JOURNAL OF DISTANCE EDUCATION
REVUE DE L'ÉDUCATION À DISTANCE
2010
VOL. 24, No. 1, 55-76

Putting Ourselves in the Big Picture: A Sustainable Approach to Project Management for e-Learning

Janet Buchan

Abstract

In a case study of a large Australian university the metaphor of panarchy is used as a means of describing and understanding the complex interrelationships of multi-scale institutional projects and the influences of a variety factors on the potential success of e-learning initiatives. The concept of para-analysis is introduced as a management strategy to map educational technology projects in time and institutional space and to predict the impacts the implementation of these might have on individuals. Finally, four good practice guidelines for strategic project management for e-learning in a large institution are presented.

Résumé

Dans une étude de cas d'une grande université australienne, la métaphore de panarchie est employée afin de décrire et de comprendre les interrelations complexes de projets institutionnels à échelles multiples et les influences d'une variété de facteurs sur la réussite potentielle d'initiatives d'apprentissage en ligne. Le concept de la para-analyse est introduit en tant que stratégie de gestion pour détailler des projets de technologie éducationnelle en termes de temps et d'espace institutionnel et pour prédire les impacts que l'implantation de ceux-ci pourrait avoir sur les individus. Finalement, quatre lignes directrices sur les bonnes pratiques pour la gestion stratégique de projets d'apprentissage en ligne dans un grand établissement sont présentées.

Introduction

Like many others, the author's university is undergoing significant and transformative change in responding to external influences in the higher education sector. In her multiple roles of instructional designer, learning/educational technologist and manager, the author works in a team to serve as something of a change agent or broker in the task of implementing and facilitating the effective use of new technologies in e-learning. This study grew out of a perceived need to try to find ways for educational institutions and individuals to manage the impact of external

environmental factors better, and to maintain the integrity of the learning environment in the face of constant technological change.

The literature related to IT funding and support models for educational technology at an institutional level is scant. Much of the focus in publications on educational technology appears to be around implementation of educational technology projects and the pedagogical application of technology (Benson and Palaskas 2006; Zhou and Xu 2007; Weaver, Spratt et al. 2008) with generic references to institutional limitations in funding and support. This is possibly due to the historical separation of management and support for ICTs in general from those making decisions about, and using, educational technology. In adding to the body of literature in this area, this study draws on *evidence based practice* to focus on two main areas. Firstly, it introduces *panarchy* as a new, holistic way of looking at and understanding project management in the context of e-learning and contemporary technology-enhanced learning environments that attempt to put the individual at the centre of the picture. Secondly, it presents some *good practice guidelines* to project management for e-learning.

In today's competitive higher education environment, institutional learning and teaching related projects must often compete for funding with other essential institutional IT support systems and infrastructure. There is increasing demand for accountability to demonstrate the return on investment in e-learning initiatives. Institutions are focusing strategically on specialised funding for innovation and e-learning. Funding limitations can promote a project based approach to implementation of the technology. This is necessarily a 'grass roots' approach involving faculty, students and ICT (information communications technology) support staff. However, a project-based approach raises the question of ongoing sustainability. Once the project is over what about ongoing maintenance, upgrades, supporting the users or introducing new technologies? Our climate of rapid technological change can see a number of ICT related initiatives taking place simultaneously, from the local level (faculty, college, etc.) to the whole institution. At times the wave of change can be overwhelming for individuals. How can change be managed better? How can we be sure these initiatives will be successful?

To answer these questions the author is undertaking a doctoral study and part of this research is documented here.

Context

Charles Sturt University (CSU) is a multi-campus, inland university in New South Wales, Australia. It has five main campuses (Bathurst, Wagga

Wagga, Albury-Wodonga, Orange and Dubbo), four specialist centres and study centres in the main cities such as Melbourne and Sydney. CSU also has a campus in Ontario, Canada, as well as links with international partner institutions in China, Malaysia and the UK. The University has approximately 32,000 students of whom two-thirds are enrolled as distance education (DE) students. CSU is responding to changes in the broader higher education environment (Charles Sturt University 2006) and is currently undergoing significant and transformative change (Andrews 2008). Amongst the many other initiatives was a restructuring of the faculties and supporting Divisions (Figure 1).

In addition, in 2006 CSU enhanced its existing online supported learning environment with the creation of a new online learning environment (OLE) called CSU Interact. This was done through the introduction of the community source learning management system (LMS), Sakai. There is a strong focus on technological solutions to address the challenges associated with cross-campus schools, and cross-campus offerings of subjects and convergence of distance and internal modes of delivery. Figure 1 illustrates the structure of CSU's divisions and units that support learning and teaching with a particular focus on those areas mentioned in this study relating to dedicated support for educational technology.

Approach to the Study

A case study of a large mixed mode regional Australian university is used to introduce the concept of panarchy into educational management and to illustrate the potential application of para-analysis. The case study describes aspects of Charles Sturt University's strategic approach to educational technology project management.

This qualitative research study is grounded in the ethnographic approach common in educational settings (Wiersma 2000; Walter 2006). Consistent with the ethnographic approach, the author has been documenting her growing understanding of institutional systems and project management with respect to educational technology in an attempt to understand how institutions and individuals can manage a rapidly changing educational technology environment better. This has been done through making personal notes and reflections during regular divisional meetings, professional development workshops and through formal and informal discussions in a variety of groups. Some of these reflections are used here to highlight incidents, or 'snapshots in time' during this learning experience. This understanding has been actively used to contribute to management decisions during the development of the University's new online learning environment (OLE) and its ongoing

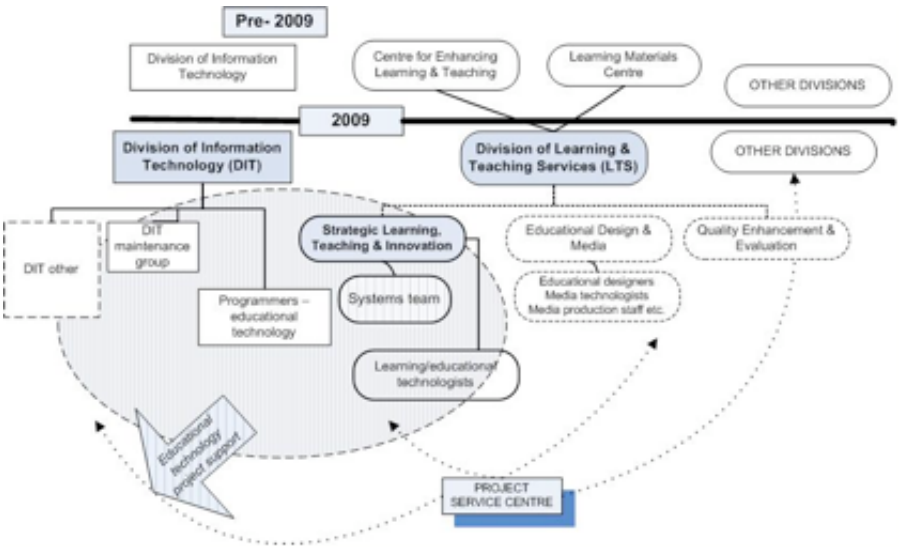

Figure 1: The changing structure of CSU's divisions and units that support learning and teaching. Focusing on those relating to dedicated support for educational technology projects.

development. Historical documents and University records have been accessed in order to develop an accurate picture of how the technology enhanced learning environment is changing. Through this research new frameworks are being developed for understanding and managing the changing educational technology environment (Buchan 2008; Buchan 2008).

Terminology. A variety of different terms are used to describe the use of computers and technology for educational purposes. E-learning, IT, ICTs (information communication technology), instructional technology, CAL (computer assisted learning) and CAA (computer assisted assessment). *Educational technology* is the primary term used in this study and refers here to technology that directly supports learning and teaching interactions and information sharing between staff and students. For example the use of learning management systems, podcasting or vodcasting software, online conferencing systems, etc. It does not include software and systems such as administrative systems that support

administration of courses, grades and student and staff affairs. The *technology enhanced learning environment* is the broader term used to describe the interactions between people and the technology. The term 'academic' used here is the more common Australian term and is equivalent to teaching staff, 'faculty' or lecturer/professor.

Panarchy

The metaphor of 'panarchy', taken from natural resource management, is now introduced into the educational management context. This is a systems analysis tool for describing and understanding the dynamics and complex interrelationships of multi-scale institutional projects and the influences of a variety of factors on the learning environment. Panarchy, which has its origins in natural resource management, is one of five heuristics in a *social-ecological systems approach* to understanding systems (Buchan 2008). Social-ecological systems analysis provides a way of identifying the possible causes and effects at a variety of levels of changes in the environment. Walker et al (2006a) identify five preliminary heuristics that can be used to explain patterns of change in complex social-ecological systems. (1) Adaptive cycles and (2) panarchy are used to describe the dynamics of systems; while (3) resilience, (4) adaptability and (5) transformability are given as heuristics to describe the properties of social-ecological systems that determine these dynamics. This study will explore the second of these heuristics, panarchy.

The term 'panarchy' stems from work by (Gunderson and Holling 2002) who have developed and tested theories that explain transformational change in systems of humans and nature. In nature this change takes place across space (local to regional and global levels) and time (months to millennia). The growing impacts on the Earth's atmosphere and on international economic patterns has led to the study of cross-scale influences. Such examples include the impact of climate change on regional ecosystems and on local human health, or of economic globalisation on regional employment and the environment (Gunderson and Holling 2002) .

The use of terms such as 'millennia', 'panarchy', 'regional' and 'global' and the scale of the original use of these theories of adaptive change may seem something of an 'overkill' or too theoretical to be of practical use in the field of educational technology. However, the broader study of which this research forms one part, aims to fulfil a perceived need or gap in the current educational management processes. This need is to find ways to help individuals and institutions maintain and manage the integrity of the learning environment in the face of constant change in the broader educational environment.

Para-analysis—Putting the People Back into e-Learning Considerations

For application of panarchy to a wider audience the author is developing a tool which will be known as *para-analysis.* The prefix '*para*'- here reflects the need to look beyond and more widely than the normal organisational perspective on project management. Analysis describes a systematic process. Para-analysis is a management tool that can be used to map projects in time and institutional space. It is a tool that can help an institution make decisions not simply according to physical and financial resourcing, but importantly, the potential impact the outcome of the project might have on individuals. This will be illustrated later in context of the case study.

Panarchy and para-analysis involve mapping events and thus creating a visual representation of a system over time and space. In nature the time axis (x) is usually a log scale. In this institutional context the linear time scale is years. Unlike the natural environment where there is a real physical space, the space continuum in this representation of panarchy is the levels of influence within an institution. The boundaries of the 'ecosystem' or observation area, need to be determined (Buchan 2008). This could be the whole higher education sector, a single institution, or restricted to a certain 'population' within that institution. In the case study scenario the populations considered are the academic staff i.e., the teaching population only (Figure 2) and the Learning and Teaching Services educational design staff (Figure 3).

Mapping the Impact of Educational Technology Projects through Para-analysis

The first data required are how long the event will exert an influence. This might be open ended or have well defined timelines. Secondly, a determination of the scale of influence of the individual events is needed. In the institutional context the latter equates to how many people in the institution, or the part of the institutional population being measured, will feel the impact of the event. This is subjective in these initial stages of this case study, although rigorous research and measuring will provide some quantifiable data. The impact of an event will vary according to the population (see Figures 2 and 3). The collection of data through research interviews and surveys has contributed to identifying key issues and influences.

Para-analysis has been used here to map CSU's teaching and associated administrative technologies. This study confines itself to those technologies that are used directly to support learning and teaching. Table 1 lists the major administrative and teaching systems and tools at Charles Sturt University from 1998 when some of the first educational technology

projects began. Some are tools/systems used by academics in their teaching (Figure 2) or by educational designers in supporting staff in e-learning delivery and learning resource development (Figure 3). Others are administrative systems academics need to be competent in using in order to deal with student grades and course administration, etc. Although this is only a relatively rough and personal interpretation, it provides a useful visual representation of the University's record of educational technology development.

Table 1. Glossary of terms: Administrative and teaching systems/tools at Charles Sturt University (see Figures 2 and 3)

System	System Full Name	Teaching or Administrative Use	Function
Banner		Administrative	
BlogWow		Teaching	Blog tool.
CASIMS	Course and Subject Information System	Administrative	
DOMS	Digital Object Management System	Teaching/admin	Provides structured storage repository for learning resources and automation of specific processes.
EASTS	Electronic Assignment Submission Tracking System	Administrative	For students to submit assignments online and university to track assignments and send to markers. Online marking function available.

System	System Full Name	Teaching or Administrative Use	Function
eBox	(System predates official use)	Administrative	Online delivery point for official communications between the university and its students. Secure authenticated online environment. Messages sent and received are stored and tracked to provide students with a permanent, web-based record of official communications.
eReserve/ Rapid print	Electronic Reserve		For storing readings in electronic form.
ePortfolio		Teaching	For creating a portfolio of work.
eReserve/ Rapid print		Teaching	System by which e-copies of readings can be selectively accessed and printed on demand.
Flexible Publishing		Teaching	A tool whereby files can be uploaded by lecturer to a unique subject site and accessed by students via the online subject outline.
Forums		Teaching	In-house developed communication tool that enables students and teaching staff to post, read and reply to messages from other members of the subject site.
Gradebook		Teaching/admin	A Sakai tool for recording and administering grades.

System	System Full Name	Teaching or Administrative Use	Function
CSU Interact LMS	Learning Management System	Teaching	A collection of tools in an integrated framework, for communicating and sharing information within a subject or course. Sakai 2.4
Institutional repository	Unilinc	Administrative	For official recording and storage of research papers, theses and publications.
MSI	Mandatory Subject Information	Teaching/admin	For developing online subject outlines with required subject/course material.
myCSU		Administrative	An integrated homepage for access to university services.
OASIS repository	Online Assessment Submission Information System	Teaching	In-house developed multiple-choice, quiz tool.
OES	Online Evaluation System	Teaching/admin	In-house developed, for subject-specific, student evaluation surveys.
OSAM	Online Subject Assignment Submission System	Administrative	For administering and marking assignments online
SMPFs	Subject Materials Preparation Form	Administrative	For capturing requirements to initiate the subject development production process.

System	System Full Name	Teaching or Administrative Use	Function
SOMS	Subject Outline Management System	Teaching/admin	In-house developed tool for publishing subject outlines online.
Test Centre		Teaching	Online quiz tool (Sakai).
Wiki	Wiki	Teaching	For sharing and collaborating (Sakai) in learning, research and administration.

When looking at the visual representation of the technology and impacts of external factors one can see that one of the major impacts in the case study is the faculty restructure (moving from five to four faculties) which took effect in 2006 (Figures 2 and 3). The effects of this are still being felt in a number of ways. In particular, the restructure has driven a need for

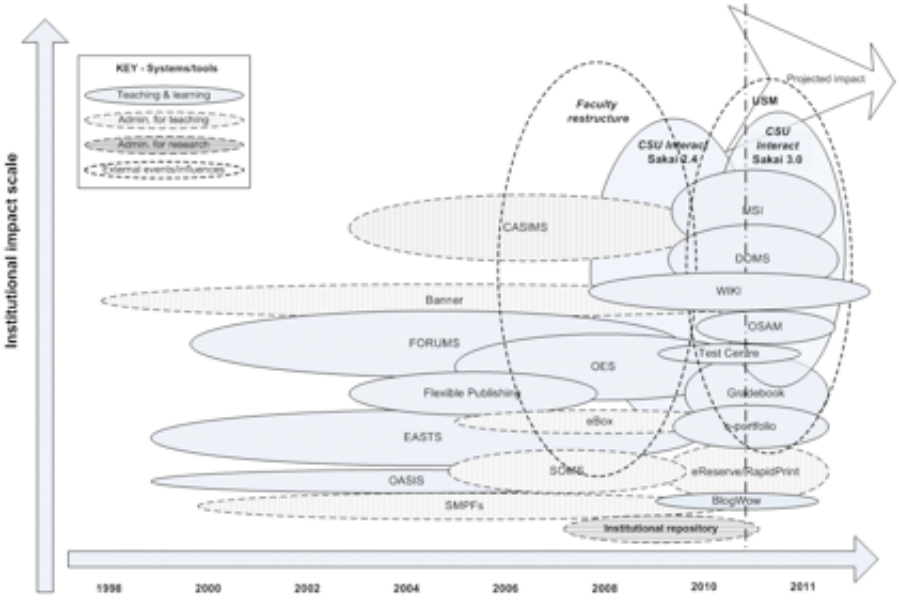

*Figure 2: A para-analysis view of the impact scale of teaching and administrative systems used by **academic staff** in their work at CSU.*

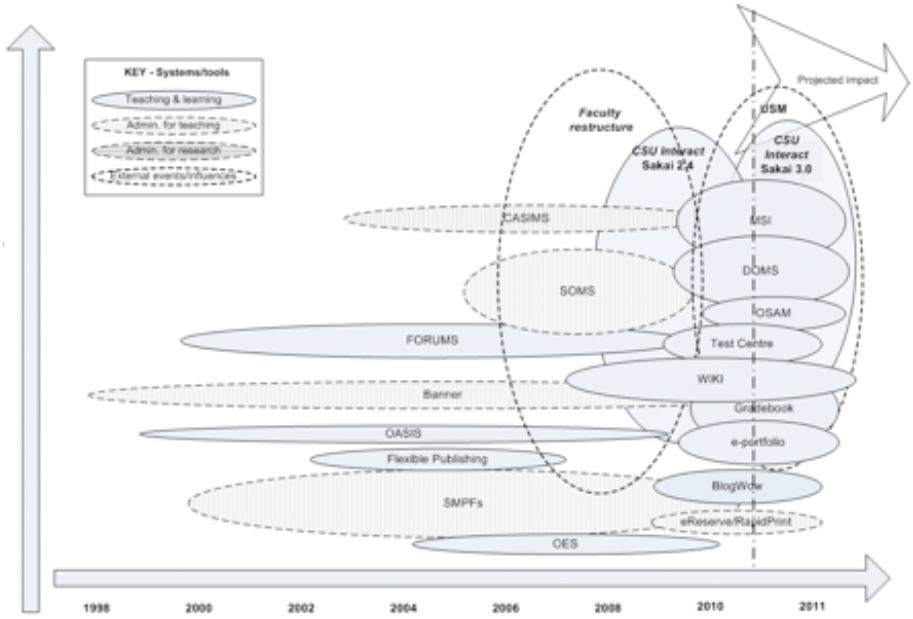

*Figure 3: A para-analysis view of the impact scale of teaching and administrative systems used by **educational designers** in their work at CSU.*

cross-campus courses and teaching with an associated need for technological solutions to address this. Another external factor that will impact significantly in the coming years is the move to a unified session of course offerings. From 2010 the University is moving to what is locally known as the USM (Unified Session Model) whereby some nine or more different semester and trimester arrangements will be streamlined into a single trimester arrangement of sessions for Australian students with some differences incorporated for international programs.

This para-analysis representation is important for management purposes. What it shows is that in the case study there has been major change in education technology at the University in the past four to five years, with ongoing change planned. This impacts on a variety of different areas. Firstly, on the teaching staff (Figure 2) and secondly, on the associated support divisions, such as Learning and Teaching Services, who collaborate on the implementation and ongoing support for users of the technology (Figure 3). Perhaps one of the most important aspects of para-analysis for predicting the success of the implementation of educational technology is that it aims to take into account the impact of

the technology *on people i.e., the users themselves* (see interview comments below). Traditional project management and institutional planning strategies include budget and resourcing management strategies and generally involve a degree of change management and communication strategies. For the vast majority of users, if managed well, the implementation of new educational technology should be a liberating and enabling experience that facilitates good learning and teaching outcomes. The constant change, both in technology as well as other environmental factors within the case study institution has had a noted effect on staff. Part of the data collection in this study included structured interviews with staff from faculties and divisions. The effect on some academic staff is illustrated in these responses to the following research questions during interviews in 2008, six months after the institution-wide implementation of the LMS CSU *Interact*.

Q.1 IDENTIFY THE MAIN TECHNOLOGICAL CHANGES THAT HAVE INFLUENCED YOUR LEARNING ENVIRONMENT IN RECENT TIMES.

> Respondent 1—"I think Interact here will be a life-saver when we are all completely familiar with it. As we are moving to a problem based learning approach where you can give students a problem and get them to respond on wiki or whatever and everything is there is one place."
>
> Respondent 2—"The other technological change… is interactive video teaching, and I think that is a significant change… I don't think it has been done particularly well in terms of teaching and learning. [but] From the very beginning the technology has always been excellent…I think it has the potential to greatly influence the learning environment."

However, even the most effective e-learning project does not take cognizance of all the events and external factors that might affect an individual during and after the period of implementation.

Q.2. WHAT ARE SOME OF THE ISSUES AND PROBLEMS FACING YOU IN YOUR CURRENT ROLE?

> Respondent 3—"I think that is what many organizations do, they introduce change, but they don't prepare people for change. And they don't make allowances for the extra workload that comes with change."
>
> Respondent 4—"Expectations on lecturers that we will learn how to work new systems and things and I will raise that. I mean there are uses for them but sometimes we are so busy catching our tail that we have so much change happening around. So then Interact came in and that's a great opportunity and I have almost not used it… But I know I haven't used it to its capacity because I haven't had time to think my way through sort of how it can help the learning I'm trying to facilitate I guess."

> Respondent 5—"There [would seem to be] no real value to some of the processes required. I don't have the same problems with adapting to the change as some of the older members of staff but, if the university wants us to comply, then they also need to have the systems in place [to] support that."

In 2007 in the early days of working towards implementation of CSU *Interact* one school's Learning and Teaching committee facilitated a group session around staff perceptions and feelings about the new technology. Some of the comments included: "What's driving it? Bureaucracy?"; "It's just another thing the university does and will take a number of years to go through"; "I don't care—it's just another set of tools". Some of the feelings expressed included being; excited, overwhelmed, resigned, enthused, cautious but hopeful.

These views are only representative of a minority of staff. Anecdotal evidence and that as reported at the 2008 CSUED Conference (Charles Sturt University 2008) demonstrates that there is extremely good work being done in developing good e-learning practice. However, whilst many staff are still learning how to effectively use the tools in the new LMS and moving from a Web 1.0 to a Web 2.0 paradigm (Buchan 2007) the effectiveness of the implementation and acceptance of new technology will be varied. Judicial use of para-analysis to map events and the changing technological world of academics and educational designers can provide a tangible warning sign to management.

Para-analysis has application in the introduction of smaller scale e-learning initiatives e.g., testing mobile technologies at CSU. The mapping of current and future e-learning initiatives and other events from a variety of perspectives (Figures 2 and 3) suggests that the potential broad-scale return i.e., tangible benefit to learning and teaching, for time and resources spent on such a project during 2009/2010 might be more limited than say, at the end of 2010, once some of the current institutional initiatives at are embedded. However, user demand means technology must move on and targeting innovators and early adopters who are less affected by the change should have merit. The qualities of these individuals can be illustrated by the following responses to the research interview question; "Describe your ability to adapt to change".

> Respondent 6—"My ability to adapt to that I suppose is interesting in that I am more often than not the agent of change not the recipient."

> Respondent 7—"I get bored easily…Setting up new challenges for myself means embracing change, doing something differently gives an opportunity for deeper learning."

Panarchy and para-analysis provide a way to plan holistically and temporally for the successful implementation and ongoing use of educational technology. Drawing on this information, this study now describes some good practice guidelines to strategic project management for e-learning.

Good Practice Guidelines to Strategic Project Management for e-Learning

1. Sustainable funding and IT services models for educational technology

A review of the recent literature has provided some insight into IT management and possible funding and IT services models for educational technology (Lewis, Snyder et al. 1995; Dewey, DeBlois et al. 2006; Boezerooy, Cordewener et al. 2007; Jackson 2007). Figure 4 summarizes the observed generalized funding options. There is often a mix of different funding modes and IT services mechanisms within an institution.

CSU has centralised IT services and funding for all institutional IT needs. This includes administrative services as well as educational technology. There is occasional special project funding for educational technology projects. Within the constraints of centralized IT services, there are limited initiatives by individual faculties to address specific

Figure 4: Institutional funding options for educational technology

needs. A project based approach to prioritizing educational technology work is now in operation (see below). Visually depicting an institution's systems and technology through para-analysis, as presented in Figures 2 and 3, helps to determine where the needs lie in sustainable funding and IT services models.

Funding for IT has been identified as one of the Top 10 IT issues for the past ten years (Brancheau, Janz et al. 1995; Dewey, DeBlois et al. 2006; Camp 2007). In the current economic climate this is unlikely to change but the demand from the customers (i.e., students and staff) for institutions to continually acquire the latest technology is high.

Thus, to provide sufficient ongoing funding for educational technology, institutions would do well to look at the trends in IT management in their long-term planning (Jackson 2007), as well as adopting something of the '*developing country*' model of information technology. This means hard decisions which are not necessarily popular sometimes have to be made; "…convenience is not our primary concern. We have to ask: what will help students most?" and "...the answer may not be exactly what students want (e.g., a smarter iPod), and it certainly has to fit into what the institutions can afford." (Padron 2008).

CSU has adopted something of the developing country approach in its stated "Cautious approach" (Rebecchi 2005) to educational technology. CSU has delivered online supported subjects through its own VLE (virtual learning environment) since 1994. CSU adopted a best-of-breed strategy (Rebecchi 2004) towards creating its own VLE using a collection of tools that best suited its environment. Many of these were in-house developed (Buchan 2009). The University took its 'quantum leap' in technology (Padron 2008) in 2006 with the staged implementation of an open source LMS (learning management system), CSU *Interact*. This relatively late entry into the LMS world gives the advantage of hindsight and learning from others' experiences in implementing learning management systems. An informal survey was done on *Interact* use in the first six months of implementation and the results from an end-of-year survey of staff were being processed at the time of writing. Initial signs are that adoption and successful use of the technology is comparably high (Gill and Hardham 2008).

Technology moves on quickly. Users, however, want more than the current institutional resourcing can offer. E-learning is about more than simply acquiring the latest technology. The effective integration of ICT into learning and teaching requires support, and thus funding/resourcing, from a variety of divisions/groups including information technology services, learning and teaching support services, and student support services.

Through pockets of innovation and specialised funding some of the early adopters and pioneers are effectively paving the way for others.

2. A centralized project based approach to educational technology implementation

Individual, *ad hoc* e-learning projects and initiatives can serve an important purpose in meeting a specific need in a timely manner in a certain area. Figures 2 and 3 illustrate the emergence over time of a multitude of individual educational technology tools in the case study institution. The impact factor of each of these is visually represented in the figures. Each tool has had a positive impact on learning and teaching at some level. However, strategic planning at an institutional level has been identified as an important facet of successful e-learning at an institutional level (Nelson and Davenport 1996; Goldstein 2004). In 2005 the Project Service Centre (PSC) was established at CSU within the Division of Information Technology in order to make best use of resources and to streamline ICT developments.

> … the University identified that a Project Management Office was the most appropriate means of effectively identifying and managing resources being directed toward achieving CSU's strategic objectives.….
>
> To achieve these stated objectives, the PSC aims to improve the overall effectiveness of the University. The PSC is a program of change management for CSU under which projects can be identified, prioritised and implemented using proven PM methodology to minimise risk and increase benefit realisation. (Project Service Centre. 2009)

Projects run by the PSC are multi-stakeholder with representatives from different divisions (Figure 1). For many university staff from the academic side and learning and teaching support services, the entry into formal Project Management (the capital P, capital M denote here formal CSU-based project management as opposed to any other recognised system of project management) will be a new experience and the processes, paperwork and recording mechanisms initially time consuming. However, the formal project approach ensures outcomes are met, at least until implementation of the e-learning software.

3. A multi-stakeholder approach to managing the implementation of e-learning technology

If the investment in IT services and technology is to be maximized, the users of educational technology need to have an active engagement in the choice, implementation and use of the technology. It is now being recognized that implementing and maintaining IT for educational

purposes (i.e., educational technology) is not simply the domain of an IT services unit. This case study describes how a large regional university employed a multi-stakeholder approach to the implementation and ongoing maintenance of its new online learning environment.

In 2005-2009 the University funded a major program, the Online Learning Environment (OLE) Program to improve the university's online learning environment with the introduction of an open source learning management system (LMS). This program was run through the Project Service Centre. The OLE Program was possibly one of the most widespread, truly collaborative projects seen at the University and has set a benchmark for Project Management and for a strategic, integrated and consultative approach to implementing educational technology. A single project in the OLE Program might have involved representatives from DIT, Learning and Teaching Services, the PSC, the Library and Student Services (Figure 1). The OLE Program Steering Committee included representatives from all divisions as well as high level academic representation. There was an academic reference group for consultation on learning and teaching related issues associated with the OLE.

The OLE Program included multiple projects which contribute to the implementation of CSU *Interact*, the new OLE. In the initial implementation phase for the start of 2008 there were some 18 individual projects and four pilots of new tools. In the ongoing implementation there are eight individual projects along with four pilots. There was targeted funding from the OLE Program budget which enabled the deployment of extra staff in a number of areas. These included educational designers and educational technologists in the (then) Centre for Enhancing Learning[1] (CELT—see Figure 1). These staff led and contributed to projects and developed a university-wide professional development program to teach people how to use the new educational technology to enhance their teaching and students' learning. Program funding also paid for more IT developers and for travel associated with developing relationships with other institutions in the Sakai open source community.

4. After the project—mainstreaming support

An important aspect of a project based approach to introducing new technology, especially where special funding is associated with the project, is ongoing maintenance and mainstreaming of the technology. Once the implementation is complete, there needs to be resourcing for ongoing maintenance to deal with bugs and version upgrades, etc. An

---

1. In 2009 the new Division of Learning and Teaching Services was established through the amalgamation and restructure of CELT and the Learning Materials Centre.

entry in the author's journal during the OLE Program shows this concern:

> I recall a conversation with [our director] in Wagga late in July when I voiced the concern (no doubt already felt by [our director] and …others) 'What worries me, is what happens after the end of the OLE Program? We currently have an excellent, inter-divisional working relationship all working towards the common purpose. Fully funded and with dedicated resources. Once the project is over and the OLE is up and running, what then? We then go into some operational phase, but how that will actually work is questionable at this stage.' (Journal reflection—19.10.07)

Progress in 2008 towards this was noted thus;

> Excellent progress on the support for the OLE & making it an ongoing and sustainable entity. Real coup to get dedicated DIT support for the OLE & to retain [that] IT expertise. (Journal reflection. LTS restructure meeting—8.05.08)

The University has moved from a model of centralized ICT support through the Division of Information Technology (DIT), to a model with some IT programmers dedicated solely to the support of educational technology. These staff report directly to the Systems Manager of the newly established Division of Learning and Teaching Services (LTS), while maintaining operational links with the Division of Information Technology (see Figure 1).

Before the recent recognition and separation of learning and teaching related educational technology, projects related to learning and teaching had to compete with all university-wide ICT related projects and mainstream IT work for funding. Now, educational technology projects and those related to the online learning environment (OLE) of less than four weeks duration are addressed by a Maintenance group outside of LTS system support staff and the LTS systems manager votes on the priorities in that job queue. For bigger projects there are two options. Either individual project money may be sought or the initiative can be addressed formally through the Project Service Centre proposal process (Uys, 2009, pers. comm.).

The benefits of this system are that valuable IT staff resources for educational innovation through the ongoing development of the OLE and introduction of new tools are not being used for 'maintenance' jobs on the existing systems. Where a new educational technology project strongly supports the university's strategic direction it will be able to compete on an equal footing for centralized funding.

Good project management and strategic planning are admirable necessities if best use of available resourcing is to be made. However, good project management does not necessarily equal successful use of the

technology, and good project management alone cannot create institutional transformation. At the centre of a successful (or unsuccessful) project are the people. Change management and communication are important aspects of a successful implementation of any educational technology (Uys 2007; Uys & Tulloch 2007). CSU acknowledged this by including in the OLE Program a Change Management and a Communications project.

Conclusion

The case study institution has been used to illustrate good practice in four identified areas in the strategic and sustainable management of e-learning projects:

1. to identify sustainable funding sources for e-learning projects;
2. use of a centralised, strategic approach to educational technology project management through a project service centre as a way of facilitating transformational change in the case study institution;
3. the use of an integrated, multi-stakeholder approach to e-learning projects; and
4. planning ongoing support for e-learning systems and educational technology beyond the life of the project.

Institutional e-learning (i.e., educational technology) projects have the potential to transform learning and teaching practices. *Para-analysis*, as an extension of the concept of panarchy, has been introduced here as a management tool that contributes towards the development of a sustainable approach to project management and provides a way of drawing a realistic picture of what is happening across an institution and how e-learning projects may be impacting on different areas. Para-analysis can be used to map the potential impact (positive and negative) on individuals of educational technology projects over time and institutional space. It is a tool that can help an institution make decisions not only according to physical resourcing but, importantly, by taking note of the impact the outcome of the project might have on individuals and the institution as a whole. In this case study the use of para-analysis provides something of a reality check for those early adopters and innovators who are asking for more educational technology. At CSU there is still a need for new tools such as podcasting/ vodcasting, mobile learning, interactive virtual worlds, personal learning environments and increased social networking tools. However, these technologies may need to remain on the 'virtual' horizon until there is the physical resourcing to implement them properly and users have time and brain space to learn to effectively apply yet more technology.

This research is showing that some staff are feeling the impact of the constant change; not only of technology but also of the many changing systems and structures at the University. As a university in transformation this is to be expected. However, the effectiveness of the implementation and sustainable management of new educational technology for e-learning will thus be dependent upon strategic project management and keeping the individual in the centre of the big picture.

References

Andrews, B. (2008). "Bradley backs new world-class national university in regional Australia. Media release." Retrieved 20 February 2009, from: http://news.csu.edu.au/search/result.cfm?itemID=42736BF7E90F3E71DEA5C83F4B84361C&module=newsreleases&cat=

Benson, R., & Palaskas, T. (2006). "Introducing a new learning management system: An institutional case study." *Australasian Journal of Educational Technology, 22*(4): 548-567.

Boezerooy, P., Cordewener, B., et al. (2007). "Collaboration on ICT in Dutch Higher Education: The SURF Approach." *Educause Review 42*(3): 66-79.

Brancheau, J. C., B. D. Janz, et al. (1995). *Key issues in information systems management: A shift toward technology infrastructure.* University of Colorado Graduate School of Business: 41.

Buchan, J. (2007). *Web 2.0: The dawning of the interaction age*: 6.

Buchan, J. (2008). Rethinking management strategies for the online learning environment. *ALT-C Rethinking the digital divide 9-11 September 2008.* Leeds UK. Leeds, Association for Learning Technology.

Buchan, J. (2008). Tools for survival in a changing educational technology environment. *Ascilite 2008: Where are you now in the educational technology landscape, Melbourne*.

Buchan, J. (2009). *Developing a dynamic and responsive institutional online learning environment: A case study of a large Australian University. Free and Open Source Software for E-Learning: Issues, Successes and Challenges.* B. Ozkan. Arizona, IGI Global.

Camp, J. S. (2007). Top 10 IT Issues. *Educause Review. 42*: 12-32.

Charles Sturt University (2006). *University Strategy and plans.* C. S. University, Charles Sturt University.

Charles Sturt University (2008). CSUED 2008. Educational interactions and curricula. *CSUED 2008: Educational interactions and curricula. November 19-20, Wagga Wagga, Charles Sturt University.*

Dewey, B. I., DeBlois, P. B., et al. (2006). Top-10 IT Issues 2006. *Educause Review, 41*: 58-79.

Gill, L., & Hardham, G. (2008). *Progress and issues with CSU Interact: The learning and teaching experience during our first six months.* Internal report Charles Sturt University: 4.

Goldstein, P. (2004). *Achieving alignment through strategic information technology management at the University of Memphis.* ECAR CAse Study 2. Case Study from EDUCAUSE Center for Applied Research, EDUCAUSE Center for Applied Research: 1-18.

Gunderson, L. H., & Holling, C. S. (2002). *Panarchy: Understanding transformations in human and natural systems.* Washington, Island Press.

Jackson, G. (2007). "Compartments, Customers, or Convergence? Evolving Challenges to IT Progress." *Educause Review 42*(3): 35-49.

Lewis, B. R., Snyder, C. A., et al. (1995). "Toward a theory of business process change management." *Journal of Management Information Systems 12*(1): 199-223.

Nelson, K. R., & Davenport, R. W. (1996). "A Planning Process Addresses an Organizational and Support Crisis in Information Technology." *Cause/Effect 19*(2): 26-27, 32-37.

Padron, E. J. (2008). "The developing country model of information technology." *Educause Review 43*(5): 8-9.

Project Service Centre. (2009). "Roles and responsibilities." Retrieved 16.02.09, 2009, from: http://www.csu.edu.au/division/psc/roles-and-responsibilities/

Rebecchi, M. (2004). *Implementation of a commercial Virtual Learning Environment at Charles Sturt University.* Charles Sturt University: 13.

Rebecchi, M. (2005). *J. Buchan.* Albury.

Uys, P. (2007). "Enterprise-Wide Technological Transformation in Higher Education: The LASO Model." *International Journal of Educational Management.*

Uys, P., & Tulloch, M. (2007). Appropriate Change Leadership for the Introduction of Flexible Learning within University Governance and Strategic Leadership Frameworks: A Comparative Analysis of Case Studies in Developed and Developing Countries. *Integrating for Excellence Conference 2007.* Sheffield.

Walter, M. (2006). *Social research methods: An Australian perspective.* Oxford University Press.

Weaver, D., C. Spratt, et al. (2008). "Academic and student use of a learning management system: Implications for quality " *Australasian Journal of Educational Technology 24*(1): 30-41.

Wiersma, M. (2000). *Research methods in education: An introduction.* MA, Allyn and Bacon.

Zhou, G., & J. Xu (2007). "Adoption of educational technology ten years after setting strategic goals: A Canadian university case." *Australasian Journal of Educational Technology 23*(4): 508-528.

Janet Buchan is an educational technologist and Manager of an Educational Design and Media team at Charles Sturt University, Australia. E-Mail: jbuchan@csu.edu.au

---