Harnessing the Power of Technologies to Manage Collaborative e-Learning Projects in Dispersed Environments

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Abstract

'The impact of web-based lecture technologies on current and future practice in learning and teaching' was a collaborative project across four Australian universities, funded by the Australian Learning and Teaching Council (ALTC). The project was both exploratory and developmental in nature and according to the project's external evaluator, was successful in achieving its aims to explore:

- how the technologies are integrated into the curriculum to support learning and teaching in different contexts

- the educational implications of their use for the design of curricula, teaching, learning and academic policies and practices including professional development.

The targeted end users were teachers, researchers and developers in the higher education sector. Key deliverables were a report on issues and implications, research papers and a set of guidelines for staff and students in the use of these technologies to enhance learning and teaching. A particular feature of the project design was the embedding of strategies to enable capacity building across the sector through the ongoing dissemination of findings to stakeholders throughout the life of the project, not just at the end. Key to the development and management of the project was the use of a range of technologies to engage the range of stakeholders and manage day-to-day operations in a dispersed environment.

This paper draws on elements of existing project management frameworks to discuss the critical factors contributing to the project's success. Challenges threatening the success of the project are also examined along with suggestions for other collaborative projects being developed in dispersed environments.

Résumé

« The impact of web-based lecture technologies on current and future practice in learning and teaching » était un projet en collaboration qui regroupait quatre universités australiennes et était financé par le Australian Learning and Teaching

Council (ALTC). Le projet était à la fois de nature exploratoire et développementale et selon l'évaluateur externe du projet, a réussi à atteindre son objectif d'explorer :

- comment les technologies sont intégrées au curriculum pour soutenir l'apprentissage et l'enseignement dans des contextes différents;
- les implications éducationnelles de leur utilisation pour la conception de curricula, l'enseignement, l'apprentissage et de politiques et de pratiques académiques incluant le développement professionnel.

Les usagers cibles étaient les professeurs, les chercheurs et les développeurs dans le secteur de l'éducation supérieure. Les livrables clé étaient un rapport sur les questions soulevées et les implications, des articles de recherche et une série de lignes directrices pour le personnel et les étudiants sur l'utilisation de ces technologies pour améliorer l'apprentissage et l'enseignement. Un aspect particulier du concept du projet était l'enchâssement de stratégies pour permettre l'accroissement des capacités à travers le secteur par le biais de la diffusion continue de résultats aux parties prenantes pendant le cours d'un projet, et non seulement à la fin. L'utilisation d'une gamme de technologies pour impliquer l'éventail des parties prenantes et pour gérer les opérations quotidiennes dans un environnement dispersé a été fondamental au développement et à la gestion du projet.

Cet article s'appuie sur des éléments de cadres de référence en matière de gestion de projet pour discuter des facteurs critiques contribuant à la réussite du projet. Les défis menaçant le succès du projet sont également étudiés, de même que les suggestions pour d'autres projets en collaboration en voie de développement dans des milieux dispersés.

Introduction

The e-Learning project described in this paper is a cross-institutional research and development project, funded by the Australian Learning and Teaching Council (ALTC), exploring the impact of web-based lecture technologies on learning and teaching. The project, involving Macquarie University, Murdoch University, Flinders University and the University of Newcastle, was both exploratory and developmental in nature, aiming to investigate:

1. how web-based lecture recording technology is being integrated into the curriculum, its role and relationship with other elements within the curriculum;
2. how the technology can effectively support learning and teaching in different contexts, taking into account disciplinary differences, student diversity, specific teaching aims and learning outcomes; and

3. the educational implications of its use.

Key deliverables were aimed at staff in universities, the end users, and included a project report, a series of research papers on the issues and implications, plus a set of guidelines for staff and students in the use of these technologies to enhance learning and teaching.

One of the challenges faced by the project team in developing the project was that, in addition to producing these end-products, the funding body required their effective dissemination of findings beyond the life of the project to enable capacity building across the sector (The guidelines are available from the ALTC website:

http://www.altc.edu.au/carrick/go/home/grants/pid/54)

In the past, dissemination of outcomes from teaching development projects funded through national schemes has been problematic, particularly when treated as an add-on at the end of the project and relying solely on traditional academic outputs—conferences, and journal articles (McKenzie, Alexander, Harper, & Anderson, 2005; Southwell, Gannaway, Orell, Chalmers, & Abraham, 2005). To boost the likelihood of effective dissemination, Southwell et al. (April 2005) recommend the integration of dissemination strategies into the project development cycle.

A second challenge was in managing the project in a dispersed environment. Project team members were located in the west, east and south of Australia and therefore had to work across large distances and three time zones. The impracticalities arising from both the cost and time involved in managing a large collaborative project had to be overcome. In doing this we were able to capitalise on the affordances offered by a number of eLearning tools to support the management and development of the project. Particular strengths were evident in the capacity of the tools to facilitate the documentation of progress, collaboration on project activities and communication with the various stakeholders. On reflection, the integration of eLearning tools into the day-to-day operations and management of the project was a defining feature and contributed strongly to its success—making this an eLearning project both in outcomes and in process.

An external evaluator—a requirement of the ALTC funding body—confirmed the success of the project when she examined both the project's development processes and whether or not the project outcomes were achieved. She noted:

> The project team are to be commended for the highly effective way they have worked together on achieving the outcomes from this Project. The openness and critically reflective nature of the project team, has meant

there was a commitment to improving the quality of the project outcomes throughout the project. (Carter, 2008)

Various studies have documented the need for, and importance of, incorporating sound project management strategies to ensure the success of learning and teaching projects (Alexander & McKenzie, 1998; Harrell, McClenaghan, & Johnston, 2001; Hayden & Speedy, 1995). Typical project management methodology includes four to five stages covering initiation, planning, execution, monitoring and problem solving, and bringing closure (Kerzner, 2005). On reflection, a number of the strategies contributing to the success of this project and the challenges faced at each of the key development stages are likely to have relevance to other cross-institutional capacity building projects, such as those supported by JISC in the UK.

This paper makes use of the project methodology framework to provide insights into the challenges faced and the factors that contributed to the success of the project with specific reference to the role of technologies in facilitating the management of the project and the development of project activities. First, to provide a context for these insights, an overview of the project and the methodology used for its evaluation will be given.

Background to the Project

Many universities have invested substantial resources in sophisticated, fully integrated campus-wide IT infrastructure, not only to meet existing educational requirements but also to provide opportunities for future innovation in learning and teaching. In establishing this infrastructure, it is not unusual for the focus of development activity to be on ensuring the robustness and security of the technology, often to the detriment of support for staff and students in using the technologies for learning and teaching purposes (Burnett & Meadmore, 2002). The introduction of web-based lecture technologies (WBLT) into universities has often reflected such a pattern.

WBLT refer to a range of technologies used for digitally recording face-to-face lectures for web delivery and are essentially a one-way medium of communication well suited to the delivery of lecture content in close to real time. Lectopia (previously known as iLecture and also known as Echo 360) is an example of this type of technology and is currently used in 16 Australian universities (Lectopia 2009).

The technologies have had a rapid uptake at many universities in response to student demands for increased flexibility in combining their study, work and family commitments (Phillips et al., 2007). Two of the universities participating in this project; Macquarie University and

Murdoch University, had implemented Lectopia to deliver lecture content to external students. Flinders University and University of Newcastle reported the primary driver for implementing their systems as testing blended learning models. Although there had been some preliminary evaluations of the technology at Macquarie, Murdoch and Newcastle which had found a range of issues around student access and academic perceptions on the impact on teaching, the focus had largely been on technical and operational issues.

More broadly, prior to this project, little comprehensive research has been published on the real impact of web-based lectures, on learning and teaching. Research on web-based lectures has tended to focus on the technology itself (Bittencourt & Carr 2001, Day et al. 2004) and had provided little insight to its effective use as a learning and teaching tool. Case studies on iLecture/ Lectopia (Fardon & Williams 2005, Williams & Fardon 2005, Fardon & Ludewig 2000) provided information on who, why and how staff and students use the technology and some of the issues that are arising. However, more research was needed to shed light on the pedagogical and learning implications of the use of iLecture/ Lectopia and other WBLT. Williams and Fardon (2005), for example, observed of iLecture:

> Its role and effectiveness has not been fully tested yet, and further studies are required to assess the impact such a system has on higher education teaching and learning activities (p. 10).

In response to this context, the aim of the WBLT project was to build on the existing work to provide a much needed educational perspective, particularly in relation to how web-based technologies can be effectively used to support learning and teaching in the higher education environment.

The research program was comprised of two stages and adopted a mixed methods approach. The first stage, surveys of students and staff, was designed to capture the diversity of experiences in the use of WBLT in order to identify and categorise the issues and usage patterns. The second stage involved a more detailed exploration of the educational issues arising from the surveys through a series of vignettes and case studies. This stage was both investigative and developmental in nature, exploring the issues in depth by focusing on specific curriculum contexts. More detailed information about the project itself is available on the project website:

http://www.cpd.mq.edu.au/teaching/wblt/overview.htm

The project was developed under a full collaboration model among the four participating universities. This meant each of the contributing

universities had a direct and active role in all the design and implementation or the project, formulation of outcomes, development of the report and dissemination of findings. This is in contrast to a cooperative model where activities are disaggregated and each university takes responsibility for a particular task or aspect of the project (Panitz, 2001).

To manage the collaboration, a team-based approach was adopted comprising a project leader, a project manager and research assistant located at Macquarie, the lead university, and institutional research coordinators located at the three other universities

A reference group was established to provide advice and formative feedback during the development of the project and advise on the alignment of the project with its stated goals and outcomes. The members were all working in the higher education sector and were chosen for their particular expertise in one or more areas of web-based lecture technology, institutional development, learning and teaching development, professional development, project development, implementation, evaluation, e-learning and dissemination.

Evaluation of the Project

A requirement of the funding body for all substantial projects was the appointment of an external evaluator which, in this project, was done through an invitational-style tendering process. In consultation with the appointed evaluator, an evaluation plan was designed to use both process and outcomes based approaches, examining both the project's development processes and whether or not project outcomes had been achieved. The plan specifically identified key areas of focus including project management, communication and dissemination strategies and project outcomes.

The evaluation was both formative and summative in nature and involved:

- reviewing processes and outputs as they have occurred throughout the project;
- the production of two interim evaluation reports including recommendations to be used for formative purposes; and
- a survey of key stakeholders at the project conclusion.

Data was collected from a variety of sources: two project team self-reflection exercises; observations through attendance at project team meetings (both face-to-face and online); a content review of project documentation; unstructured discussions with both project team and reference group members; and individual surveys of the project team

members, institutional sponsors and the reference group members covering process, outcomes, products and communication.

Three factors were identified as critical to the success of the project (Carter, 2008):

1. *Team Dynamics*—some team members were previously well acquainted, they all got on well together, they had complementary skill sets and a shared and strong commitment to the Project aims;
2. *Communication Mechanisms*—there was a good mix of face-to-face (funded and unfunded), online (e.g., Live Classroom) and asynchronous (e.g., Moodle) discussions;
3. *Management/Leadership*—there was a clearly articulated aim, a commitment to project management principles, a strong project leader, an experienced project manager and a good focus on outcomes/dissemination.

Managing and Developing the Project

On reflection, establishing these success factors was not something that automatically happened or could be decreed at the outset of the project. Rather, they were nurtured and evolved throughout the project due to the good will and co-operation of all team members. Nevertheless, there were a number of conditions present and strategies adopted that contributed to this evolution and thereby the success of the project. Insights into these, as well as some of the challenges faced is discussed in relation to each of the project development stages: initiation, planning, execution, monitoring and bringing closure.

1. Initiating the Project

The initiation phase of the project usually involves determining the nature and scope of the project, understanding the environment in which it is taking place and identifying key stake holders and their expectations (Kerzner, 2005). Having clearly defined aims and outcomes aligned with strategic agendas and establishing a diverse and experienced project team proved to be important in initialising the project and providing a strong foundation from which to work.

CLEARLY DEFINED AIMS ALIGNED WITH STRATEGIC AGENDAS

The project leader has been involved with implementing institution-wide technology solutions for several years. The decision to lead the research project was based on a comprehensive understanding of the issues around the introduction of institution-wide IT infrastructure including WBLT. In addition, a sector-wide perspective equipped the research

leader with a network of potential project collaborators from other universities.

The implications of WBLT for learning and teaching was identified as an ideal focus for research because of its topical nature in all of the participating universities as well as across the sector as a whole. Having a topical focus worked to our advantage in gaining sponsorship and funding for the project.

At the time, all four participating Universities were members of the Innovative Research Universities Australia group. An initial brief presented to the IRUA Education sub-committee met with a positive response, followed by assignment of a representative from interested Universities to progress the project and seek funding through the Australian Learning and Teaching Council (formerly the Carrick institute for Higher Education). Having a strong endorsement from the Deputy-Vice Chancellors (Academic) in each of the participating institutions from the outset signaled the importance of the project and provided the leverage to negotiate the inevitable administrative and political processes within the institutions and boosted the commitment and the morale of the project team. Endorsement by the IRUA group served to indicate to the potential funding body that this was a project of sector-wide interest.

Because of the topical focus of the project, the research was well aligned with the ALTC's program priorities:

- Research and development focusing on issues of emerging and continuing importance;
- Strategic approaches to learning and teaching that address the increasing diversity of the student body; and
- Innovation in learning and teaching, including in relation to the role of new technologies.

Overall, the ALTC values of enhancing learning and teaching; and identifying, developing, disseminating and embedding good individual and institutional practice in learning and teaching were also maintained as drivers of strategic decisions in the initial design.

Once the general focus of the research was established, the process of narrowing the scope to determine clear project objectives as part of a flexible overall plan was undertaken as part of the initial planning phase. This was one of the success factors identified as critical for sustainable education innovation (Kirschner, Hendricks, Paas, Wopereis, & Cordewener, 2004).

A DIVERSE AND EXPERIENCED PROJECT TEAM

Central to the initiation stage was the engagement of an experienced project team. Common amongst team members was a strong research interest relating to the implementation of educational technologies and a broad range of complementary perspectives and skills covering technical and educational issues, research methodology, expertise in statistical analyses and project management.

Critical to the success of the project was availability of an experienced project manager. Research undertaken to establish the determinants of successful projects (Kirschner et al., 2004) found that an overwhelming majority (97%) of the successful projects had an experienced project manager at the helm. Part of this experience involved recognizing the need to implement sound project management strategies, define roles and responsibilities, systematically monitor performance and finish in time and on budget.

From the outset, the project team was confident that the scope was realistic and the outcomes of the project were achievable within the allocated timeframe. From these clear project objectives, a realistic set of deliverables was articulated as part of the project proposal and this then drove much of the subsequent decision-making in the planning stage.

2. Planning

After the initiation stage, the operational details of the project are expressed more fully in a comprehensive project plan (Kerzner, 2005). As well as identifying project activities, timelines, milestones for delivery of outputs and critical stages for review, the team took particular care to plan for collaboration and dissemination activities.

FACTORING COLLABORATION INTO PLANS

Actualising the full collaboration model presented logistical challenges in the management of the project as team members were drawn from Western Australia, South Australia and New South Wales. This however was mitigated by the previous working relationships within the team. All but one of the team members had worked with other members in various ways. In effect, this shortened the team's orientation period that usually accompanies any team work project and allowed the team to move quickly into the work at hand in an efficient manner (Tuckman & Jensen, 1977).

Another key factor in planning for an effective team approach was the ability to budget for collaborative activities including travel, accommodation and refreshments. The funding body is to be

congratulated on their foresight in supporting collaborative activities. Having specific funding allocated for developing and maintaining an effective collaboration enabled the team to timetable face-to-face meetings at critical times, one of which was the initial planning stage where a detailed operational plan identifying project activities, critical points for feedback and review, key deliverables and milestones, and communication and dissemination strategies was agreed.

ENGAGING STAKEHOLDERS TO ENHANCE DISSEMINATION OPPORTUNITIES

The requirement of the funding body for short and longer-term dissemination introduced an additional dimension to planning and managing the project.

In line with the recommendations arising from report on Strategies for Effective Dissemination of Project Outcomes (Southwell et al, 2005) we recognised from the outset that dissemination had to be embedded throughout the project. To achieve this, a number of strategies recommended by Southwell et al (2005) were adopted to ensure effective dissemination in a manner that had the potential to enable more effective capacity building across the sector. Some of the successful strategies were:

- Gaining sector level sponsorship through the IRUA group to enable systematic reporting to maintain the profile of the project and its outcomes beyond the participating universities;
- Selecting reference group members for their potential to contribute to the development of the project, as well as their capacity to disseminate findings across the sector. Members were invited to several face-to-face meetings as well as telephone and web conferences during the project and contributed feedback on various stages throughout;
- Utilising networks that members of the project team had established with professional organizations including ACODE and ASCILITE to provide opportunities for presentations and updates on progress and outcomes;
- Addressing capacity building imperatives through the inclusion of recommendations for policy, practice and professional development as outcomes;
- Including discipline-based project teams undertaking action research in their own context in the research methodology to extend the project activities beyond the team and open further avenues of influence;
- Selecting a project team from diverse locations which increased the opportunities available for presentations at local forums at no cost to the project.

In addition, outcomes were communicated to the sector in the usual ways through journal and conference papers and formal reports. To achieve this, a communication plan to disseminate the project's findings to key stakeholders was developed. After each major data collection and analysis phase, the team wrote at least one conference or journal paper. This strategy proved effective in encouraging the documentation, analysis and synthesis at each stage and lead to a number of refereed conference papers and journal articles. It also heightened awareness in the sector, which led to members of the project team being invited to present at a number of universities and requests from other universities to use the survey instruments and project resources.

3. Execution

Coordinating people and resources, as well as integrating and performing the activities of the project in accordance with the project management plan during the execution phase, was significantly aided by communication and collaboration technologies.

Due to the challenges of working across three time zones and the impracticalities (both cost and time) of regular face-to-face meeting, it was decided from the initial planning phase to employ technologies to facilitate communication. This was only possible because all the team members had a personal knowledge of the affordances of the technologies and experience in using them. A comprehensive communication strategy for maintaining contact in the dispersed environment was developed, making extensive use of online collaboration tools and a project team website created using Moodle.

ONLINE COLLABORATION TOOLS

The online collaboration tools, Elluminate and Wimba's Live Classroom enabled the project team to conduct its regular meetings online. Both technologies were used at different times to support audio synchronous conversations and also enable the team to share project documents and digital resources using the virtual whiteboard. The synchronous nature on interactions added a human touch that can be missed with email. For example, the project's commitment to dissemination from the outset meant that many publications were developed collaboratively. Online conferencing allowed an element of levity to be maintained while discussing feedback on drafts, which diffused potentially tense situations. While the online conferencing tools were invaluable for maintaining regular contact, face-to-face meetings were seen as important for teasing out more complex issues and were used in critical points of the project.

THE PROJECT TEAM WEBSITE

The project team website became the project team's virtual 'head-office'. The site was password protected and its access was limited to the team members, the reference group and the project evaluator. It provided a centralised place for tracking the project's development and served as a repository for outputs. The site was used to store all project documentation; meeting agendas and minutes, periodic progress reports, publications, presentation slides, along with records of disseminations activities and project management processes. With team members being distributed across Australia, having an easily accessible, secure site for documents was essential.

Day-to-day communication was also channeled through the web site. The discussion forum had the capacity to deliver new postings to the members' regular work-based email inboxes. This saved the team members from logging into the site regularly to check for updates. As such, it was instrumental in facilitating instant feedback and at the same time providing a central space for storing interactions between team members, keeping them transparent and also providing an ongoing record of decisions.

The wiki tool, another popular technology for collaboration, was also used but its effectiveness was somewhat limited. At first, the wiki was used for documenting all the formal and informal dissemination as part of the communication plan. This was proven to be effective because members were able to log in and add their latest activity at any time. Unlike a discussion forum or email list, the wiki kept all the activities in one page so the list was always readily available and version control issues were avoided. The wiki grew quickly and at the various stages of the project when reporting was required, the project manager was able to look at the wiki and get a complete list of the dissemination activities to date.

While the wiki was effective in capturing the dissemination activities, it was less successful when the team trialed it for collaborative authoring on publication drafts. The team missed the familiar Microsoft Word functions such as *track changes* (where individuals' edits could be highlighted) and *comments* for editing each others' work. These functions were seen by the team members as important in the etiquette of academic co-writing. Furthermore, the wiki did not support automatic in-text referencing using bibliographical software such as Endnote and that limited the efficiency of the collaboration. Eventually, it was decided instead to return to centrally stored versions of Microsoft Word documents.

THE PUBLIC PROJECT WEBSITE

While the online conferencing tools and the project team's web site were useful in facilitating the activities of the project, a separate approach was needed to maintain communication with the diverse range of stakeholders such as members of the participating universities and the sector as a whole. A separate public website was also established to include static information about the project plans, team members, progress against milestones and the publications.

FLEXIBLE APPROACHES TO OVERCOME CHALLENGES

Although this project team was comfortable with using the online collaboration and communications technologies, this can not be assumed for all. Not everyone has a level of expertise in these technologies that enables them to work efficiently with them or use them to discuss potentially difficult issues. Developing expertise and comfort, if it is not already present, adds to the complexity of managing projects. Even when this expertise is present, the tools may not prove to be the most effective means of communication. We found, for example, that while the reference group were highly techno-literate and shared a research interest in educational technologies, most were time-poor and held senior positions in their organizations. Reviewing online materials, tracking discussion forums and regular online meetings were not compatible with their preferred working style. As a consequence we reverted to more familiar teleconferencing and face-to-face meetings for the reference group; a salutatory reminder that considering the effectiveness of technologies for use in specific contexts is a key factor in determining their successful uptake (Collis and Moonen, 2001).

The execution phase was not without challenges, amongst which was the negotiation of different academic timelines for multiple universities—semester start and finish times and examination timetables—and administrative procedures, in particular the Human Ethics Approval requirements of four institutions. While the differences between the institutions were an asset in many aspects of the study, the disparate ethics requirements and delays in approval placed significant stress on the project timeline. The need for individual applications to be submitted to each institution for each stage of the project was a significant issue throughout the project, with potentially damaging consequences. Due to lengthy, convoluted processes, student and staff surveys were delayed, leading to a chain effect of delays to data analysis, interviews for vignettes and the development of case studies. Fortunately, such delays were accommodated by effective risk management strategies.

4. Monitoring

Managing a collaborative project across four universities in three states required careful monitoring of both process and outcomes which was aided by the risk management approach adopted by the project team, another success factor identified in the literature (Kirschner et al., 2004).

IDENTIFYING AND MANAGING RISKS

The initial objectives established at the outset of the project, along with the plans for project activities, were invaluable in guiding decisions throughout the project. This proved to be effective for monitoring known risks. In addition, strategies were needed to proactively identify and manage the unforeseen situations that inevitably emerge in large projects.

Risk assessments were undertaken throughout the project to monitor progress and make appropriate adjustments along the way. Issues which could pose risks to the success of the project were identified and strategies were developed to manage these risks as required. As an example, the initial plan included the submission of an ethics application to cover both the staff and student surveys. As described in the previous section, the risk of a delay in distributing the student survey was identified as high, due to the impending end of year break, and a separate ethics applications was submitted for the staff survey to simplify and expedite the approval of the student survey. Delivering the survey online offered a level of flexibility that would not have been present with paper-based surveys. The survey delivery could easily be rescheduled to meet the changed timelines as there were no printing deadlines for paper-based copies to deal with, nor was there any need to have in-class access to students or personnel to hand out and collect the surveys. In addition, the administrative overheads associated with data entry were significant reduced.

FORMATIVE FEEDBACK AND CRITICAL REFLECTION

The role of the project evaluator was carefully crafted to encompass a formative component to monitor progress and developmental processes as well as a summative component to assess the achievement of stated outcomes. This enabled the project team to gather and respond to feedback throughout the project and maximise the project's likelihood of success.

At the end of the first stage of the project, the Evaluator provided an interim report to provide a commentary on stated intentions, processes and progress of the project. Recommendations were included to guide the project team toward more efficient and effective practice.

Critical reflection was built into the project's evaluation process, involving the team in identifying successes and risks in addition to those of the evaluator. As a result, several of the issues raised in the recommendations, such as the need to capture communications between team members where possible, had been identified as risks by the team and planning was undertaken to address these in the next phase of the project.

The use of technologies to capture reflections and many of the project activities was invaluable in monitoring progress. The project team, evaluator and reference group all had full access to all the project documentation, record of discussions, minutes of meetings, research instruments, communications and dissemination plans and outputs that were lodged on the project team's website. Each month a project report was sent to the team members, evaluator and reference group members, followed by an online meeting to discuss issues. Online meetings were recorded and made available to the evaluator, the reference group and team members through the website. Having access to both the outputs and a record of the process enabled everyone to keep in close touch with the project.

Monitoring and risk analysis enabled potential problems to be identified early and strategies put in place to minimize their impact. Meetings were increased during critical times, such as survey instrument development and analysis. The strategy of writing papers during the various stages helped to keep the team focused, informed and on-track.

5. Closure

The closure phase of projects is the formal ending, often involving the finalising of the administrative activities, archiving of files and documenting lessons learned (Kerzner, 2005). The production of the final report, the guidelines and other artifacts was included in this phase. Ensuring adequate time was allocated in the project plan helped with this process. However, it is easy to underestimate the time required to synthesise the findings and then critically reflect on their implications for practice in order to produce these outputs.

Inevitably there is an element of professional pride that, if not realistically contained, can manifest in lengthy fine tuning of final drafts and difficulty in bringing closure. Having strict deadlines built into the project by ALTC for acquittal and deliverables were important in ensuring that closure was reached and a date for these activities was set at the outset of the project.

While dissemination of project results can continue, this needs to be managed within normal workloads when the project funds have been

spent. This is an ongoing challenge for the project team. Technologies such as the public project website, with embedded contact points, have enabled project outputs to be stored in one central place for ongoing access and communication with end users.

CONCLUDING COMMENTS

In summary, the critical success factors and main challenges identified as part of our project seem to be applicable to many e-Learning projects. Although it is not possible to plan for a project that is without any of these challenges, sound project management can help to overcome or at least mitigate the negative impact of the challenges. A recent paper developed by the ALTC on the operational learnings of project holders (ALTC, 2008) reflects this observation:

One of the recurrent themes amongst projects revolves around project management and, in particular, the systematic and detailed planning of project activities and processes. Above all this includes the need to clearly understand the scope of the project, identify and document explicit project objectives and deal with the finite timeline of implementation and evaluation of the work. Furthermore, there is a clear benefit to having a defined management structure, with a precise division of tasks.

Being cognisant of the processes and activities associated with each of the stages in the project management cycle can help to establish a solid foundation for any project. The insights gained through reflection on the successes and challenges encountered in this project have provided some shared learnings that are particularly relevant to large collaborative projects, particularly those funded through national bodies such as the ALTC and JISC with capacity building agendas. Based on project management stages, the key points to emerge include:

Initiation

- The project has clearly defined aims and outcomes aligned with strategic agendas; and

- A diverse and experienced team has been chosen and works collaboratively to conceptualise and scope the project and its outcomes.

Planning

- Ways of measuring the success of the project are clearly stated as outcomes, with a realistic plan for achieving them;

- The true implications of collaboration are factored into project plans, timelines and budgets;

- Communication strategies have been developed to keep stakeholders informed and engaged; and

- Strategies for effective and ongoing dissemination of outcomes are embedded in project activities.

Execution

- Collaborative tools and processes for regular communication across the project team have been agreed;

- A realistic timeline has been agreed with room to cater for the unexpected;

- Flexibility has been built in to plans to allow for collaboration across diverse contexts, for example differences in the academic cycles of universities (semester dates, exams, ethics requirements); and

- External stakeholders are kept informed of progress.

Monitoring

- Known risks to the success of the project have been identified and planned for;

- Strategies are in place to proactively identify and manage unforeseen situations; and

- Processes for monitoring progress have been agreed and critical points have been identified for formative feedback.

Closure

- Realistic timeframes have been factored in for finalizing administrative; arrangements and developing and fine tuning the project report and other the final report and other artifacts; and

- Points for critical reflection have been built in to all stages of the project to enable lessons to be shared.

Finally, technologies played a major part in contributing to the success of this project: facilitating regular communication to support the synergies available when team members with diverse skills and perspectives combine their efforts; overcoming distance as a barrier to collaboration; maintaining communication with a wide range of stakeholders and capturing the day-to-day operations during the project. The affordances of these technologies have the potential for wide-ranging appeal, beyond this project team's common interest in experimenting with the technologies and have much to offer as project management and development tools.

Acknowledgements

Additional information about the project, along with details of the other aspects of the study, is available at the project website: http://www.cpd.mq.edu.au/teaching/wblt/overview.htm

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