

LASO, LAMS and learning designs: Reflections on strategic change in digitally-enhanced learning environments

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The LAMS system and learning designs can be seen as disruptive technologies or learning strategies to change pedagogical practices in Higher Education. These can also, however, operate to sustain conventional pedagogical practices. What are the critical issues when implementing institution wide learning strategies like using learning designs and LAMS to support a digitally enhanced pedagogical environment? LAMS and learning designs relate closely to the writer's PhD (2000) that focussed on the implementation and management of digitally enhanced learning in Higher Education, during which he developed the LASO (Leadership, Academic and Student Ownership and readiness) change management model for e-learning. This model addresses the distributed nature and human issues present in change within a digitally enhanced pedagogical environment. The LASO model is grounded in literature on change management and educational management. The paper uses a comparative analysis of three case studies over nine years in which learning designs are considered that reaches beyond the doctorate research. The paper further reports on work done regarding learning designs at Charles Sturt University, Australia over the last year as well as on issues of a possible enterprise rollout of learning designs and LAMS at Charles Sturt University (CSU).

Keywords: LASO, LAMS, change, learning design, digitally-enhanced learning environments

Introduction

The pursuit of strategic change in digitally-enhanced and Higher Education learning environments has become widespread internationally with the extensive pervasiveness of the Internet and the perceived advantages to Higher Education. The resultant wide use of e-learning in Higher Education has made it imperative to understand what the critical issues are when implementing enterprise wide learning strategies, ie strategies to improve learning, such as learning designs and learning objects to support a digitally enhanced learning environment. Bates (1999) concurs that by using technology for teaching such as LAMS (2006), universities can serve the public more cost-effectively and in particular can prepare students better for a technologically based society.

Examples of definitions of learning designs include 'modelling units of study' (Koper, 2001), 'people doing activities with resources/environments' (Sloep, 2002), 'a description of a method enabling learners to attain certain learning objectives by performing certain learning activities in a certain order in the context of a certain learning environment' (IMS, 2003). Dalziel (2005) indicates 'While definitions of Learning Design vary, the main elements tend to include greater focus on 'context' dimensions of e-learning (rather than simply 'content'), a more 'activity' based view of e-learning (rather than 'absorption'), and greater recognition of the role of 'multi-learner' (rather than just single learner) environments.' Dalziel (2006) further sees the key to Learning Design as 'Re-usable sequences of collaborative learning activities'.

Learning objects on the other hand can be defined as 'any entity, digital or non-digital, that may be used for learning, education or training' ([IEEE Learning Technology Standards Committee 2001](#)). Another way to describe a Learning Object... [is] 'any digital resource that can be reused to support learning.' Examples of larger reusable digital resources include entire web pages that combine text, images and other media or applications to deliver complete experiences, such as a complete instructional event' (Wiley, 2002). The Wisconsin Online Resource Center (2005) postulates that 'learning objects is a new way of thinking about learning content. Traditionally, content comes in a several hour chunk. Learning Objects are much smaller units of learning, typically ranging from 2 minutes to 15 minutes.'

Enterprise-wide strategic change in digitally-enhanced learning environments has major systemic implications and needs to be carefully managed as Drucker (1998, p100) points out: '... as soon as a company takes the first tentative steps from data to information, its decision processes, management

structure, and even the way it gets its work done begin to be transformed.’ Attempts to introduce any significant reform in institutions will impact on most, if not all, of its sub-systems. Bates (2000, p196) contends, ‘...using technology to extend the campus on a global basis will affect all aspects of a university or college, but particularly administrative systems’. Fullan (1991, p349) refers to the necessity of looking at innovations within the framework of institutional development.

Thomas, Carswell, Price and Petre (1998) argue for a transformation of practices (both teaching and administrative) in order to take advantage of technology so as to provide needed functions, rather than superficial translation of existing practices. Bates (1999) argues that the introduction of e-learning, of which LAMS may be a component, will prompt ‘...a thorough re-examination of the core practices of an organization, whether advertising, or registration, or design and delivery of materials, or student support or assessment of students, in order to arrive at the most effective way of providing these services in a networked, multimedia environment.’

Managing change for enterprise-wide transformation in general and in Higher Education in particular is, however, problematic since people are central to the process, and it is therefore necessary, as Fullan (1991, p350) suggests, ‘... that we explicitly think and worry about the change process’ in educational reform. The LASO (Leadership, Academic & Student Ownership and readiness) Model (see Figure 1) (Uys, 2001) was developed in response to this imperative. The LASO model highlights the importance of integrating top-down, bottom-up and inside-out strategies to achieve sustainable technological transformation. Inside-out strategies (Earl, 1989) acknowledges the central importance of people in the transformation process. The LASO model might provide a framework for the enterprise-wide implementation of learning designs and systems such as LAMS.

The LASO model was developed over five years from 1995 during the doctorate research of Uys (2000) and is grounded in literature on change management and educational reform. The paper uses a comparative analysis of three case studies of the implementation of the LASO model with reflections on learning designs over nine years. These case studies are the e-learning implementation on the Wellington campus of Massey University, New Zealand from September 1995 to December 2000, a five-month consultancy in 2000 at the Cape Technikon, South Africa to lead the enterprise-wide wide implementation of e-learning, and four years of implementing e-learning at the University of Botswana to January 2005.

The LASO Model is situated within the dynamics of educational reform and the implementation of innovation, such as learning designs and LAMS in educational settings.

Background

Educational reform and transformation

There is no neatly formulated theory of generic and enterprise-wide change (Goodman & Kurke, 1982). Cannon (1986) further points to the absence of a general theory of educational development and notes that educational developers therefore draw on theories from other disciplines to inform their educational practice.

Higher Educational institutes in general are very conservative and have been highly resistant to change and reform over the centuries (Evans & Franz, 1998 April; Richardson, 1979). Educational institutions in general ‘...which exist to open minds and challenge established doctrine, are themselves extremely resistant to change’ (Robbins & Barnwell, 1998).

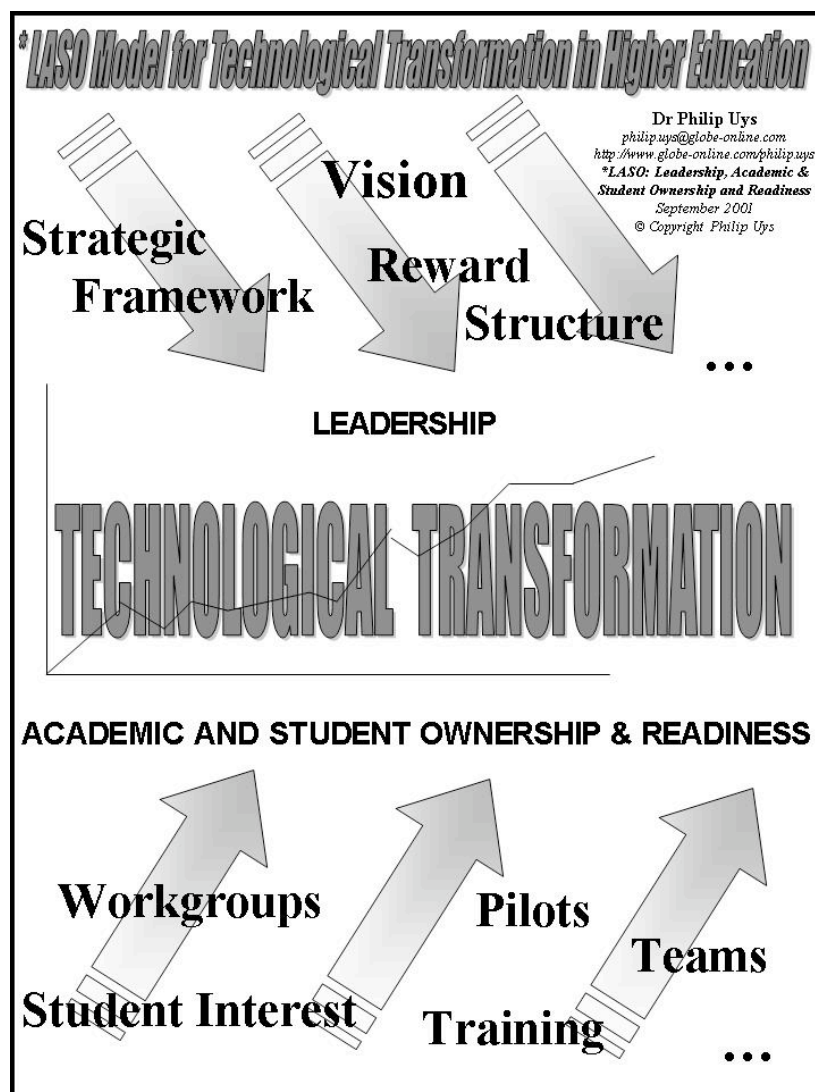


Figure 1: The LASO model

Technological innovation in Higher Education has often been implemented as an isolated, bottom-up initiative of academic staff for efficiency purposes. In this scenario the wider systems within Higher Education are often not considered and neither affected by the innovation. Enterprise-wide transformation is highly unlikely in this scenario and would be very fragile.

An enterprise and all its subsystems need to be considered when considering true strategic change in digitally-enhanced learning environments. Systems theory calls for an integrated approach to educational and technological innovation: 'a system is a whole that cannot be taken apart without loss of its essential characteristics, and hence must be studied as a whole' (Ackhoff, 1972, p40).

Technological innovations have also experienced difficulty in education because of a problem that Michael Porter calls 'metrics' (Pastore, 1995). Higher Education, similar to other sectors of society, has often responded to new ICT applications on the basis of efficiencies rather than using more strategic considerations. Institutions might thus incorrectly focus on whether LAMS, for instance, would increase the pass rates of students in the short term, instead of considering whether the quality of learning would be increased. Porter (Pastore, 1995) describes this problem as follows: 'The traditional criteria by which IT applications have been chosen have been ones of operational effectiveness—How many people can we save? How much faster can we process things?—rather than more strategic measures, such as how much have quality or service levels gone up'. Fullan (1991) further refers to first order (or first level) and second order (or second level) changes to explain this phenomenon. He believes that most changes in

education in the twentieth century have been first order changes, which are aimed at improving efficiency and effectiveness of current practices.

The structures supporting technology-based education have to ensure an educational focus and pre-eminence of educational principles rather than administrative desires or technical possibilities. Caladine (1993, p7), who reviewed the literature on non-traditional modes of delivery in Higher Education using state-of-the-art technologies, indicates that the extensive use of ICT in education ‘...poses previously unencountered problems in pedagogy and andragogy’.

The LASO Model draws on the work of Tillema (1995) who considered engaging academics in the reform process as one of the two significant management issues to address in educational reform and in education in general. He asserts that reform has to be based on the development of ‘learning communities’. That means that the actual process of reform must engage academics in local communities of discourse about their educational practices including the design of learning activities. Learning activities can be described as any action that students might take to learn; such actions can range from being involved in a CHAT session to studying materials on their own. Tillema further points out that historical studies, based largely on experience in schools, show that ‘top down’ attempts to achieve educational reform have failed, and suggests that they will be doomed to failure until they ‘confront the cultural and pedagogical traditions and beliefs that underlie current practices and organizational arrangements’ (Goodman, 1995, p2). In strategic change in digitally-enhanced learning environments, it is therefore critical to address the concerns and perceptions of academic staff in the light of the need for changing their attitudes and to ensuring ownership by academic staff (Evans & Franz, 1998 April; Taylor, Lopez & Quadrelli, 1996). The bottom-up approaches of the LASO model give expression to these views. Ownership of the strategic change in digitally-enhanced learning environments by academic staff is indeed a key value in the LASO Model. This also highlights the importance of following both top-down, bottom-up and more organic approaches during strategic change in digitally-enhanced learning environments in Higher Education.

The LASO Model proposes that the reward systems be tied to engagement with the processes that facilitate the desired reform. Hanson (2003) found in the implementation of e-learning that ‘...academics need to see that putting effort into changing their teaching practice is valued and that the effort is rewarded.’ To enable enterprise-wide strategic change in digitally-enhanced learning environments in Higher Education, it needs to be identified as a strategic objective and direction, and the reward systems then need to be tied to its implementation, as put forward by Munitz (1997). One of the more common ways of doing this in UK universities has been to establish a teaching award scheme (Hanson, 2003) similar to those popular in the United States (Gibbs & Habeshaw, 2002). The institute’s reward systems should encourage academic staff and students to become and remain involved in the use of learning designs if it desires to implement planned and re-usable learning activities on an enterprise-wide scale. Marquardt (1996, p97) contends that ‘one of the most powerful management principles in the world is “That which gets rewarded, gets done”’.

Innovation and transformation

The LASO Model links to the notions of diffusion of innovations as the core of strategic change in digitally-enhanced learning environments; there is no transformation without innovation. An innovation, like the use of learning designs and LAMS can be described as ‘...an idea or behaviour that is new to the organization adopting it’ (Swanson, 1994, p1070).

The LASO Model incorporates, besides its emphasis on bottom-up processes, a strong top-down innovation process. Drucker (1985) points to the importance of a top-down process given that successful innovation aims at leadership. He believes that if it does not aim at leadership right from the outset, it is unlikely to be innovative enough, and therefore unlikely to be capable of establishing itself on an enterprise-wide basis. This statement is made within the context of the private sector, but with the increasing competitive nature in the Higher Educational milieu this assertion is becoming increasingly relevant to Higher Education. Szabo, Anderson and Fuchs (1997) who reported on strategic change in digitally-enhanced learning environments in Higher Education at the University of Alberta, Canada similarly suggests a strong top-down approach:

There are two major intended goals of TIES [Training, Infrastructure and Empowerment System]. The first is that the chief academic officers identify a vision for alternative

delivery systems of instruction for the university, publish that vision widely, and demonstrate their commitment to it in a clear and convincing fashion. Secondly, departments within the university create leadership task forces to interpret the vision for their unit and prepare colleagues to implement the shared vision.

The LASO Model, as discussed above, also proposes powerful bottom-up approaches based on the Innovation Diffusion Theory (Rogers, 1995; Mahony & Wozniak, 2006) that provides a general explanation for the manner in which new entities and ideas like learning designs over time disseminate through social systems, in this case Higher Education. Rogers reviewed studies of diffusion of innovations from many technological contexts and forwarded a model for adoption of innovations describing key roles and behaviours in the adoption. Innovation diffusion theory is essentially a bottom-up approach based on individual activities and acceptance. Initially there is a take-off stage (that is introduction) during which an innovation is introduced in a social system. An entrepreneurial group called the innovators often then adopts it. During the next phase of maturation the 'early adopters', who are change agents or opinion leaders among the social system, will enter the process thereby legitimising the innovation and opening the potential for adoption to all members of the system. The final saturation stage in an innovation's adoption is characterised by widespread adoption. The innovation saturates the social system and growth tapers off. This process can be plotted as an S-shaped growth curve. Everett Rogers, however, indicated that a top-down approach could be inferred if the innovation starts within senior management (Rogers, 1998) This would allow for both top-down and bottom-up approaches to integrate and has a higher probability for enterprise-wide transformation.

Innovation in Higher Education – as with most innovations - takes place within the context of organisational and management structures. According to Daft (1989, p274) '... organic organizations encourage a bottom-up innovation process' which is seen as typical for technological innovation. Daft (1989, p274) however also indicates that administrative innovations follow a top-down direction of change within a mechanistic management structure. Daft (1989, p570) observes that '... the trend over the last thirty years has been toward more organic structures' which he partly attributes to '... greater environmental uncertainty and nonroutine technologies'. In contrast, it seems that conventional management of Higher Education does not provide the required organic structures that foster innovation for enterprise-wide benefit. Fullan (1991, p349) refers to this dilemma as the tension of '... combining individual and institutional development...' and the necessity of having both in tandem for successful educational change.

The LASO Model further aligns itself with Stace and Dunhy (2004) as well as Gunn (1998, p142) who emphasise the importance of using top down and bottom-up approaches in tandem:

An effective technology strategy works in both directions. From the top down, it is articulated through institutional objectives, sensitive to existing culture, constraints, strengths and weaknesses, and presented as a coherent, achievable set of goals with appropriate incentives and rewards. It must also move from the bottom-up where knowledge of teaching strategies, learning contexts and disciplinary expertise can be translated into action plans geared to achievement of institutional strategic objectives and so creating a sense of ownership at all levels of the institution.

LASO, learning designs and educational reform over the last decade

The LASO model emphasises the necessity for top-down, bottom-up and inside-out approaches to be integrated. It further posits that the diffusion of innovation curve has a ragged contour given the complexities of change management and reform within Higher Education. Learning designs have played roles of varied significance in the implementation of e-learning in the four cases to be reported on. The LASO Model has been used during the last decade at Massey University at Wellington, New Zealand (from 1995-2000), at the Cape Technikon (in 2000) and at the University of Botswana (2001 to 2005).

Integrating top-down and bottom-up strategies

Top-down efforts need to occur within a strategic framework for diffusion to be effective. At Massey University the president was the sponsor of the project but the project was not viewed as being of strategic importance; this led to limited diffusion. Learning designs in the e-learning project on the

Wellington campus of Massey was informal and deliberate. There was not formal learning design documentation except for the subject outline that contained learning outcomes, assessment information and the like. The online subjects were deliberately designed to be done in any order by the students. There were no prescribed sequence of activities but a range of possible activities was provided. A particular subject was designed so that students could do the subject in any of three different ways. Students could start with the narrative or with discussions or with the assignments and work their way to the other components. Other subjects were very content oriented but provided different navigational paths for students through the use of mind maps.

At both Massey University and Cape Technikon, however, the level of resources made available would not have been possible without senior management and middle management support. Furthermore when typical political problems like natural resistance to change were encountered, senior management was able to step in and direct matters. Middle management, that is heads of academic and administrative departments, played an important role in controlling resources; in some cases in a positive way and in other cases in restricting support. At Cape Technikon where the initiative was regarded as one of strategic importance, the top-down strategies included the creation of a widely owned strategic plan that included a clear and unified vision, having the vice-rector as sponsor and a task group with wide and senior representation as a sub-committee of Senate. The use of learning designs and learning objects were not included in the change management strategies and could, in retrospect, have led to major educational change. Learning designs was informal and intuitive and therefore not as effective as it might have been.

A high level summit on e-learning was held, an extensive business plan was developed which was approved by the finance committee of Council, a presentation to Council was made and fortnightly input was provided at senior executive meetings. This created a strong top-down impetus and the creation of a reward structure by means of a central fund that encouraged participation, which confirmed the view of Berge and Schrum (1998:35) that the key to success of campus initiatives in technology-enhanced learning and distance education is the support of campus leaders.

At the University of Botswana the Vice-Chancellor created two new positions in the writer's department which was vital for e-learning to spread namely an instructional designer position and that of graphic designer. The Deputy Vice-Chancellor (Academic Affairs) was the sponsor of the e-learning Initiative at the University of Botswana (UBel) and was available to discuss emerging issues as well as being instrumental in the formation of the UBel Team, that is the e-learning implementation team.

The instructional designer at the University of Botswana ensured that learning designs were central to the e-learning initiative. A 'subject concept' or learning design was created for every subject that was developed for online delivery. The aim of the subject, its objectives, assessments, learning activities and support provision were specified. The use of explicit learning designs in many instances led to education change as academics carefully planned student engagement with the subjects.

Running regular workshops on relevant aspects for academic staff members was an effective bottom up strategy at both Massey University and Cape Technikon. At Cape Technikon and the University of Botswana the bottom up strategies further included using pilots to create successful role models in each faculty. At both the Cape Tech and the University of Botswana the library holdings on e-learning were aggressively extended. The focus was more on e-learning than on educational reform through learning designs.

At the Cape Technikon possible research topics in e-learning were circulated to academic staff, an e-learning seminar week was held, information sessions in each faculty were conducted and a project team with wide representation concerned themselves with the operational matters of the diffusion. Furthermore a centre for e-learning was established at Cape Technikon, regular news items appeared in the campus newspaper as well as in the Alumni and student publications. A library exhibition on e-learning was organised, departmental meetings on e-learning were encouraged, e-learning was linked to other thrusts within the organisation, and extensive conferencing occurred on an individual level with interested academic staff members. These strategies led for example to an overwhelming response of 40 proposals for pilot projects at the Cape Technikon. At the University of Botswana a widely representative implementation team, the UBel team met monthly to consider implementation issues. The writer further brought together interested staff to form an informal e-learning research group that worked together to publish a number of papers. In hindsight, the promotion of learning designs could have led to deeper educational change.

Bottom-up and top-down strategies converged at Cape Technikon at faculty level in the workgroups that were established under the leadership of the deans in each faculty and chaired by an enthusiastic and capable academic. Each faculty workgroup consisted of keen academic staff members and further had wide representation including administration, the information technology group and the Centre for eLearning. At the University of Botswana the University of Botswana Educational Technology and eLearning (UBel) Committee comprised representatives of all the faculties and relevant divisions including the Library, Information Technology, the Centre for Academic Development, and the Centre for Continuing Education. A team approach in which academic staff plays a key role as content experts seems to support ownership by academic staff of the transformation. The dominant team-approach for the development of distance and e-learning materials (Bates, 1993, p232; DEC Working Party, 1989; Garrison, 1989, p98&117; Holmberg, 1995) was therefore a key bottom-up approach.

On reflection, more focus on learning designs and learning objects could have turned these projects into vehicles for educational transformation at Massey University, Cape Technikon and the University of Botswana.

Inside-out strategies

The LASO Model further includes inside-out strategies that attempts to address perceptions, attitudes and behaviours of students, academic staff and project teams in Higher Education and further addresses these realities to support strategic change in digitally-enhanced learning environments. Ensuring ownership by academic staff was found to be essential in the diffusion of e-learning. Strategies such as one-to-one and small group discussions, demonstrations, academic involvement in decision-making wherever possible and explanation of the benefits of e-learning were used to ensure academic ownership.

In order to ensure ownership by academic staff as well as sound educational quality in e-learning, it was important at both Massey University at Wellington and Cape Technikon for educators and educational principles to drive the strategic change in digitally-enhanced learning environments. This confirms similar views held by Szabo et al (1997), Caladine (1993) and Tillema (1995).

The extensive interest in the workshops that the writer conducted at the three institutions regarding e-learning indicates that staff development can be used as an important inside-out and bottom-up strategy to advance the transformation of Higher Education among academic staff.

The benefits and advantages of e-learning for the institute, teachers and students were consistently highlighted in order to gain the positive interest of administrative managers and academic staff in the strategic change in digitally-enhanced learning environments of Higher Education.

The ragged contour of the diffusion S-curve

The LASO Model acknowledges the complexity of strategic change in digitally-enhanced learning environments within Higher Education, given the centrality of people to the transformation process and the resultant inside-out strategies. The experience of pursuing strategic change in digitally-enhanced learning environments at Massey University at Wellington, Cape Technikon and the University of Botswana does not confirm the smooth contours of Rogers' diffusion of innovation curve. The various barriers that were encountered (both internally and externally), the uncontrollable events that negatively impacted on the implementation like key staff being allocated work with a higher priority, mistakes made and some fruitless experiments all point to a more ragged contour of the innovation curve.

The workload pressures of academics have made e-learning adoption often very difficult. Changing priorities of those involved in the implementation phase has also negatively impacted on the innovation process. Navigating the complex educational reform process without established models of change to draw on has led to frustrations and in some cases ill-spent energy. Finding a balance between scholarly debate on e-learning issues and practical implementation issues has been difficult given the mix of academics and support staff. The interaction of different and sometimes conflicting personalities has also been an ever-present factor in the way the teams operated.

Strategic change in digitally-enhanced learning environments at Massey University, Cape Technikon and the University of Botswana proved to be complex within its systemic dimensions and required a high level of determination by all involved as well as high standards of teamwork. The findings in this

research therefore suggests that Rogers' diffusion of innovation theory, when the innovation emerges from outside of senior management, needs to be augmented with a top-down component that includes both senior and middle management in order to accomplish effective diffusion of technology based education on an enterprise scale.

LASO, LAMS and learning designs at Charles Sturt University

The LASO Model can act as a guiding framework at Charles Sturt University (CSU, 2006a) with regards strategic change in digitally enhanced learning environments through the use of learning designs and LAMS. Top-down processes will be followed in conjunction with bottom-up approaches at CSU. CSU is the largest distance education provider in Australia and has highly formalised processes in place to ensure high quality learning materials.

Two phases for implementing learning designs with appropriate software are foreseen at CSU. The first possible use for LAMS at CSU would be to document learning designs in a reusable format during phase one. In phase two a top-down approach will be combined with bottom-up strategies leading to the adoption of a learning activity management system such as LAMS by CSU to be used by students.

The top-down approach of both phases with regards learning designs started early in 2005. A working group on learning designs and frameworks was established in 2005 by the Learning Material Design Subcommittee (LMDS), with the writer as facilitator, to investigate the potential for using learning designs, learning frameworks and templates to empower academics and educational designers (EDs) to create digitally-enhanced learning environments.

The bottom-up approach would consist of an evolutionary strategy proposed by the working party to create an ongoing showcase of learning designs. These learning designs will include learning sequences using the LAMS software. The CSU working party believes that learning designs can be used to enhance the quality of learning and teaching; to legitimise learning innovations towards new ways of learning and teaching; for educational design of learning materials by academics and EDs; for capacity building of academics and EDs; to make educational design work more visible and concrete, as well as in the formal teaching development programmes at CSU. Contribution of learning designs will be based upon prestige of participation and performance-based points allocation. Subjects with multi-media elements developed via the Centre for Enhancing Learning and Teaching would be evaluated for inclusion in the showcase. The learning design would need to be endorsed by the school's learning and teaching committee following blind peer review. Another strategy that will be used is for students to contribute learning designs. The subject 'Designing Learning Environments' in the Graduate Certificate of University Learning and Teaching will require students to formulate learning designs and to use LAMS to graphically represent the learning activities. Some of the work of the students will be selected for inclusion in the showcase.

Designing for reusability is key to the learning designs project at CSU. The learning designs should thus be presented in an uncluttered and systematic way. Learning activity sequences would be specified using appropriate software and would be available for re-use. The project will further build on existing technology as a starting point for an accessible capacity building facility. The CSU Learning and Teaching website (2006b), to be maintained by the Centre for Enhancing Learning and Teaching (CELT), would be used as well as appropriate learning activity sequencing software. The collection of learning designs need to be easily accessible through cross-referencing in three different ways: by content area/discipline, by pedagogies used and by technologies/multi-media used. The pedagogy index will further include links to pedagogy guidelines and references of the pedagogies used.

The first possible use for LAMS therefore at CSU would be to document learning designs in a reusable format for use by other academics at CSU (phase one). LAMS seems to be a feasible option given CSU's commitment to open and community source through their recent selection of Sakai (2006) as CSU's online learning management system. A top-down approach will be followed when an assignment will be registered at the CSU Project Office to investigate the most appropriate software to document and use learning designs which would include LAMS and Coppercore (2006).

The bottom-up initiative for phase one will ensure that the working party see a demonstration of LAMS and Coppercore to appreciate the re-usability potential of well-documented and systematic learning designs. Learning designs in phase one would be linked to the pilot at CSU of Equella (Learning Edge

International, 2006), a Digital Object Management System. Proper training on both Equella and LAMS (if selected) would be provided as important bottom-up strategies. It is of critical importance for strategic educational change at CSU, that only subjects that display the characteristics of blended and convergent learning be selected to become part of the showcases. This will contribute to academics using the new technologies for new forms of pedagogy instead of, what some have called, 'shovel-ware'.

In phase two a top-down approach will be combined with bottom-up strategies leading to the adoption of a learning activity management system by CSU to be used by students. The top-down component would be a ruling by the Information and Learning Systems Committee (ILSC). The bottom-up approaches would include a pilot, the provision of training and thereafter the wider implementation in every faculty through task groups.

CSU currently uses online subject outlines that have some of the elements of a learning design but which are targeted towards the students. A learning activity management system will, however, target academics in phase one, and students in phase two. Phase two will provide learning activities in an executable format through the use of an activity management system and not in a static format as is the case with the current subject outlines.

Conclusion

The LASO (Leadership, Academic & Student Ownership and Readiness) Model for Technological Transformation in Higher Education emphasises the necessity for integrated and orchestrated top-down, bottom-up and inside-out strategies. This model acknowledges that the process of strategic change in digitally-enhanced learning environments, that could include the widespread use of learning designs and LAMS, is complex with many dislocations, dilemmas and uncertainties.

Creating an enduring vision and a strategic implementation framework for the effective implementation of educational innovations like learning designs and LAMS seems critical as Berge and Schrum (1998, p35) contend, 'the most important function of institutional leadership may be to create a shared vision that includes widespread input and support from the faculty and administration, articulates a clear educational purpose, has validity for stakeholders, and reflects the broader mission of the institution'.

The LASO Model is proposed as a guiding framework for enterprise-wide strategic change in digitally-enhanced learning environments that could include the use of learning designs and will be tested in this capacity at Charles Sturt University in 2007.

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