

Using Online Roleplay/Simulations for Creating Learning Experiences

[Robert G. McLaughlan](#)

National Centre for Groundwater Management, University of Technology, Sydney, PO Box 123, Broadway NSW 2007, Australia

Denise Kirkpatrick

Teaching and Learning Centre, The University of New England, Armidale NSW 2351, Australia

Philip Hirsch

School of Geosciences, The University of Sydney, NSW 2006, Australia

Holger R. Maier

Department of Civil and Environmental Engineering, Adelaide University, SA 5005, Australia

Abstract

Over 140 geography and engineering students from across Australia and overseas spent 4 weeks participating in an online roleplay-simulation set in the Mekong region of South East Asia. The online environment provides a setting for the construction of alternative points of view and a lively debate and creates an authentic context for student collaboration. The roleplay-simulation involves decision-making and conflict resolution regarding natural resource development. The Mekong e-Sim (electronic simulation) has been designed to support the learning of students studying subjects in the subjects Technology Assessment, Environmental Engineering or Asia Pacific Development Studies at different universities. The students share the online roleplay-simulation experience, which is then utilised differently within each of the geography or engineering subjects at the institution where the students are enrolled. Student and staff response has been very positive. Students report that the e-Sim provides a realistic experience, is engaging, develops their information technology and communication skills and increases their awareness of multiple perspectives on the issues involved.

Introduction

University teachers are faced with the challenge of integrating the development of technical skills with 'soft' skills. A review of Australian Science graduates found that graduates agreed that their degree gave them analytical and problem solving skills. However there were lower levels of agreement about the extent to which their degree studies developed an awareness of social implications of developments in their discipline, understanding of other points of view, the ability to use information technology effectively, the ability to work with others and a capacity to deal with complexity and ambiguity (McInnis et al. 2001). The Mekong e-Sim was designed to address the development of these skills in a way that crosses discipline specific boundaries, engages students in authentic learning environments and has cross-cultural and international dimensions.

The Mekong e-Sim incorporates the use of Information and Communication Technology (ICT) into a roleplay-simulation. Roleplays involve participants deliberately adopting a role for a specific purpose and a simulation is a simplification of reality that maintains the essential functions of the simulated environment. Roleplay-simulations combine the attributes of both a simulation and a roleplay where the simulation acts as the context and structure within which the roleplay occurs. Students learn about the adopted role, the setting of the simulation and the issues that cause interdependence among the roles as a consequence of their interactions within the roleplay-simulation. The use of ICT allows the conventional face-to-face roleplay-simulation timeframe to be extended thus providing greater opportunity for reflection and technical analysis of options during decision-making by the participants. It also allows the participation of students whose participation would otherwise be restricted by time or distance. Although the use of ICT has broken down some of the barriers associated with wholly face-to-face roleplay-simulation, we believe it is important to support some face-to-face contact among a subset of the participants to maximize learning outcomes. The e-Sim used a widely available Course Management software (*Blackboard*) to host the e-Sim. The software allowed for sending email, text chat, discussion forums (using bulletin boards), HTML content and group work areas.

Who was involved?

The Mekong e-Sim is a cross-disciplinary learning experience designed for use with undergraduate university students. It is specifically intended to develop learners' understanding of multiple perspectives of issues related to development and technology within the Mekong region of South East Asia. Consequently, it is applicable to a range of subject discipline applications. The activities within the e-Sim were designed to take about 50 hours and constituted one module of a semester subject or course. The current target audience comprises students in the following subjects at four participating institutions.

- **Asia-Pacific Development, The University of Sydney**

Third year geography students drawn from the Faculties of Arts, Science, Education and Economics.

- **Technology Assessment, University of Technology, Sydney**

Third year engineering students from sub-disciplines comprising civil, environmental, telecommunications, computer software engineering and mechanical engineering.

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

Second year engineering students from the Civil, and Civil and Environmental Engineering programs.

Why the Mekong?

The Mekong e-Sim was set in the Greater Mekong Sub-region of South East Asia. This provided an authentic setting for geographers and engineers to collaborate on understanding development needs of the region and issues related to engineering and technological approaches. The six countries in the region and the varied values and belief systems of the inhabitants add a rich political and social dimension to the setting. Aspects of development futures in this region stimulate highly charged debates featuring clear-cut differences, conflicts in values and interests

and adoption of opposing and alternative points of view. In addition to information that is openly available on the Internet, specialized educational resources were available from The University of Sydney's Australian Mekong Resource Centre and at their associated web site.

Design of e-Sim

The Mekong e-Sim was constructed around four key stages:

- The Briefing stage involves participants becoming familiar with the e-Sim structure, geographical context, requirements and technology. It also involves them researching a range of different information sources to develop an understanding about the responsibilities, views and strategies of their adopted persona identity. Four students share a single persona.
- The Interaction stage comprises interactions between different personae in response to events that have occurred and the actions of other personae. The events are modeled on news events such as the announcement of a public hearing on a specific topic or the discovery/restriction of a scarce resource shared by various personae. Participants are therefore required to operationalise the understanding of their persona and the simulated environment gained during the briefing stage. This understanding is reshaped as participants experience consequences that follow from their actions. These interactions were conducted primarily using email and ran for 17 days.
- The Forum stage involved four online public forums based around a simulated public inquiry. Personae could post submissions in response to the specific terms of reference for each of the inquiries and then respond to other submissions. The topics chosen for the forums involved a proposal to build a large dam, the development of a natural resource management plan for a lake and the prioritisation of alternate Regional Transport Initiatives. Another forum was set up to solicit funding proposals from personae relating to development projects they wished to pursue. During the forums students gained an understanding of the multiple perspectives about the topic being debated. The debates in the forums took place over a 48 hour period.
- In the Debriefing stage participants identify what they have learned as a consequence of participating in the e-Sim. The debriefing comprises the online publication by each participant of an incident, which occurred during the e-Sim and their learning from that incident. This is supported by a face-to-face session that uses a structured process of guided recall, reflection and analysis of the roleplay-simulation based on the experiences of the participants present and their understandings deriving from the online critical incident reports.

What student learning occurred?

The Mekong e-Sim has been evaluated at all stages of its design and implementation. Evaluation was planned using Bain's (1999) framework as a guide. Student perceptions of their learning and responses to the e-Sim were evaluated using student comments in the debriefing essay, a paper based student survey and focus group discussions.

Survey results indicated the following levels of student perceptions that the e-Sim:

- developed an awareness of multiple perspectives on natural resource decision-making and development issues (91%);
- contributed to the development of negotiation, and communication skills (70%);
- assisted the development of knowledge about organizations in the region (94%); and the values and attitudes of personae (85%); and
- was enjoyable (68%).

In addition to considering student perception of the learning that resulted as a consequence of participating in Mekong e-Sim we also examined student responses to the e-Sim as a learning activity. Ninety two percent of participants rated the Mekong e-Sim from satisfactory through to excellent and student comments elaborated on this: 'it is undeniable that the e-Sim as a whole does capture the complexity of natural resource management decision-making. The unique experience provided in the e-Sim is one which transcends the restrictions of a classroom, enabling learning to occur in an exciting and highly motivating context'.

Mekong e-Sim was intended to support students in understanding multiple perspectives associated with natural resource management. The extent to which students demonstrated this was evaluated through the examination of written assessment tasks that were designed to demonstrate student capabilities and understandings. Analysis of debriefing essays using SOLO taxonomy (Biggs and Collis 1982) indicated that 75% produced multi-structural responses to the problem supporting our belief that this approach effectively supports student learning about alternate perspectives on problems.

Acknowledgements

This work has been partially supported by Adelaide University using funds from a University Teaching Development Grant. Support from University of Technology, Sydney and the Australian Mekong Resource Centre at The University of Sydney is also acknowledged.

References

1. Bain, J. (1999) Introduction, *Higher Education Research & Development*, **18**(2), 165-172.
2. Biggs, J. B. and Collis, K. F. (1982) *Evaluating the quality of learning: The SOLO taxonomy*. New York: Academic Press.
3. McInnis, C., Hartley, R. and Anderson, M. (2001) What did you do with your Science Degree? Australian Council of Science Deans, <http://www.acds.edu.au/occas.htm>, Accessed 24/10/01.

Robert G. McLaughlan
 National Centre for Groundwater Management
 University of Technology, Sydney
 PO Box 123
 Broadway NSW 2007
 Australia
Robert.mclaughlan@uts.edu.au

Denise Kirkpatrick
Teaching and Learning Centre
The University of New England
Armidale NSW 2351
Australia

Philip Hirsch
School of Geosciences
The University of Sydney
NSW 2006
Australia

Holger R. Maier
Department of Civil and Environmental Engineering
Adelaide University
SA 5005
Australia