Leading an evidence-based, multi-stakeholder approach to evaluating the implementation of a new online learning environment: an Australian institutional case study

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An Australian institutional case study is presented on the evaluation approach being adopted for the implementation of a new online learning environment. Well conceived and inclusive evaluation is seen as essential for the quality management of online learning environments. The focus is on identifying and reconciling the informational needs of various stakeholder groups in the institution, and developing a plan of action covering the key period of implementation. The significant judgements required to carry out evaluation in a multi-campus environment cannot be under-estimated. This is particularly the case given the more recent move to devolving resources and responsibility for the successful implementation of the environment to faculties in the institution concerned. It calls for a more sophisticated conception and set of practices around distributed leadership, as aided by institutions' teaching and learning centres. A set of strategic recommendations are offered to help with the evaluation task.

Keywords: learning management systems, evaluation, quality management, teaching and learning centres

Introduction

This paper draws on work being undertaken as part of an Australian Learning and Teaching Council (ALTC) project, **Building distributed leadership in designing and implementing a quality management framework for Online Learning Environments (OLEs)**, involving Deakin University, University of South Australia, Macquarie University, RMIT University and University of Southern Queensland. One key aspect of the national project is the investigation of the evidence required to enhance the quality management of OLEs. Therefore, the focus here is on leading an evidence-based, multi-level and multi-stakeholder approach to the evaluation of the implementation of a new online learning environment with particular reference to institutionally approved and supported learning technologies like learning management systems. The paper outlines the importance of, and challenges associated with, undertaking inclusive evaluation taking account of a range of stakeholder

information needs. This is required to best manage the quality of online learning environments over time. Such an evaluation is a major undertaking, and is not a straightforward task. It is fundamentally political in nature, requiring the declaration and reconciliation of different needs and interests. The way this challenge has been approached in one Australian university is explored. This is not a case study in the making of best practices. It is a case study on dealing with the realities of undertaking large-scale institutional evaluation of complex teaching and learning systems. The strategic and constructive role that teaching and learning centres can play in this endeavour is highlighted.

Background

In line with international developments, Australian universities have made very large investments in corporate educational technologies to support their commitments to online, open, distance and flexible education. Learning management systems (LMSs) have represented the centrepiece of these institutional investments over the last decade or more. Learning management systems are currently perhaps the most widely used and most expensive educational technology tool (Salinas, 2008), and, like many other learning technology trends before them, have been adopted by higher education institutions almost automatically and uncritically (Reynolds, Treharne & Tripp, 2003). The choice of a particular system is a significant decision-making event shaping institutional approaches to ICT-enabled learning for a considerable period of time, i.e. for most institutions at least five years. Many university leaders have a stake in making and implementing such a choice, ranging across University Senior Executive members, leadership of central teaching, learning, media production and IT groups and through various levels of faculty academic leadership. The latter encompassing such leaders as Associate Deans (Teaching and Learning), Heads of School and program and unit/course coordinators. Almost all staff in a university use and rely on its LMS in enabling student learning.

Many Australian universities have recently reviewed, are reviewing or will soon be reviewing their LMS technologies with a view to making decisions on the next generation of online learning environments and developments. In addition, adjunct specialist applications are often integrated into such systems to provide a one-stop-shop for students and teachers. LMSs, and associated corporately supported e-learning technologies, are seen by universities as 'mission critical'. Running in parallel with these institutionally-supported developments has been the growing use and importance of externally hosted social media/networking sites. These too are contributing to an enhanced learning experience and require increasingly careful attention.

Having committed to a particular system, what types of data are collected at what levels of the organisation to assure and improve the quality of use, and how is evidence acted upon through the various decision-making structures of the institution? The importance of quality management systems, and their current state of underdevelopment in higher education, is highlighted by Fullan and Scott (2009). Turnaround leadership, they argue, is dependent on the development of such systems, and a greater focus on outcomes and impact (as opposed to inputs). They also observe:

> ...a focus on robust evidence is often not front and center when it comes to making decisions about what most requires improvement and attention in universities, what their key strategic directions should be, or how well their core activities are currently working in practice. ...A university culture characterised by a commitment to continuous evaluation, inquiry, and quality improvement concentrates on using evidence to identify what aspects of its current provision are working well and what most need enhancement (Fullan & Scott, 2009, p.80).

The effective leadership of OLEs is also dependent on such systems with the associated focus on learning and teaching outcomes and impacts, and such systems are nowhere more important than in areas of greatest strategic importance and value to the institution – corporately supported LMSs and associated e-learning technology investments. We concur with Fullan and Scott (2009) that much greater commitment to systematic institutional evidence gathering and use is required in the area of OLE implementations. The Australasian Council on Open, Distance and E-learning (ACODE) has developed benchmarks for e-learning in universities and guidelines for their use (ACODE, 2007). Benchmark 2: Planning for, and quality improvement of the integration of technologies for learning and teaching is particularly relevant. The description of this benchmark, a good practice statement and performance indicators follow:

> **Scoping Statement**: There is a need for institution wide quality assurance processes to ensure the appropriate use of technologies in learning and teaching. This will include planning, implementation, evaluation and feedback loops.

Good Practice Statement:
Institutions support and encourage the appropriate use of technology in learning and teaching through strategic planning processes at all levels of the institution. The focus is continuous improvement through systematic and regular evaluation of implementation strategies and outcomes. Such evaluation will in turn inform future planning.

Performance Indicators:
1. Institution wide processes for quality assurance are in place and in use to integrate technologies in learning and teaching.
2. Institution and Faculty plans are aligned with institution policy for the use of technology in learning and teaching.
3. Operationalisation is planned and evaluated.
4. Planning and quality improvement is resourced.
5. Collaboration for integrating technology in learning and teaching occurs across key functional areas.
6. Evaluation cycles are in place to measure key performance indicators for all key stakeholders.
7. Outcomes are reported to all levels of the institution.
8. Evaluation feedback is integrated in planning for continuous improvement purposes.

It is timely to shed light on how universities, through this institutional case study, are currently conducting planning, implementation, evaluation and feedback loops in the context of the new wave of decision making on OLEs, including social networking developments.

Framing evaluation of OLEs: stakeholder analysis

Institutional surveying of staff and students' perceptions of the value of various functions of the OLE that Deakin University adopted in 2003 was undertaken over a three-year period. From a user perception perspective, this survey data provided indicators for action foci to improve staff and student satisfaction, and also challenged one-size-fits all institutional policy regarding the use and support of OLE systems (Palmer & Holt, 2010). Since the time of this surveying, the OLE at Deakin has expanded beyond merely the LMS to encompass a portfolio of e-learning technologies including a synchronous communications tool, a system for audio-visual recording of presentations for later online distribution via downloading, a set of social software tools, a third-party online service for checking the originality of submitted work, and others. Given both the intervening period and the expansion of the range of technologies now included in the OLE, there is a pressing need to update this information, as well as to establish on-going, systematic monitoring of the OLE (Sharpe, Benfield, Roberts & Francis, 2006). With the changing times, comes a need to evaluate students' perceptions of the value of e-learning technologies in terms of their capacities to support strong student engagement, quality learning experiences and quality learning outcomes (Coates, 2006). To evaluate merely student satisfaction with technical-functional aspects of the OLE now falls short of meeting this need. More fundamentally, as the OLE has expanded from being solely the LMS to encompass a portfolio of e-learning technologies, a key question arises regarding the best ways in which elements from the portfolio of technologies can be organised and combined into learning environments to improve learning (Gibbs & Gosper, 2006).

Parties that have a 'stake' in the evaluation are those who can affect or be affected by its conceptualisation and conduct. Their needs, interests, expectations and circumstances need to be carefully considered. Holt, Rice, Smissen and Bowly (2001) identified the following parties as having a key stake in decision making on learning management systems:

- **University Senior Executive**, strategic competitive considerations
- **Management of administrative support units**, cost-effective service delivery considerations
- **Management of academic support units**, learning resource management and quality of education considerations
- **Faculty academic management/leadership**, faculty-based competitive and marketing considerations
- **Faculty academic and teaching support staff**, discipline- and program-based educational considerations (Holt et al. 2001, p.273).

Added to these parties, in Deakin's most recent OLE decision making and implementation phases, has been the University's commercial software services division, i.e. the developer of a major commercial student information system. This party was allocated the responsibility of overseeing the OLE decision-making process and project managing the implementation of the system. They have been particularly concerned to ensure that certain benefits and associated key performance indicators (KPIs) are being used to evaluate the benefits of the

new system in use. The planned benefits and KPIs cover:

Benefit 1: Improved student experience
        KPI: More positive student perception of enhanced learning quality
        KPI: More positive staff perception of enhanced learning quality
        KPI: Increased student satisfaction with use of teaching and learning technologies
        KPI: Maintained student satisfaction with DSO [read new LMS as used with accompanying learning technologies]
Benefit 2: Reduction in online course delivery costs
        KPI: Reduction in staff time required to administer units in [new] DSO
        KPI: Increased ease of use for staff (compared with previous LMS)
        KPI: Reduction in ITSD [Information Technology Services Division] staff time required to support DSO
Benefit 3: More contemporary and flexible learning programs
        KPI: Increased innovations to program delivery via DSO
        KPI: Increased ease of use of online learning tools in DSO

Each of the stakeholders' interests naturally impact the ways in which these stakeholders would evaluate the benefits of any new OLE. Each set of interests carries its own self-evidently declared purpose for the evaluation. The purpose of the OLE evaluation has to be framed in an inclusive and non-biased fashion. In the University's case, through the function of an LMS evaluation working party (of which one of the authors has been a continuous member) established as part of the institution's overall LMS governance structure, the purpose of the evaluation was framed as follows: 'To inform all relevant stakeholders and their leadership on progress in realising the benefits of the new DSO in enabling the achievement of Deakin's flexible education vision, along with providing them with a basis for informed decision making'. The question to be addressed was: 'Does the new Deakin Studies Online (DSO) environment [read new LMS as used with accompanying learning technologies] make a difference to teaching and learning at Deakin University?' If the new DSO environment does make a difference, in what ways, how, when and where are the differences experienced? The key questions were underpinned by a series of more specific questions representing a range of views of the various stakeholder representatives involved in the working party's deliberations:

- Does the new DSO enhance the quality of learning and teaching?
- Does the new DSO enhance the efficiency of learning and teaching?
- Does the new DSO enhance the satisfaction of learning and teaching?
- Does the new DSO enhance accessibility to learning opportunities?
- Does the new DSO enhance the administration and management of learning?
- Does the new DSO impact academic workload (new compared to the old system)?
- Does the new DSO provide opportunities for the advancement of higher education research/scholarship?

While the benefits as outlined above were shared and more or less understood by various stakeholders at the beginning of the process, the evaluation scope was seen to be broader than this specification of purpose (the KPIs, on the other hand, were developed through a separate senior management mechanism and shared later in the working party's deliberations). It was felt that evaluation activities had to give stronger expression to students' and teaching staff members' experiences and wishes to contribute to enhanced system use over time. The deliberations begged still further the question of what was in and out of the scope of the planned evaluation. Was the focus to be on the teaching and learning implementation impacts of the new learning management system, as integrated with other institutionally supported learning technologies, all representing the new DSO environment for the University? Or, was the evaluation merely to focus on the new LMS itself, in isolation from other significant learning technologies? The consensus after extensive deliberation was for the former position to be adopted. While important, the assessment of the technical performance of the new DSO and the relationship with the vendor was not seen to be within the scope of this predominately teaching/learning focused evaluation approach. It was assumed these would be handled separately by the University's IT Division and commercial software services operation, respectively. Such evaluation activity, however, was noted in the overall plan (see Table 1 below).

An evaluation plan for the new DSO

While the DSO evaluation working party gradually worked its way through to an agreement on purpose (i.e. the overarching and subsidiary evaluation questions) and shared understanding on higher level benefits and KPIs, a concrete plan of evaluation activities needed to be determined, along with their timing and responsibility for their carriage. As for timing, the evaluation was seen to be needed over a three-year period from 2011 to 2013. The 2011 evaluation would focus on collecting institutional baseline data on the University's current DSO environment and evaluating initial transitioning to the new LMS through the pilot unit program. The 2012 evaluation focus would be on the complete implementation of the new LMS/DSO across the University, with special focus on the value of the new system's features. The 2013 evaluation focus would be on the integration of the new DSO environment across programs/courses as part of the University's new curriculum reform agenda.

The methods of evaluation to be used would cover:
- Institutional surveying of staff and student perceptions of the importance, satisfaction and use of various functions in the current and new LMS, and accompanying learning technologies
- Usage data extracted from the new system at institutional, faculty and program/course level
- Faculty-based surveying of staff and students involved in the new LMS/DSO pilot unit program
- One-on-one development support for teaching staff involved in the pilot unit program
- Sharing of academic developers' and teachers' experiences of the new system through faculty and University forums
- Interviews and focus groups with key staff involved in integrating the new DSO environment into their programs/courses.

The evaluation outputs would include:
- Institutional reports on staff and student use and value attributed to the new DSO environment
- System usage data reports
- Faculty reports and case studies on the use of the new DSO, including the value of new features
- Presentations at faculty and University forums
- Presentations at external academic conferences and events
- Academic publications.

The nature of evaluation methods to be used and their timing is summarised in Table 1 below. The three-year plan is still a work in progress. It represents a multi-level and multi-domain approach involving the work of various stakeholders located centrally and in faculties, and as spread across the University's distributed multi-campus and multi-city operation. It represents an amalgam of centralised and decentralised activities. The evaluation plan is distributed, along with the leadership and control of resources for its various components. The devolution of significant resources and staffing for supporting the implementation of the new LMS to faculties is a significant departure from previous institutional LMS implementation practices. The locus of LMS implementation control has shifted from the centre to the faculties and is represented in each faculty having its own LMS transition plan and local control over the resources to make it happen. Faculty variations in LMS evaluation and research interests and commitments naturally flow from this devolved implementation model.

Table 1: Institution plan of evaluation foci and activities

Evaluation/research activity	2011	2012	2013
Institutional surveying(teaching and learning centre)	Baseline staff and student data on current OLE	Staff and student data on new OLE	Staff and student data on new OLE
Faculty developmental evaluation (Faculties)	New OLE pilot unit program	New OLE initial roll-out	OLE mainstreaming
Faculty summative evaluation (teaching and learning centre with faculties)	New OLE pilot unit program – interviews with staff and surveying of students	To be determined	Not required
Research on integration of new OLE with curriculum development	NA	To be determined by faculties and teaching/learning centre	To be determined by faculties and teaching/learning centre

OLE technical evaluation (IT Division)	New OLE pilot unit program	Going live across the institution	Monitoring ongoing performance
OLE change management effectiveness (Project management centre)	New OLE pilot unit program	Going live across the institution	Full embedding of new OLE in institution's teaching and learning environment

Evaluation challenges

Work in planning the evaluation has raised a number challenges, which are explored below.

What is the purpose of the evaluation?

The purpose of any new OLE evaluation can be clear, that is, clear to those themselves who have a particular view about the benefits to be had from any new system implementation. The problem is that a wide range of views are in force, held by parties who might wish to draw others towards their points of view based on their sense of importance and authority. There are those who have broader and more limited benefits in mind, those who have interests in some benefits but not others, those who see benefits as realisable sooner rather than later, or who, in fact, require that such benefits are realised sooner than later. Some parties are open to unanticipated benefits (and, indeed, costs), while others are fixed on the defined benefits plan. Limited defined benefits call for limited and closed methods of data collection; more open and expansive views of benefits yet to be imagined call for a greater diversity of methods of both open and closed form. To work through these many and possibly conflicted views is not an easy exercise. We see some central organisational group, like a teaching and learning centre, as being best placed to help facilitate and coordinate some overall institutional plan of action (and the three authors of this paper are all actively contributing to it from the vantage point of being members of such a centre). This role was made more problematic within our institutional context as the evaluation plan was conceived at a time when the Centre was in the midst of major restructure and redirection with debates around what and how much should be in the new Centre and what and how much should be devolved to faculty and how the two would work together. A new Centre, accompanying a new LMS, accompanying a national external Australian Universities Quality Agency (AUQA) audit in the first year of implementation provided a highly volatile environment to plan centrally the evaluation task.

What types of evaluation should be conducted?

There was a general consensus in the University's DSO evaluation working party that baseline data should be collected on staff and students' views on the current LMS/DSO environment in the first year of the implementation plan (see Table 1). This surveying should be repeated in the following two years as parties moved into the new system. Two of the authors of this paper designed, produced and administered the surveys in concert with Senior Executive support. The surveys were modelled on those used over 2004-2005 during the initial implementation of the institution's previous LMS. The University discontinued these surveys when the system was reaching a maturity of use, and relied on two items in its standard unit-based student evaluation surveying to ascertain views on systems reliability and value for learning. The new staff and student surveys were expanded to include other accompanying learning technologies that had been added and integrated with the LMS since its initial implementation. The new surveys retain a focus on the importance and satisfaction of various features offered by the LMS, along with the subsequently added learning technologies supported by the institution. In addition, a new dimension has been added related to frequency of use. This was seen as a proxy measure of student engagement, an agenda popularised in recent years through the advent of the Australasian Survey of Student Engagement (AUSSE), which was also used in our own institution for a period. Student engagement relates to the time and effort devoted to purposively designed tasks, and frequency of use is a helpful measure of how much time students spend using various technology features. The survey for students also covers their perceptions of support for the use of the OLE, and, for staff, the adequacy of professional development and training opportunities in using the OLE to best effect. Both surveys have a question for respondents on how well informed they believe they are about the advent of the new LMS. The institutional surveys have received University ethics committee approval. We recommend that as much as possible all data collection methods go through the rigorous process of independent ethics review to ensure they are technically and ethically sound.

We certainly acknowledge that the surveys are product-centric. Questions of how features and technologies are

selected, integrated and used by teaching staff is not central to the staff survey design, unless such information is volunteered through open-ended questions on best aspects of the OLE, and those that need improvement. A parallel argument can be made about the design of the student survey. It is again product-centric. It does not directly examine the student experience of engaging with their overall online learning environment. Ultimately, any type of data collection method will have its limitations. Institutional surveying of the type used in our case directly responds to senior leaders' concerns to find out whether the OLE is well used and well valued, i.e. is there an adequate return on the educational technology investment made by the institution? Senior leadership want and need evidence to at the very least know whether a good decision has been made, and that the new system will stand the institution in good stead over time. Exploring the more nuanced uses of the OLE needs to be considered at faculty, program and discipline levels. This is reflected in Table 1 where added depth of focus will be on those units piloting the new LMS in 2011 through consistent student surveying across all pilot units and depth interviews with the leaders of those units. With the new LMS pilot evaluation, unit chairs were asked, in interview, a range of questions covering how they used the new system, how easy it was to use the system for themselves as teachers and for their students, whether they used it differently to the current system, whether it had helped to enhance the quality of teaching and learning, whether administration and management was easier using the new system, along with identifying elements of the system that might have the biggest impact on enhancing learning, ideas on how it might allow staff to change their teaching over time, improvements that could be made, and any additional support or training that would be beneficial. Students undertaking the pilot units received a survey with closed-ended questions covering ease of access and use of various elements of new system in various modes/places, and open-ended questions covering whether the new system enhanced learning, was more reliable, along with identifying best aspects of the new system, areas needing improvement, ideas on what the new system could do but which it can't do currently, and views on any additional training/support needed to use the system better.

Additional forums are planned to be run to allow a broader range of parties (beyond unit chairs) to share their experiences of being involved in the pilot unit program. These forums will involve senior academic leaders, all those involved in teaching on the pilot units, and central and local faculty support staff. Additionally, faculties are collecting data on the fly in their pilot units to help improve the online learning experience as it is occurring. The longer term impacts of the new LMS on curriculum design and delivery are to be researched, although the exact mechanisms to do this are yet to be determined. The new LMS is being implemented at the beginning of the University's new teaching and learning planning period, and relates to the institution's commitment to undertake wide ranging curriculum review and reform.

Finally, apart from transmission of learning resources and facilitating learning interactions, one of the primary functions claimed for LMSs is the provision of evaluation information (White & Larusson, 2010). Most commercial LMSs have some form of built-in analytic reporting capacity that logs and tracks certain types of user activity, typically including number of logins, duration of logins, access to learning resources, communications and other interactions, completion of learning tasks, etc. (Dawson, Heathcote & Poole, 2010). This recorded 'student tracking' data provides system administrators and educators with potentially valuable information for evaluation of aspects of performance of the LMS (Mazza & Botturi, 2007). For example, tracking data on student use of an online discussion space was combined with other information and used to reveal distinct patterns of usage of the discussion space and which types of student posts were positively associated with desired learning outcomes (Palmer, Holt & Bray, 2008). This will be another layer of data analysis in our own institution's approach.

Who needs to approve evaluation?

This is not a trivial question as large-scale institutional surveying of OLEs usually needs to fit within an annual schedule of surveys of students and staff as approved by the University's Senior Executive (and as organised in our case through the University's Planning Unit which is responsible for all institutional data collection). Surveying of students' and staff members' views about various aspects of the institution's OLE must sit comfortably with an institution's ongoing system of student surveying on units and the perceived quality of their teaching. At Deakin, all coursework units are surveyed each time they are offered over a six-week period from late in the teaching period through until the end of examinations. External student surveying also needs to be taken in account. The surveying landscape can be very crowded and students placed in danger of being over-surveyed thus degrading survey responses. Different surveys running concurrently can be frowned upon. To commit students and staff to a further survey on the OLE, an institution must see its OLE as being strategically very important. It must wholeheartedly commit to the importance of collecting and using institution-wide data for improved decision making and improved practice. More practically, new surveying must be conducted

during gap periods in the annual surveying calendar. The surveying, though, must make sense in terms of its timing and use. These logistical matters cannot be under-estimated. The best designed surveying will count for nothing if the surveys themselves can find no room in crowded institutional survey schedules. Enhancing the student experience must be central to the imperative to ask for and secure approval for major new data collection methods. This must be strongly advocated, and Senior Executive sponsorship is essential. The argument will not necessarily sell itself from afar. An added impetus for making such requests and having them seriously considered at the highest level might lie in being actively involved in a relevant nationally funded ALTC-type project where evidence gathering is a major focus of attention.

Who needs to accept responsibility for funding and conducting evaluation?

One might expect that any new systems implementation budget would make allowance for costs involved in carrying out an institutional evaluation plan. Those who manage such budgets can quite reasonably expect an upfront cost estimate. However, providing such upfront estimates is difficult as evaluation planning can be a very fluid exercise, with an agenda that is pushed and pulled between different parties with different information needs, which in turn may be much more or less expansive in nature. Cost estimates can be further complicated by expectations that it is the 'core business' of certain established institutional groups to undertake such work largely from their own resources. These might range from the absolute minimalist stance of using limited currently collected data to opening up whole new lines of rich data collection. Teaching and learning centres can be reasonably asked to make a significant contribution to evaluation activities, but they may not be in a position to run all necessary institutional surveying.

The added challenge in costing and conducting evaluation relates to the devolved nature of the LMS implementation, with faculties being allocated significant amounts of funding to support local developments. Their own transition plans can contain local evaluation commitments and associated funding allocations. This raises the issue of the need to be clear about what is being done centrally and what is being executed locally. It might be reasonably accepted that institutional surveying lies in the province of a teaching and learning centre. Equally, in an environment with strong faculty-based academic development resourcing, it could be reasonably assumed that the lead for research on the alignment of a new OLE with program or discipline curricula might come locally. However, there are activities which fall in-between these two ends of the continuum that can be seen as overlapping and possibly disputed territory amongst stakeholders. This can particularly be the case with planning the evaluation of any piloting of the new system, and in determining what data should be collected consistently across all pilot units and what data should be collected based particular faculties' specific interests.

How long should the evaluation task be sustained?

Our University is planning for special evaluation activities over a three-year period at this stage. Special activity relating to the evaluation of the pilot unit program is only required in the first year of implementation. It has been speculated amongst stakeholders that the benefits of some of the major new features of the system may not materialise in full until well down the track. At a point, special evaluation activity needs to give way to routine and ongoing data collection, which integrates with the institution's continuous quality improvement processes. We see, though, in the longer term, greater opportunities for specialist research projects on various aspects of the impact of the new OLE, particularly with the gradual uptake of significant new features. In the case of our own institution, renewed impetus will be given to both specialist evaluation and research projects through the establishment of a new Teaching and Learning Centre, focused on enabling desired learning futures, and encompassing research, scholarship, development and practice improvement in the realm of flexible education within its mandate.

How can evaluation best inform decision making and improve practice?

Leadership of OLEs is embedded at many levels of the management hierarchy and is exerted informally by leading edge users of any new system. Data collected at different levels for different stakeholders must feed into decision making through myriad structures and mechanisms. Higher level data collection must feed into the institution's OLE governance structure as related to standing committees of Academic Boards and IT planning/budgeting committees. Institutional data showing breakdowns by faculty needs to flow into faculty-based teaching/learning committees and their deliberations (at both faculty and possibly school/departmental levels). More nuanced program and unit data must feed into the leadership of courses, disciplines, units and their teaching teams. The above 'feed in' mechanisms relate to sharing and deliberating on data within vertical discipline-based hierarchies which characterise universities' organisational design (see Mintzberg's (1979)

characterisation of universities as 'professional bureaucracies'). The challenge remains as to how to facilitate sharing of experiences and useful practices across faculty, departmental and discipline boundaries; that is, how to promote forms of horizontal leadership and learning. This is where the expertise of leading edge or pioneering academic teachers comes to the fore. In the name of the learning organisation (Senge, 1990), opportunities must be orchestrated to enable such boundary riding. Teaching and learning centres can provide these boundary straddling opportunities through forums, promotion through communities of practice and annual conferences.

The overall evaluation orientation

Educational institutions cannot conduct large-scale controlled experimental research on the utility of different learning management systems, or any other significant educational technology for that matter, for a host of pragmatic and ethical reasons. The practical issues range across the financial, legal and logistical. Few educational technology studies do, in fact, reach purportedly high scientific standards at any rate (see, for example, meta-analysis of online learning studies reported by Means et al., 2009). For example, no university could afford to run in parallel two LMSs to test their comparative utility, nor could they afford to randomly deny an LMS to one student cohort to test its efficacy in relation to those using it in a treatment group, certainly not if the control group constituted distance education students where access and equity considerations apply. Once decisions are made on large-scale enterprise-wide investments in things like LMSs, the institution is involved in long-term contractual commitments. There is no way of easily going back. This applies equally to the human resources that need to be developed over significant periods to reap the best outcomes from any technology deployed. We concur that the best research, scholarship, evidence and experience needs to be applied in educational technology decision making, deployment and use; but all of this is indicative, not definitive, in nature. Professional judgment making must come to the fore.

People cannot be or remain neutral players. Evaluation must have a strong formative, developmental orientation. It must be aimed at getting the very most involved and deriving the very best from what can be obtained from the investments made. Here, we cite the work of Guba and Lincoln (1989) who have explained and critiqued four generations of evaluation. In critiquing the first three generations of evaluation that revolved around measurement, description and judgement, they argue for the need for a new paradigm, 'fourth generation evaluation'. The authors emphasise that evaluation is not about revealing truths. They see evaluation as enabling stakeholder constructions, with negotiation to shared and more sophisticated understandings being the key. Courses of action are, therefore, determined through a process of negotiation between stakeholders, and are responsive to their needs. It is not easy to conduct a fourth generation evaluation as related to OLEs. And yet the spirit of this paradigm is laudable and in some ways desperately required to work through the maze of stakeholder needs and expectations.

Of equal usefulness is the movement around design-based research (DBRC, 2003). The DBRC argues that design-based research has five characteristics.

1. The goals of designing learning environments and theory development are interrelated.
2. Research and development occur "through continuous cycles of design, enactment, analysis and redesign".
3. Design research "must lead to sharable theories that help communicate relevant implications to practitioners and other educational designers".
4. Research must explain the way "designs function in authentic settings".
5. The development of these explanations uses methods "that can document and connect processes of enactment to outcomes of interest". (DBRC, 2003, p. 5.)

DBR sees research and development working in concert through a commitment to ongoing action and evaluation. It seems like a compelling approach to improving teaching practices and learning experiences over time with the advent of new LMSs, and OLEs more generally. The sorts of questions that could be addressed by DBR follow: What forms of online teaching support current pedagogy? What forms of online teaching enhance student learning? Do these differ for different learning areas and fields of study? What are the pedagogical principles on which online teaching is based? Are online offerings equitable? Do online offerings cater for cultural diversity among students? What forms of staff development will best ensure the maximum possible realisation of the pedagogical potential of online teaching and learning? How does online teaching and learning relate to promoting student-centred and lifelong learning?

Conclusion

Many people, both formally and informally, assume and exert leadership on the development of online learning environments in their institutions. They are located across various physical locations and operate in different domains and levels of the management hierarchies. Leadership emerges from the interplay of leaders and hence the focus of attention has increasingly been directed at cultivating distributed leadership to enhance organisational performance. This applies also to orchestrating institution-wide approaches to planning the evaluation of a new learning management system. In order to conceive and execute the best possible evaluation plan for the implementation of a major new institutional online learning environment the following recommendations are offered:

- Active Senior Executive support for the institutional evaluation.
- Clear statement of the benefits to be gained from the implementation of any new OLE.
- Understanding of how identified benefits relate to the needs of major parties/stakeholders throughout the institution.
- Evaluation plan determined for an appropriate period of time, i.e. at least three years.
- Use of an appropriate range of data collection methods which address the key benefit areas, and any associated key performance indicators.
- Clear distinction between evaluation to be conducted to meet institutional information needs and specialised research projects initiated at the local faculty level.
- Timetable for data collection and dissemination of evaluation reports.
- Protocols for the approval and dissemination of completed reports through Senior Executive to inform the practices of early adopters.
- Consideration of evaluation reports through well established governance mechanisms with a focus on required decision making.
- Flexibility where required to focus evaluation efforts on priority areas as they emerge over the implementation period.

Teaching and learning centres have a key leadership role to play in this regard. Centres are in a unique position to see overall institutional developments and needs. However, at least in our own institution, in a time of increasing devolution of academic development resources to faculties, the role must be seen through the lens of distributed leadership. A plan of action must be orchestrated with others and key aspects of it can only happen through the efforts of many throughout the organisation. The paper has attempted to give some insight into the challenges of evaluating the implementation of a new LMS, and how these challenges have been dealt with. Stakeholder interests need to be understood and reconciled in some manageable way. Much is at stake in relation to institutional performance and reputation. Valuable data must be collected and used wisely. Professional judgement making is required in quite a politicised environment. Our own institution's plan is still in the making and will no doubt have to adapt to changing circumstances.

References

ACODE (2007). *Australasian council on open, distance and e-learning benchmarks for e-learning in universities and guidelines for use*, June.

Coates, H. (2006). *Student Engagement in Campus-based and Online Education*. New York: Routledge.

Dawson, S., Heathcote, L. & Poole, G. (2010). Harnessing ICT potential: The adoption and analysis of ICT systems for enhancing the student learning experience. *International Journal of Educational Management, 24*(2), 116-128. https://doi.org/10.4324/9780203969465

Design-Based Research Collective (DBRC). (2003). Design-based research: An emerging paradigm for educational inquiry. *Educational Researcher*, 32(1), 5. https://doi.org/10.3102/0013189X032001005

Fullan, M. & Scott, G. (2009). *Turnaround Leadership for Higher Education*. San Francisco: Jossey-Bass.

Gibbs, D. & Gosper, M. (2006). The upside-down-world of e-learning. *Journal of Learning Design, 1*(2), 46-54.

Guba, E.G., & Lincoln, Y.S. (1989). *Fourth generation evaluation*. London: Sage Publications.

Holt, D.M., Rice, M., Smissen, I. & Bowly, J. (2001). 'Towards institution-wide online teaching and learning systems: Trends, drivers and issues' in G. Kennedy, M. Keppell, C. McNaught & T. Petrovic, (Eds). *Meeting at the Crossroads. Proceedings of the 18th Annual ASCILITE Conference*, 271-80. The University of Melbourne, Australia, pp.271-280.

Mazza, R., & Botturi, L. (2007). Monitoring an Online Course with the GISMO Tool : A Case Study. *Journal of Interactive Learning Research*, 18(2), 251-265.

Means, B., Toyama, Y., Murphy, R., Bakia, M. & Jones, K. (2009). *Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies*. U.S. Department of Education

Office of Planning, Evaluation, and Policy Development, Policy and Program Studies Service.

Mintzberg, H. (1979). *The Structuring Of Organizations: A Synthesis Of The Research.* Englewood Cliffs, N.J.: Prentice-Hall.

Palmer, S., Holt, D. & Bray, S. (2008). Does the discussion help? The impact of a formally assessed online discussion on final student results. *British Journal of Educational Technology, 39*(5), 847-858.

Palmer, S. & Holt, D. (2010). Students' Perceptions of the Value of the Elements of an Online Learning Environment: Looking Back in Moving Forward. *Interactive Learning Environments*, *18*(2), 135-151.

Reynolds, D., Treharne, D. & Tripp, H. (2003). ICT - the hopes and the reality. *British Journal of Educational Technology, 34*(2), 151-167. https://doi.org/10.1111/1467-8535.00317

Salinas, M. F. (2008). From Dewey to Gates: A model to integrate psychoeducational principles in the selection and use of instructional technology. *Computers & Education, 50*(3), 652-660.

Senge, P. (1990). *The Fifth Discipline:The Art And Practice Of The Learning Organization.* New York : Doubleday/Currency.

Sharpe, R., Benfield, G., Roberts, G. & Francis, R. (2006). *The undergraduate experience of blended e-learning: a review of UK literature and practice*. York: The Higher Education Academy.

White, B. & Larusson, J. A. (2010). *Strategic Directives for Learning Management System Planning*. Boulder: EDUCAUSE Centre for Applied Research.

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