ACADEMIC AND INSTITUTIONAL ISSUES RELATED TO THE PLANNING AND IMPLEMENTATION OF A MULTI-DISCIPLINARY ROLEPLAY-SIMULATION INVOLVING COLLABORATION ACROSS INSTITUTIONS

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Abstract

The Mekong e-Sim involved more than 140 students across Australia and overseas participating in an online roleplay-simulation over a four-week period. Set in the Mekong region of South East Asia, it allowed for highly charged debates over development issues arising from clear-cut differences and conflicts in values and interests. The geography and engineering students who participated were enrolled in three different subjects at four institutions. The e-Sim was the product of a 'grassroots' alliance between four collaborators at different institutions. The drivers for forming the alliance were the development of subject specific learning outcomes, promoting linkages between students, internationalisation of the curricula and educational research. The e-Sim design created a high level of student interdependence for pedagogic reasons, which also led to a high degree of interdependence among staff. This created a need to negotiate and agree to common practices for teaching and assessment in specific areas. Issues regarding access to institutional resources for students across different institutions also arose. An awareness of these issues is needed to ensure that 'grassroots' collaborative educational activities are designed to meet their objectives and can evolve to be sustainable.

Keywords

collaboration, online teaching, roleplay, simulation, alliance, multi-disciplinary

Introduction

The development of collaborative projects between universities has been encouraged by the demands created by the current economic restrictions confronting all higher education institutions. However, collaborative projects can also be driven by the need to foster learning communities between staff and students at various institutions. Collaborative educational projects can disseminate teaching ideas, allow more efficient use of scarce resources, open up access to different resources and make teaching enterprises public. In addition, inter-disciplinary educational projects create opportunities for students to transfer skills and knowledge and to develop alternate perspectives. The incorporation of student groups with diverse backgrounds can significantly enhance learning outcomes from teaching and learning tools such as roleplay-simulations that have a particular strength in allowing for the integration of student knowledge and perspectives.

Electronically supported roleplay-simulations (e-Sims) for education have been used since the early 1980s for political science students (Vincent & Shepherd, 1998; Wilkenfeld, 1983). They have only recently become more widespread in political science (Linser & Naidu, 1999; Kinder, Fardon & Yasmeen, 1999) and occasionally in environmental decision making (McLaughlan & Kirkpatrick, 1999). The use of an e-Sim is still very much innovative particularly with regard to being able to effectively allow students to share their perspectives and knowledge in an online environment and then develop understandings through online debriefing. A rich learning experience can be created when students with different disciplinary backgrounds and knowledge participate in an e-Sim. This creates a demand for collaborative educational projects that can bring together students who may be distributed in different locations into a learning community.

The aim of this paper is to describe the formation of the educational alliance, which developed the Mekong e-Sim, and the issues that were faced during the planning and implementation of a 'grassroots' multi-disciplinary, cross-institutional educational activity. This analysis is based on data collected as part of the evaluation of the project and represents the experiences of all team members. If these types of projects are to be sustainable, strategies to address and manage these types of issues need to be developed. This is particularly important for alliances that arise from shared interests and commitment but have limited resources to cover any workload impacts due to the venture.

Project Aims

The Mekong e-Sim has involved collaboration between staff and students at the University of Technology, Sydney, Adelaide University, University of Sydney, Sepang Institute of Technology, Malaysia and the University of New England. The project involves developing the Mekong e-Sim and evaluating and identifying aspects of staff and students collaboration.

The e-Sim is an electronically supported roleplay-simulation, which can be used by students who are geographically distributed. The Mekong e-Sim is based around a realistic international problem that would allow specific knowledge and generic skills to be developed in students from a variety of cultural and professional backgrounds. The specific learning objectives of the Mekong e-Sim were for students to:

- Identify the political, social, economic and scientific dimensions to decision making in the context of natural resource management conflicts.
- Identify the responsibilities and appropriate responses for characters in the roleplay-simulation.
- Develop communication, research, critical thinking, negotiation and decision-making skills and an appreciation of cultural differences and approaches.
- Utilise information technology and telecommunication skills.

A feature of the e-Sim is the focus on collaborative learning between students with diverse backgrounds. Creating this diversity of student groups requires collaboration between staff and the development of shared practices. These staff may have diverse disciplinary, institutional, teaching and learning cultures. Therefore, it is appropriate to seek to understand issues associated with collaboration among staff from different disciplines and institutions.

The Mekong e-Sim

The Mekong e-Sim was run for the first time between March and April 2001. It comprises four stages: briefing, interaction, forum and debriefing.

The *briefing* stage involves participants becoming familiar with the e-Sim structure, geographical context, assessment and task requirements and the technology used in the e-Sim. It also involves them researching, adopting and then publishing their persona identity. Within the e-Sim, 39 personae (groups) represented stakeholders who can influence or are influenced by development activities in the Mekong Basin. These comprised Government agencies and ministries, multi-lateral funding agencies, Non-Governmental Organisations, Business corporations, media and People's Organisations. Each persona comprised four members with half the groups comprised of cross-institutional and/or cross-disciplinary members. This briefing stage occurs over a two-week period.

The *interaction* stage comprises interactions between members of a persona and between different personae. This occurs while carrying out their tasks, preparing for the forum stage and responding to any events or actions by other persona. The main communication medium for this stage is email and posting to a group discussion area. This ran for 17 days and a total of 1600 emails were sent.

The *forum* stage involved four online public forums with specific terms of reference where personae could post submissions and responses. The three forums, modelled on public inquiries, focussed on the Nam Theun2 Dam, Tonle Sap Management and Regional Transport Initiatives. Another forum was set up to solicit AusAid funding proposals from personae. The four forums had between 24 and 172 messages posted, indicating there was extended debate on some topics. The forum stage lasted two days.

In the *debriefing* stage participants identified what they learned as a consequence of participating in the e-Sim. As part of the debriefing, the participants post online a structured analysis of a learning event that occurred during the e-Sim. A face-to-face debriefing was also conducted at each of the sites. This was a structured process using guided recall, reflection and analysis of the experience (Lederman, 1992). Students were required to write a debriefing report that demonstrated their understanding of the various factors that influenced development issues and strategies adopted by their persona.

Teaching Context

The Mekong e-Sim constitutes part of the curriculum of three different subjects in the four participating institutions. These subjects are discussed below.

Asia-Pacific Development, University of Sydney

The Year III geography semester unit of study on Asia-Pacific Development deals with processes and consequences of development and its social, environmental and political ramifications in the dynamic Asia-Pacific economies. It involves approximately 60 third year students drawn from a range of faculties, including arts, science, education and economics. Forty of these students undertook the unit in normal lecture-practical mode, while 20 undertake the unit in Field School mode, involving a five-week intensive field-lecture program in Southeast Asia.

Technology Assessment, University of Technology, Sydney

This subject aims to develop students' understanding of relationships between technology and economics and the environment, politics and society, particularly within a public policy framework. Approximately 20 third-year engineering students drawn from sub-disciplines comprising civil, environmental, telecommunications, computer software engineering and mechanical engineering were involved.

Environmental Engineering II, Adelaide University & Sepang Institute of Technology, Malaysia

The subject covers fundamental concepts in environmental engineering such as environmental systems, environmental decision-making and sustainable development. Topics in river management and rehabilitation, water quality and air quality are also addressed. Students are also expected to show an awareness of the economic, social, political, legal and environmental context of engineering projects, and sensitivity to the needs of the community. The student cohort comprises approximately 60 second-year engineering students from the Civil- and Civil and Environmental-Engineering programs.

Drivers for the Alliance

The Mekong e-Sim alliance relies on the shared interest and commitment of individual collaborators to provide a suitable educational experience for students' needs while meeting their own professional needs. In general the collaboration was motivated by a shared interest in developing a learning experience that would involve students in collaborative learning, embedded in real-world problems that would support student understanding of multiple perspectives. The e-Sim was seen to provide a relatively low-risk environment in which students were free to learn by doing. Project members recognised the advantages for themselves and their students that would derive from collaborating to develop and teach the Mekong e-Sim.

Each of the subjects that contributed to Mekong e-Sim sought to develop students' understanding of multiple perspectives. Participation in the Mekong e-Sim afforded an opportunity for students to engage in a learning experience that included the consideration and adoption of multiple views (i.e. economic, social, technical and political dimensions) of issues relevant to development and technology within the region.

The use of electronically supported roleplay-simulations (i.e. e-Sim) is innovative and still very much an area of development and research. The e-Sim has been designed to provide opportunities for the study of both practice and pedagogic issues that will allow it to be used as a basis for extending knowledge within this area. The inclusion of students and collaborators who are geographically distributed and from multiple disciplines and institutions is a fundamental requirement for that research agenda.

There was an expectation that the e-Sim would promote linkages between students. The subject Environmental Engineering II is taught both at Adelaide University and Sepang Institute of Technology (SIT) due to a twinning arrangement between the institutions. The subject co-ordinator hoped the e-Sim would promote positive interaction before the students from SIT would complete their studies at Adelaide University in the following two years. The subject co-ordinator of Asia-Pacific Development intended that students who had undertaken the Field School in Asia would share their experiences through the e-Sim with other students who were completing the subject through coursework in Sydney.

There is always a need within education to promote effective teaching and learning practices in a cost-effective manner. Several of the collaborators had trialed roleplay-simulations previously with their students and found them to be effective (McLaughlan & Kirkpatrick, 1999; Maier & McLaughlan, 2001). A roleplay-simulation conducted in 1999 between engineering students at UTS and political science students at Macquarie University had also yielded positive learning outcomes. The collaborative nature of Mekong e-Sim provide an opportunity for staff to share reflection on the design and effective implementation of roleplay-simulations and to learn collaboratively themselves. The collaborative development of Mekong e-Sim allowed for specialist skills and knowledge and sharing of scarce resources.

There was also an intention among the collaborating developers that the e-Sim would promote internationalisation of the subjects concerned, both through the content of the curriculum and through student interactions. Internationalisation of the curriculum for the engineering subjects was achieved by focusing on the Mekong Region of Asia while the incorporation of the perspectives of international students has occurred to a degree with the involvement of the SIT students. There is scope for further internationalisation.

Structure of the Alliance

An inter-firm alliance can be defined as an organisational structure to govern an incomplete contract between separate firms in which each firm has limited control (Gomes-Casseres, 1996). A contract is termed incomplete when it does not specify what to do under every conceivable situation and hence the participants need to engage in joint decision-making to deal with unforseen circumstances. Our collaboration has these characteristics. It is very much a 'grassroots' driven alliance initiated by staff at the contributing institutions. Due to nature of the alliance it was necessary to create an educational product (the Mekong e-Sim) that would have a minimal impact upon the existing course structures, have low requirements for the re-distribution of resources between institutions and consequently a relatively low impact if the educational product did not meet its objectives. Collaborators within the alliance brought a mixture of subject content knowledge, educational development and evaluation expertise, familiarity with the teaching and learning tool used and control over the curriculum where the educational product was to be embedded. The e-Sim was designed to have a centralised set of resources and be a 'virtual space' where students shared the online roleplay-simulation experience through Internet connections from their own site. All students engaged in the same assessment tasks, which were marked by staff from their own institution. The relationship between the Mekong e-Sim experience and the curriculum at the host institution could then be utilised differently within each of the subjects where the students were enrolled.

The organization of the alliance has features similar to other networked learning communities reported in the literature. CollabU, a graduate seminar is based around students from five universities sharing resources and collaborating on activities conducted via online discussions around five themes related to technology in education (Breuleux, Owston, Laferrière, Resta, Hunter, Estes & Awalt, 1999). It is a multi-site, international, distributed, collaborative project driven by the shared interests of collaborators whose interactions were generated from interaction at a conference. A more formally structured alliance is The Global Seminar project spearheaded by Cornell University, which involves an educational consortium of at least eight internationally, based universities (Global Seminar, 2001). Each institution shares equal ownership of a variable 1-3 credit point University seminar subject, sponsored through the respective University and co-ordinated through Cornell University. Staff at each university are responsible for hosting one video broadcast of a seminar and play a leadership role when the seminar originates from their site. Cornell University co-ordinates the project by hosting the website server, discussion board, reviewing and publishing instructional material and other management responsibilities. Costs are shared across those institutions that have the ability to pay, with other institutions covered by grants and contributions from consortium members. This model requires a much higher level of institutional commitment than that available to the members of the Mekong e-Sim

A key feature of such alliances is a focus on constructivist approaches to learning where the richness of the learning experience is partly dependent on the knowledge and perspectives of participants bought into the alliance. Staff from both the CollabU and the Global Seminar alliances collaborate around the generation of learning experiences for students at their respective institutions. The Mekong e-Sim project shared a similar focus and was also guided by principles of learning that valued collaborative and experiential learning approaches.

To ensure the desired learning outcomes and needs of the collaborating members were met, it was considered necessary to establish shared protocols about the e-Sim and the ways it would be embedded into the respective subjects at the various institutions. It was agreed that the e-Sim should entail the same workload and contribution towards assessment in each subject. This was set as 40 hours and between 35-50% of the subject credit point allocation. Student assessment comprised both individual and group tasks. Previous experience with a roleplay-simulation where different groups of students were not assessed in a consistent way indicated that this led to a lack alignment of student goals resulting in a reduced level of collaboration between cohorts (McLaughlan & Kirkpatrick, in press). Therefore, a common set of assessment criteria and tasks was used for students across institutions. All project members acknowledged the desirability of a high level of student interdependence and collaboration across diverse student populations. This required students at different sites to form groups and share responsibility for tasks. As a consequence the e-Sim has resulted in shared student learning and shared academic practice among the staff involved.

Resourcing the Project

The project developed from conversations between two of the project members at an engineering education conference. The presentation of work associated with an e-Sim relating to the management of contaminated site (McLaughlan & Kirkpatrick, 1999) stimulated discussion and led to the initiation of an e-Sim in Engineering at Adelaide University (Maier & McLaughlan, 2001). Those involved recognised the value of working collaboratively to develop a distributed, shared learning experience and planned the Mekong e-Sim. During the following year a small amount of funding supported travel for a face-to-face meeting to begin planning. The visit was timed to coincide with the debriefing phase of the Adelaide University roleplay-simulation. The debriefing phase of roleplay-simulations is critical in supporting student learning and the face-to-face meeting provided an opportunity for the two staff to develop a shared approach to the debriefing. The meeting also focused on clarifying the approach that would be used for analysing student assessment tasks. Other collaborators were invited to participate in the e-Sim and preliminary talks progressed. One of the collaborators and a colleague were awarded an institutional teaching development grant that funded development of the e-Sim. The final core project team comprised three academics who were the subject co-ordinators of the subjects involved who contributed substantive content expertise and would be responsible for managing the e-Sim at their own institution and a fourth member who was responsible for design and implementation of the evaluation of the project. The project was coordinated by Robert McLaughlan who had substantial experience in designing and teaching e-Sims. A two-day meeting between all participants was held one month before the commencement of the e-Sim to clarify roles, responsibilities and set timelines for the e-Sim design and evaluation. At this meeting scenario design was finalised and evaluation of all aspects of the project was negotiated. Because of different arrangements at each institution there was variation in the extent to which each team member would be actively involved in teaching via the e-Sim and assessing student work.

The financial resources (~$11,000) spent to date have been largely expended on travel to allow face-to-face planning meetings and the collection of student evaluation data. The major resource involved in the e-Sim has been the labour involved in developing and administering the e-Sim. It is estimated that this involved about two people months for the design and adaptation to the software and about two hours per day of administration over the 30 day cycle. Commitment to the development time of the e-Sim by staff involved has been accounted for as educational research or teaching development. Some staff experienced increased workloads associated with the marking of assessment items. Because we were concerned that the effectiveness of the e-Sim design and operation was rigorously evaluated additional assessment items were included to provide information about students' learning processes. A fundamental factor influencing the success of this project has been the sharing of access to central course management software licensed to UTS that supported the e-Sim.

Design and Implementation Issues

The e-Sim has encouraged a high level of student interdependence across institutions. Half of the 39 student groups comprised members from different institutions. This was designed to encourage a high level of interaction between students from different institutions and disciplines. While the e-Sim was designed to promote high levels of student interdependence, it has also encouraged a high degree of interdependence between staff. This has been manifested in relation to shared teaching and assessment practices and a sharing of institutional resources that is unusual in the current university context.

Shared Teaching Practices

There were institutional differences in the ways in which the subjects in which the e-Sim was embedded were taught, the amount of staff-student contact time and the extent to which the project member/ subject co-ordinator was the primary student contact for issues related to the e-Sim. To ensure there was a consistent approach to e-Sim issues for both staff and students, a discussion board was established on the e-Sim website to deal with student enquiries. However many student enquiries particularly about group dynamics and strategic advice were handled by staff at the various sites. A better understanding of how teaching was carried out in each of the subjects would have made it easier to support staff needs. We expect that the management of student expectations will be assisted in the future as additional material is added to the website and the student grapevine passes on tacit knowledge about the e-Sim operation and its role in the subjects.

The design of the e-Sim required knowledge and understanding from all of the collaborators about the needs and capabilities of their students. However it also required agreement about how to conceptualise both the Mekong region as well as engineering and development studies in a way that was engaging to the students and likely to lead to the desired learning. This required viewing potential issues to be dealt with in the e-Sim from a much broader (i.e. political, economic, social) perspective than may normally occur when teaching within their individual subjects. It also necessitated considering the e-Sim setting and personae from a simplified, slightly stereotyped framework that would facilitate students' immediate engagement. This contrasts with the more extended and sophisticated understanding that the staff would use in their own work. Students were expected to develop more sophisticated understandings during the e-Sim. In order to design the e-Sim it was critical that project staff explicated these understandings and their belief frameworks, and developed a shared set of understandings about teaching and key learning outcomes. This sharing of teaching practice between the collaborators required considerable effort and constant re-visiting.

Managing groups that comprised students from more that one university added significantly to the administrative load of the e-Sim. The administration of the distribution of group assessment tasks to staff for marking, managing inter-marker variability and then releasing results was performed centrally. This centralised administration system was effective from a design perspective because it alleviated issues associated with different levels of collaborator familiarity with both the software involved and e-Sim management requirements. We now have a better understanding of the resource implications of this approach, the value of each of the assessment items and a more clear understanding of e-Sim management and dynamics among the staff and students.

Shared Assessment Practices

Each of the subject co-ordinators followed different practices with regard to delegation of marking for assessment items in their subject. Consequently, the extent of the workload from the e-Sim and its management had different impacts upon each of the staff involved. Collaborating staff have had to negotiate the following aspects: what constitutes an acceptable level of feedback for students, the amount of time to be allocated for marking each piece of work, whether grades or marks would be provided, and suitable turn around times for the release of grades and feedback. Due to differences in the number of students from each institution, the differences in expected student capabilities and no a-priori understanding of the expectation of markers within each of the subjects, it was decided that a marker from each subject should mark group work where their own students participated.

This also led to sufficient duplicate marking to have a rudimentary quality system. Where the assessment tasks focused on predominantly scientific content the level of inter-marker variability between the disciplines and institutions was generally within 10%. However, where the assessment tasks involved a greater focus on students making explicit their value and belief systems and dealing with incomplete knowledge there was greater variability. Individual assessment items were handled solely by staff from the students' institution and returned at their discretion.

Shared Institutional Resources

The shared use of institutional resources for non-standard teaching purposes required negotiation and care. The Mekong e-Sim relies on specific Information and Communication Technology tools; specifically an electronic course management system (Blackboard). The initial design of the e-Sim which involved students having access to a single email system supported by one of the universities was abandoned due to institutional concerns about how to manage possible misuse of accounts by students not enrolled at that University. The course management system was flexible enough to allow external email accounts, thus overcoming this problem. Other difficulties arose in obtaining an additional email account for management of the email generated by the e-Sim. Temporary accounts to the course management system had to be negotiated for students not enrolled at the university. Access for non-enrolled students to other software used in the e-Sim was negotiated at a personal level.

The teaching calendars of the three participating institutions differed by a week in both the start date for the semester and the timing if the mid-semester break. The length of the e-Sim was shortened as much as practical to allow for this. However, students from one institution who commenced later, perceived they were disadvantaged by this, and students from another institution had an extended break during the debriefing stage of the e-Sim.

Future Issues

The Mekong project has now passed the initiation and implementation phase and is currently undergoing evaluation and revision. The evaluation data will be used to redesign some of the assessment items so that learning outcomes are still met and students' collaborative learning is still supported while reducing the staff and student workload associated with assessment tasks. This is intended to make the e-Sim more sustainable within the existing budgets associated with teaching and learning for the subjects involved in the e-Sim.

Another issue relevant to the sustainability of educational innovations is the stability of the curricula into which the education innovations are embedded. Changes to aspects of the curriculum in any of the subjects where the e-Sim is embedded may impact upon the viability of the e-Sim. Also, maintaining student diversity through developing a stable range of collaborative partners is needed. The most appropriate curriculum vehicle and range of partners for supporting educational innovations are areas that need to be considered when designing these types of projects.

Conclusion

Educational alliances between staff from different institutions can have a number of benefits for both staff and students. The educational activities and products resulting from the alliance can allow students and staff to share knowledge and practices. While there are significant benefits that can accrue from such projects, there are accompanying issues that relate to initiating and implementing collaborative, cross institutional projects. In this case, issues related to the negotiation of shared assessment practices, teaching and learning practices and institutional resources arose. To help manage staff expectations when entering into these types of 'grassroots' alliances it is necessary to understand some of the issues that may arise during the process and how these can be related to the design of any educational product produced.

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