Change and innovation strategies during the implementation of an open source LMS: an Australian case study

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This paper analyses the change and innovation strategies that Charles Sturt University (CSU) used during the implementation of an open source learning management system (LMS) i.e. Sakai but locally called CSU Interact in 2007 and 2008. CSU was in January 2008 the first Australian University to implement an open source learning management system institution wide. This study has been strongly influenced by the writer’s doctorate research into technological innovation in higher education. The unique characteristics of implementing change and innovation in higher education are discussed as well as CSU’s change model that comprises eight dimensions that can occur in any order and also simultaneously. This model is based on the work of Kotter and Cohen, and Synnot. Two key strategies to support change of building learning communities and sharing best practice in implementing educational technology have emerged. Some of the findings were that the change was largely driven from the bottom-up and through the writer’s role from middle-management in terms of top-down strategies. During this change and innovation process it was noticeable that the known movers and shakers engaged in the process as early adopters. As indicated in the LASO model (developed by the writer as a direct income of his PhD word), a multi-pronged approach addressing top-down and bottom-up strategies has more potential for success. Educational change and innovation and the related key strategies change management, professional development and communications needs to focus on people. Technological innovation in the context of an open learning management system have wider, external implications than the local institution given the free flow of information and intellectual property within the community. CSU needs to continue to extend the educationally focussed implementation of CSU Interact in learning and teaching to create richer experiences for the students so that educational technology truly serves the purposes of learning.

Keywords change; innovation; elearning; educational technology; open source; learning management system; LASO

1. Background

This paper analyses the change and innovation strategies that Charles Sturt University (CSU) used during the implementation of an open source learning management system (LMS) called Sakai [1] in 2007 and 2008. CSU was in January 2008 the first Australian University to implement an open source learning management system institution wide. CSU has been experiencing change in an ongoing way for the last few years that correspond to the view of Tsoukas and Chia [2] who “treat change as the normal condition of organizational life”. It is necessary, as Fullan [3] suggests, “… that we explicitly think and worry about the change process” in educational reform and innovation. At Charles Sturt University, Sakai is called “CSU Interact” [4] as this LMS was implemented to increase innovative learner engagement and interactivity in learning. This community source learning management system or online learning environment replaced the home grown and fragmented current model as part of a broad strategy for innovation in flexible learning.

Charles Sturt University [5] is the biggest distance education provider in Australia with 33000 students in total, while also having 30% of its students distributed over a number of campuses for predominant face-to-face instruction. CSU has a strong print history but are moving into a blended delivery mode through the use of print and digital media. The University has a number of international campuses and partners who are all using CSU Interact. The academic staff component consists of full-time and casual staff who all needed professional development in using CSU Interact. AS with most universities world-wide, there is typically a small percentage of academic staff who are front-runners in the use of learning technologies while a large percentage of staff move slower when it comes to integrating new learning technologies in their learning designs.
2. Change and innovation strategies

The change process started in January 2007 and continued through December 2007 when over 700 academics started to use CSU Interact to January 2008 when 35,000 students engaged in online learning supported by CSU Interact.

2.1 CSU change and innovation management model

CSU has adopted a change model [6] that comprises eight dimensions that can occur in any order and also simultaneously. This model is based on the work of Kotter [7], Kotter and Cohen [8] and Synnot [9]. This model proved helpful and provided a framework for University-wide change strategies, School strategies and divisional strategies. These dimensions are discussed below as they were applied to the introduction of the open source learning management system.

The first dimension deals with people issues. The majority of academic staff was open to the introduction of a new online learning environment. It did become, however, evident in some areas that academics have been resisting the full use of CSU Interact. It is critical in learning and teaching transformation to address the concerns and perceptions of academic staff in the light of the need for changing their attitudes and to ensuring ownership by academic staff ( [10]; [11]). Dimension two ensures that a sense of urgency is created and maintained. The deadline of 17th December 2008 by which academics got access to the System and the online version of their subjects, created some urgency. The university wide implementation of this LMS and the communication around it further made it clear to all staff at the university that a new era of online learning has begun. The third dimension of the CSU change model calls for a collaborative guiding of the change process. The representative Online Learning Environment (OLE) Steering Committee and the OLE Programme Team lead the change process. There were also guiding teams in some of the administrative divisions. In some of the academic schools implementation teams were formed but in others the change process was less successful and depended on a few enthusiasts.

Creating alignment with University goals is a further dimension of the change model. CSU Interact is seen as instrumental to support CSU’s vision to be, by 2011 a leader in the flexible provision of quality learning and teaching. School- and divisional based plans for the introduction of CSU Interact were also created. It is vital to answer the question of academics “what’s in it for me?” in a change process and in this process it was not always clear how academic might benefit from using CSU Interact. The rationale for change at school level was also not always well defined and hampered the uptake of CSU Interact. Dimension five involves communicating the vision for change, and with CSU Interact an extensive communication plan was executed across the University to all staff and students. These communications included emailing news messages, formal communications through committees, screensavers and through the extensive professional development plan.

The sixth dimension deals with empowering people and the removal of barriers. Extensive professional development occurred across the University and its affiliates and centres followed by a ready support plan. Not many procedural changes occurred during the initial phases of implementation except that publishing online was new to many academics. The policy issues that had to be dealt with included copyright matters and was addressed as required. The staff in the division dealing with information technology also has to alter their work processes to work within an open source community. Dimension seven focuses on achieving short-term wins, which was achieved during the implementation through running pilots and also through front runners who started using CSU Interact in innovative ways. The final dimension of the change model leads to the consolidation of performance improvements that is supported by a continuing professional development programme. Performance improvements are expected in 2009; and beyond as academics design new and blended learning experiences for students.

During this change process, two key bottom-up strategies emerged: The building of learning communities and sharing of best practice.

2.2 Building learning communities

Gibson and Manuel, [12] argue that effective communication and continued interaction allows those involved to develop common values and a shared understanding based on mutual trust which is fundamental to building of communities, allowing them to grow, change and achieve objectives. The development of ‘learning communities’ that engage academics in local communities of discourse about their educational practices provides a sound basis for innovation and reform [13]. If learning communities’ are to create change, however, they must involve learning at all levels of the organisation.

Some communities of practice developed through targeted actions but this was complex as the Centre for Enhancing Learning and Teaching does not have line authority in academia at CSU. Most initiatives therefore were encouraged and supported by bottom-up voluntary efforts. A reasonable success was the community that
developed around a general Interact group site about information and communication technologies (ICT) integration [14] where just over 500 staff members joined voluntarily. This site became a key communication mechanism for all Interact related matters. It is important in the next phase to change the dynamics and nature of the site to be more collaborative and more participative. Strategies that are being considered to grow and enrich the life of the CSU Educational Technology Community are to meet bi-monthly in a forum by video-conference across all campuses so that two/three people can share their stories about ICT integration, followed by an open time where anyone can share/show interesting aspects of their learning and teaching enabled by technology, new technologies on the horizon, worthwhile articles, summaries of presentations at conferences and the like.

The Sakai open source system links CSU to the wider Sakai technical and user community which is critical for being up to date with Sakai developments, for more efficient computer code developments and professional development and for contributing back to the community. This area will be grown in 2009 and beyond.

2.3 Sharing of best practice

Attempts were made to build an online Learning Designs Showcase consisting of comprehensive learning designs involving ICTS, but these efforts were thwarted by delays in the peer review process. In addition the reward structure was not inviting enough. This initiative will need to be revisited in 2009 to ensure continual extension of this Showcase.

An alternative initiative to collect short stories of CSU Interact usage [15] proved to be more successful. Educational designers from CELT, of whom every academic school has one, collected these stories from academics and posted it on the wiki in the site about ICT integration where after the stories were categorised and added to a website. This will be continued while also adding the “stories” of the bi-monthly forum to this site. Stories form the wide Sakai community can also be sought and added to this resource.

2.4 Unique aspects of educational change

Adrian Bromage [16] identified the following unique aspects of educational change and innovation by comparing the literature of change in general with that of educational change.

The first aspect is the need for mutual education to take place. This did occur at CSU in a minor way given the top-down decision to implement CSU Interact university-wide from January 2008. Mutual education did, however, occur between academics and educational designers around the details of the implementation and the application of ICT in their teaching. The second aspect is the imperative to follow a collegiate approach. Given that the change was implemented on grassroots through academics who worked closely in most cases with educational designers, a collegiate approach was largely followed.

Providing high quality evidence to academics is the third aspect. Not enough work was done in this area which lead to a lukewarm reception of CSU Interact. Case studies of the implementation and use of Sakai and other online learning environments management at other institutions internationally could have been helpful in achieving more extensive buy-in. Bromage posits lastly that a spirit of open debate should occur for educational change to be effective. This aspect was not possible on the higher levels of decision-making given the top-down decision to implement CSU Interact university-wide from January 2008. Debates did occur about how to integrate CSU Interact in subjects. Ramsden [17] suggests that the enterprise culture, by retaining a significant role for decision making at the level of the academic organisational unit, can be both responsive to the changing educational environment while retaining enduring academic values. Uys and Tulloch [18] points out that in changes related to learning technologies, however, the balance of tight and loose control over implementation is a particularly challenging one because the institutional imperatives around a centralised approach to IT infrastructure provision can militate against the engagement of academics in changing their teaching upon which any effective implementation of learning technologies ultimately depends.

This dynamic, also called the interplay between bottom-up and top-down change approaches, is well captured in the LASO model.

2.4 LASO model

The LASO (Leadership, Academic & Student Ownership and Readiness) Model for Technological Transformation in Tertiary Education [19] can also be used to evaluate the implementation of Sakai at CSU. This model acted as an additional guide to the change and innovation management process at CSU.
The LASO model emphasises the importance of integrated top-down and bottom-up processes, which is also proposed by Gunn [20] and Fullan [3] who refers to this dilemma as the tension of “… combining individual and institutional development...”. The LASO model suggests that technological transformation occurs when leadership is integrated with academic and student ownership and readiness. Leadership is achieved through mechanisms such as defining a clear vision for the transformation, providing a reward structure for those engaging in the change process and the creation of a strategic framework to guide the transformation.

In summary, looking at the implementation in the light of the LASO model, various top down and bottom-up strategies were used. Top down strategies included linking and adhering to the CSU Strategic Plan 2007 – 2011 [21] and the CSU Learning and Teaching plan [22]. There has been a Steering Committee and a Program Team that has been governing the implementation. The Deans and Heads of Schools were briefed at critical points. The inevitability created through the top down decision that Interact will be used University-wide from the beginning of 2008 created further top down impetus. The CSU experience confirms the view of Berge and Schrum [23] that the key to successful campus initiatives in technology-enhanced learning and distance education is the support of campus leaders.

At CSU the bottom-up strategies included running pilots, extensive professional development, wide communication also with students as well as the extensive support provided by the educational designers. The middle-management was not adequately prepared and did not play the crucial role they could have played in motivating academic staff and resourcing change. The change was largely driven from the bottom-up and through the writer’s role from middle-management In terms of top-down strategies.

3. Professional development

Professional development (PD) is critical in empowering academics for participation in innovation and educational change. This programme was very successful and prepared academic staff, on which the professional development was focussed, well for using Interact. One of the reasons for this success was that the Centre for Enhancing Learning and Teaching (CELT – of which the writer was a member) had a couple of dedicated staff to the PD programme who developed PD materials and ran workshops. The PD sessions in the schools occurred in late 2007 with some repeats occurring in 2008. The educational designers also provided one-on-one professional development and support.

Being part of a world-wide Sakai user community allowed us to use already developed materials from the Sakai community. We built extensive online resources through a “Help” site using frequently asked questions (FAQs). The CSU Interact site ‘about ICT integration’ linked to all the PD materials and allowed for questions to be posted. A staff support site was created with extended support materials that were widely used.

The academics were deeply involved through pilots, as participants in the PD programme and through immersion through project sites (for example for use for research) in CSU Interact. Academics also held brown-bag lunch time meetings in schools and share their experiences in the pilots. PD of CSU Interact has further been built into the official Foundations of University Learning and Teaching programme which is compulsory for all new teaching staff. A wide range of sessions on the use of CSU Interact was presented at the face to face 2008 CSU Learning and Teaching conference.

Training for students occurred through an immersion approach where students learned about CSU Interact during the process of accessing information on student life at CSU. Students also learned to use the online tools through actual use given that the tools are less complex on the student side (and more complex for academics in setting up materials). In the divisions a variety of strategies were used such as workshops, building Interact project sites, linking learning to performance management and self-study.

4. Communication

Communication is central to successful participation in educational change and innovation. The communication in this programme was effective and no academic staff member or student could legitimately claim not to have known about Interact in general and one or two specific aspects in particular. The communication programme was integrated in the change management and PD processes with a central communications team conveying messages. Communication to students occurred at key points through an efficient system whereby all students of the University are individually emailed via a computerised system. Computer screensavers were implemented for all staff and students. Various communication strategies were used in the divisions such as briefing sessions and representation on the central Interact Communications Team.

Kotter and Cohen [8] emphasise that change management approaches should focuses on both rational approaches as well as on the affective domain through see-feel-change strategies. In this regard a CD in which academics who participated in the pilots share their stories and where senior administrators in the University share their vision for Interact was provided to each academic. Bottom-up communication with academic staff
further occurred University-wide through educational designers and via Learning and Teaching committees in the schools. An extensive Interact website [14] was created as a pull strategy with professional development materials, general information about Interact, the range of tools available and information on pilots. The latest news were distributed via announcements and the listserv in the site ‘about ICT integration’.

Communication systems require a feedback loop. In the Interact programme the feedback was primarily provided by the educational designers. At the end of 2008 an extensive review was carried out among academic staff and the results are currently being analysed. Sporadic feedback from staff and students also occurred on online forums. The feedback was valuable in fixing bugs and implementing some new features.

5. Summary

The change was largely driven from the bottom-up and through the writer’s role from middle-management In terms of top-down strategies. During this change and innovation process it was noticeable that the known movers and shakers engaged in the process as early adopters [24]. The middle-management, however, was not adequately prepared and did not play the crucial role they could have played in motivating academic staff and resourceing change. As indicated in the LASO model, a multi-pronged approach addressing top-down and bottom-up strategies has more potential for success.

CSU’s change model [6] proved helpful and provided an extensive framework for University-wide change strategies, School strategies and divisional strategies. More than one change dimension have been addressed at the same time and we experienced that “to properly understand organizational change one must allow for emergence and surprise” [25].

Educational change and innovation and the related key strategies change management, professional development and communications needs to focus on people. As such it needs to deal first and foremost with people issues such as innovation capacity, insecurity, resistance, and technophobia during the change process. The ragged contour of technological transformation as depicted in the LASO model above has also been confirmed at CSU in contrast to the smooth contours predicted in Rogers’s [22] diffusion of innovation curve. Difficulties in human relationships, lack of resources at critical stages, change fatigue, resistance to change among staff, and dealing with diverse expectations all contributes to the complexity of implementing and using learning technologies at CSU.

Technological innovation in the context of an open learning management system have wider, external implications than the local institution given the free flow of information and intellectual property within the community. The expected learning innovation that CSU Interact need to support is still in an early stage. If it is true that “the biggest temptation is to settle for too little” [26], then CSU needs to continue to extend the educationally focussed implementation of CSU Interact in learning and teaching to create richer experiences for the students so that educational technology truly serves the purposes of learning.

References


