriers to understanding, perceived relevance or the project gaining traction were likely to be absent. The other point is that a high profile researcher with external funding was instrumental in leading the initiative. This created an ideal set of circumstances that are unlikely to exist in institutions pursuing local elearning initiatives, however great the available technology resources are.

Dede (2003) also notes how organizational 'climate' and 'politics' influence progress, and that momentum was lost when school board members changed and a new agenda required refocusing of objectives. Stability and continuity were thus identified as additional success factors. A key strength of the initiative described was that data driven decision-making became instrumental in achieving the goals of improved student learning outcomes and increased organizational effectiveness. However, further research was needed to identify the types of data that would provide reliable evidence to support scalable, sustainable strategies for improvement for practitioners and policymakers. Further research is also needed to identify the conditions that contributed to success with generalizing improvements to other districts. So while this is an interesting successful case, it offers insufficient evidence to support general application, and corroborating evidence from further cases is required.

It's business – but not as usual

In a study of an initiative to embed blended learning in a university's teaching culture, Davis & Fill (2007) also endorse the benefits of the 'special attention' factor of project funding and dedicated staff. They describe the challenges that results when 'champions' retire or move on, and are replaced by staff with less knowledge or enthusiasm for the initiative. Faced with many demands on their time and not fully briefed about why and how particular approaches have been adopted, incoming staff may drop or reduce elearning components. They may be unable to defend the approach to colleagues or students. For those who continue on, there may be issues with maintaining and updating digital resources, especially if the information technology infrastructure changes, or the development and technical support initially provided through project resources is no longer available.

Those who subscribe to the promise of the 'learning object economy' promoted by authors such as Duncan (2004) and Campbell (2003), might respond to concerns about continuity by advocating reuse and repurposing of digital learning resources created by others and made available via centrally managed repositories. However, Davis and Fill (2007) noted that this approach to elearning was far from mature in the UK higher education sector, and in their experience, did not address the real needs of teachers for simple ways to adapt resources created by others without support from technical specialists. Gunn et al (2005) present a case study to illustrate the point, which Johnson (2003) endorses in a paper reporting the outcome of a meeting of thought leaders and practitioners from North America and Australia to discuss the state of play with reusable learning objects. In the latter case, a group came together to identify the systemic challenges inhibiting the realization of a functional economy in learning objects. The purpose was to explore the components of such an economy, and to identify obstacles impeding a reality where learning objects are created and shared, not only within sectors, but also across education, government, business, and national borders. The following quote sums up the discussion.

No one at the meeting described the current level of activity as pervasive. Discussions over the two days focused rather on how to make the effort reach a tipping point... The issues with the

learning object economy are content, content, and content. Unless we create an economy of content in which individuals and organizations can acquire, adapt, and repurpose content, the industry won't be successful, Johnson (2003, p7).

With hindsight, it is fair to conclude that the potential of the learning object economy has faded from view because its champions did not prioritize this pragmatic approach, and therefore, failed to reach a tipping point.

Fostering sustainable change

It is clear that sustainable change is a very different proposition to the special attention and resource richness of a funded project environment, and there is valuable experience within the sector to show how it can be achieved. However, it is also evident that this experience is not currently reflected in the policies and practices of funding bodies or recipient institutions. This mismatch is reasonably widely acknowledged, and there are cases that show how it can be addressed. For example, JISC, the UK-based sponsor of a Digital Libraries initiative aimed to ensure that changes made as a result of the project were embedded in the culture of participant institutions by requiring projects to continue for a further 2 years after 3 years of funding. The paper by Davis & Fill (2007) cited in the previous section was written during the two-year extension phase, and it would be interesting to revisit to see how it has survived five years on. The experience of the project revealed a number of factors that were considered critical to success in embedding the changes that the project funded. Active involvement of senior management is one such factor. While it may be easy to secure the letter of support that funding bodies require from senior management to indicate institutional commitment to projects, this often means little more than agreement to allow the project to go ahead without payment of overhead charges. As Lefoe & Parrish (2008) note in their report on an educational leadership capacity building initiative, senior managers need to be more actively and proactively engaged than this to make a difference. However, further challenges arise when the competing priorities and perspectives of senior managers come into the picture.

Challenges also arise from the recommended scale of change. The approach taken by Davis & Fill (2007) involved a complete curriculum review rather than changing a single module within a programme. The review supported identification of suitable places to include the elearning innovation that was the focus for the project. Selection was determined by the ability to serve specified learning outcomes and availability of suitable teaching staff as well as a range of other contextual factors. The challenge of bringing staff from an entire school or department on board is obviously greater, but so are the resulting benefits if the approach succeeds.

Funding is another critical success factor. Davis & Fill (2007) say their project would not have happened without external support. Although staff may be ready to change, they are not supported to take the risks involved in transformation. Support at the point of need is important, yet most universities offer support for elearning as a standardized central service. The limits on what is supported through this type of arrangement combined with the reluctance of central units to expand services and take on new systems is problematic. Staff need immediate support to allow them to continue their work uninterrupted. Many benefits accrue from funded projects, and a new service model that accommodates this type of innovative work is therefore required.

Collaboration is important for both obvious and unexpected reasons. In a collaborative project, it is reasonable to expect development effort to be shared and resources to be reused. Davis and Fill (2007) note that this happened to some extent, but that some benefits of collaboration were more subtle than anticipated, i.e. when working with staff from different departments across the institution helped project team members to gain confidence to deal with challenging times through a common sense of purpose. The authors also report on aspects of the project that didn't work so well, and these roughly reflect the absence of the various factors noted by different researchers as critical to success.

A holistic model for change

While describing a holistic approach to sustainable change, Buchan (2010) notes that only general references to the limitations of institutional support appear in the elearning literature, and explains this as a possible result of the historical separation of management and support from decision-making and use of ICTs. She introduces the concept of panarchy as a holistic approach to project management that offers a broad institutional perspective, while also centralizing the role of the individual. She defines panarchy as:

... a systems analysis tool for describing and understanding the dynamics and complex inter - relationships of multi-scale institutional projects and the influences of a variety of factors on the learning environment, and on the potential success of elearning initiatives (Buchan 2010, p55).

Panarchy is presented as one of five heuristics in a social-ecological systems approach, which the author uses as the basis to develop a tool for para-analysis. The 'para' element of the analysis involves looking beyond the normal organizational perspective on project management to assess the potential impact of projects as well as physical and financial criteria to support decision-making around educational technology investment and support. The process is described in the context of an institutional case study, and involves mapping events and creating a visual representation of a system over time and space.

Four broad guidelines to sustain elearning initiatives include:

- Sustainable funding and IT services models
- A centralized project based approach to educational technology implementation
- A multi-stakeholder approach to managing the implementation of elearning
- Mainstreaming support after the project phase.

Buchan (2010, p73) concludes that this model also supports the decision that some technologies have to remain on the 'virtual horizon' until they can be properly resourced and implemented, and users can learn to use them effectively. There is, however, no description of the decision-making process or who would need to be involved.

The leadership challenge

All articles featured in the literature review for the current study either explicitly or implicitly point to the agency of strong and informed leadership for elearning innovations to become transformational, both across the higher education sector and within its institutions. While acknowledging that leadership and management are very different roles, the reality is that most universities are hierarchies where power and decision-making reside at the top level. It is therefore reasonable to assume that senior managers have a key role in decisions around elearning. In this context, the findings of a UK study commissioned by JISC (Duke, Jordan & Powell, 2008) give cause for concern. The study found that managers who combine a deep understanding of technology with senior management experience remain uncommon in the sector. The situation where management teams rely on collaboration between individuals with complementary skills to provide insight into the actual and potential contribution of technology to the strategic aims of the organization sounds fine on paper. However, in practice, these groups rarely include, or are influenced by front line teachers, despite them being the ones most deeply affected by decisions about technology, and having first hand experience for the organization to learn from. Gibbs & Gosper's (2006) article on the 'upside-down world of elearning' highlights the need for their voices to be heard and influence brought to bear. Otherwise, a worst possible scenario is that elearning will (continue to) be dominated by politics, power and the unrepresentative perspectives of people with limited experience of the workable nature of the elearning environments they are responsible for creating.

To paraphrase Gibbs & Gosper (2006, p51-52), unless educators play a more prominent role in the design of elearning systems and tools in the future, the sector will continue having to cope with the narrow view of education and pedagogically weak designs that are reflected by the capabilities of current systems. Technologies need to be able to accommodate the philosophical underpinnings, as well as the very broad range of activities that characterize teaching and learning environments. The authors equate the experience of using the currently common LMS as 'attempting to teach in a straightjacket', and quote an earlier study where the 'pedagogical awkwardness' of commercial systems led the author to develop his own simple system (Gibbs & Gosper 2006, p47). While the original statement was made some time ago (1999) many practitioners would relate to it today. Institutions should ignore the warning at their peril. Many academics are perfectly capable of pursuing independent courses of action, and in doing so, undermine the institutional objective to achieve standardization through the provision of secure and centrally supported enterprise elearning systems. This risk will exist as long as enterprise systems stifle innovation, as Kuriloff (2001) suggests they do.

Since Gibbs & Gosper's article was published in 2006, an explosion of free software and social networking tools has increased the range of opportunities for teachers, and with it, the risks to institutions, which can neither stop nor control the tide of elearning innovation. To 'put the right side up', effective communication between software developers and educators is one necessary step, which they believe professional development for all parties may facilitate. In a few universities, people in these roles are co-located in an attempt to raise mutual awareness and increase collaboration, though this model is rare beyond specialist elearning units. Learning design is considered a key role for the future, as it can mediate between the technology and the pedagogy of

different disciplines. However, until educators can articulate their teaching and learning needs more clearly, and software developers broaden their understanding of elearning environments and processes, the transformative potential of technology is unlikely to be fully realized. A major challenge is developing the strong and informed leadership capabilities that can steer institutions towards achievement of these objectives.

Working within the system

While innovation and user choice around elearning is definitely to be encouraged, there are clear benefits to framing these opportunities within existing systems. Gosper et al (2007) report on a project involving software selection in the context of curriculum redesign for a university program. The aims were common to those of many initiatives, i.e. to improve learning outcomes, and to increase flexibility of access and approaches to teaching and learning through the use of a variety of software packages and digital resources. It was important to ensure the solutions adopted were manageable within the existing infrastructure of the department and the university so support and maintenance issues did not become unmanageable. The selection process worked out for this case study led to the development of three instruments, which now offer a generally applicable CICTO (curriculum, ICT and organization) framework for selection and integration of software solutions. Key points to consider on the pedagogy dimension include support for an appropriate instructional methodology, integration, interaction, efficiency, effectiveness, value added and feasibility. The technical dimension focuses on process management, assessment, content creation and management, user management, usability and growth potential. Organizational factors are administration and interoperability, financial and asset management, policy compliance, support requirements, workload implications and risk management. These three instruments offer comprehensive support for faculty and academic support staff in selecting elearning tools and systems. They require discussion with technical and development staff, so may serve the additional purpose of raising mutual awareness among the different parties involved. Because they define key decision points that guide user choice, they can also be used as sustainability criteria for developers of elearning systems and tools, to ensure they would pass the selection test in institutions where similar processes may be in place. While the principle of working within the system could be interpreted as being limited by what it already offers, the instruments and processes devised by Gosper et al (2007) actually offer development potential and opportunities for organizational learning, which is a subtle but significant difference.

The future of elearning

Like all educational innovations, the future of elearning has frequently been questioned and remains contested in some quarters. At a time when major investment in online or e-universities was failing, Cronje (2006) rightly asked 'who killed elearning?' This marked the end of a period of intense, and with hindsight, totally unrealistic speculation about the potential profits from online education. Such aspirations are a common response to the introduction of any new technology. Early adopters and entrepreneurs rush in to explore the potential. When the period of speculation ends, practitioners with more realistically focused aims can explore the real educational value of various approaches and areas of application of elearning (or whatever educational technology is called). However, it is easy to see how senior management perceptions of the potential of elearning will be shaped by early experience, and endorsed by the limited success rate for funded projects that receive no support after an initial research and development phase.

Cronje (2006) points to misalignment of objectives and needs, contending that return on investment was the over-riding aim, when learning design, management and learning needs should have been equal or higher priorities. He also notes that target markets must be understood, and demand realistically forecast, and uses Khan's (2005) framework for elearning, which focuses on pedagogical, technical, interface design, evaluation, management and support, and ethical and institutional issues to elaborate the point.

When speculation dies down and more realistic expectations come into play, the management tendency to ignore, or even oppose elearning becomes problematic (Cronje 2006, p4). Failed expectations are one common cause of this, and limited understanding a driver. Coherent and concurrent elearning and change management strategies are required, although these can hinder or help, depending on how they are developed and implemented. The common practice of developing strategy at the centre without sufficiently broad consultation brings the problems of low practitioner involvement (Gibbs & Gosper 2006) and limited management knowledge (Duke, Jordan & Powell 2008) to mind. Further reference to McGraw (2001) highlights how poorly informed many approaches to the challenge of sustainable elearning are, and how easily management led strategies can overlook critical elements. In McGraw's paper, the omission is any significant focus on learning needs. For Broadbent (2001, cited in Cronje, 2006) the missing element is logic to a case that cites examples of failed technologies to justify the likely success of the latest innovation (the internet).

Cronje suggests taking the 'e' out of elearning, and returning to the core principles of learning'. For this, he proposes a blend of two approaches, i.e. the ADDIE model of instructional design with the balanced scorecard as a business model. He calls the result the learning scorecard; an integrated model for planning learning interventions that will be aligned with business objectives. However, the strength of his case, which is speculative rather than evidence based, is challenged, when he contradicts his own argument with this quote:

A successful project is just 20% technique and 80% tactics... no matter how much we try to analyze factors that lead to successful implementation or sustained use of technology in education... it always comes down to human aspects that are simply impossible to quantify
Romiszowski (2004, p24).

Cronje (2006, p6) ends with a comment that no one mourns the 'death' of elearning, and as far as the RoI driven movement is concerned this is probably true. For the educational community however, this 'death' marks the beginning of an era of opportunity to explore and exploit real educational potential without the shadow of profit motives and speculation distorting expectations, but with the legacy of failed expectations to overcome.

The problem with innovation

To conclude this overview of key concepts from the literature describing attempts to manage and sustain elearning innovations in universities, it is useful to follow Cronje's lead out of the discourse of education and into the business environment where innovation has been an integral feature for many years. In their seminal work *A Passion for Excellence*, Peters & Austin (1985) note that innovation has always been an uncertain and messy affair. Rather than attempting to control it, they propose designing organizations that take account, and even take advantage of the unpredictable and 'sloppy' nature of the process. Most organizations pursue tidier plans and better-organized teams to 'beat the sloppiness' out of the process, regardless of the fact that this approach has never proved successful in either business or elearning. A better approach would be for managers to learn to create organizations that can respond to, and support innovations. Peters & Austin (1985 p119-120) examine common myths about innovation that need to be dispelled for this to happen. While these were written in a different context, they apply equally to elearning, i.e:

- Substantial strategic / technological planning greatly increases the odds of a 'no surprises' outcome
- Complete technical specs and a thoroughly researched market plan are invariant first steps to success
- Time for reflection and thought built into the development process are essential to creative results
- Big teams are necessary to blitz a project rapidly, especially a complex one
- Customers only tell you about yesterday's needs

A quote that is frequently echoed and worth remembering is that:

The initial use and vision for a new product or service is virtually never the one that is of the greatest importance commercially (Peters & Austin 1985, p123)

Innovations require very different types of organizational structure and process to that commonly found in universities. Returning to the problem of how funded elearning projects, as instances of innovation, can be transformed into sustainable products, there are some clear implications, but with apparently limited ability for institutions to act on them. To use an analogy from the business world, if projects were seen as the research and development phase of new products, which is essentially what they are, then sales, marketing and technical experts would step in to take them to the next level once proof of concept had been achieved (Gunn 2010, p98). Instead, when funding runs out, if the research and development team has not managed to devise a business model for a sustainable future, then valuable creative work and experience is left to founder.

Case studies and conclusions

This paper has outlined the first stage of a study of the 'state of the art' at the end of the first decade of the 21st century for ways to address the challenge of sustaining elearning innovations. Common problems with attempts to manage the innovation process are identified. One problem is a lack of knowledge among senior managers and decision-makers of what is actually involved in promoting the transformational change that elearning represents. Most of the literature cites management support as critical to success, so the problem is significant. Another challenge is the lack of mutual understanding among different players, i.e. technical staff and software

developers, institutional leaders and managers, and teachers and learning support staff. A major barrier to progress is the failure of institutions to learn from the experience of their lead practitioners, or to respond to the needs of valuable educational innovations that exist outside the enterprise system suite of elearning tools. Where these innovations start as funded projects, the lack of ongoing funding and support, or ways to operationalize project outcomes results in low return on investment in both financial and knowledge building terms.

A range of proposed innovation management processes has been identified in a literature review. Analysis of a series of case studies is now in progress to see how these align with practitioner experience. Preliminary results show that initiatives that make a successful transition from funded start up to sustainable product are few, and typically involve exceptionally skilled leaders. Many of the attributes described by authors cited in this paper are present, i.e. adaptability, usability, fit for purpose and a sustainable business model. The most promising current approach combines open source and commercially hosted service, though some systems are purely open source, and a few purely commercial. While all the cases included in the study began as funded projects in some sense, the culture of the institution played a major role in subsequent development. There is, however, an emergent trend for collaboration across institutions that helps to transcend the limitations that arise from the local context of a single institution. Attempts to limit and control access to technical systems are thus being overcome.

The literature review provides the basis to draft guidelines to support sustainability prospects for innovations that prove to be educationally beneficial, technically feasible and practically possible. Development of the guidelines is progressing, using a collection of case studies of successful, stalled and struggling innovations to test usefulness in a range of practical situations. The higher education sectors and institutions in many countries have supported a project-based approach to elearning innovation for the last half a century. Many reports claim the model is flawed because inadequate provision is made for sustaining initiatives after funding has run out. Yet many excellent developments have resulted from the funded project model, and as yet, no viable alternative has emerged. The proposition emerging from the research described in this paper is that it is not the model that is flawed, but the institutional structures and responses that must change to accommodate successful outcomes.

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