Web-based Simulation Generator:

Empowering Teaching and Learning Media in Political Science

By

Albert Ip Multimedia Education Unit, The University of Melbourne, Parkville, VIC 3052.

Roni Linser, Department of Political Science, The University of Melbourne, Parkville, VIC 3052.

Abstract (Presented at ASCILTIE99 as a SnapShot)

This paper outlines and discusses a Web-based simulation generator which enables an innovative "learning architecture", which combines the power of goal-based learning, role-play and the capabilities of the World Wide Web in facilitating learning and teaching.

Introduction

Simulations have been used as a tool for teaching in many areas and disciplines. The idea behind using simulations as pedagogical tools relies on the idea that experience is the best teacher. If access to such experience in real-time is impossible, an artificial environment may be, if not ideal, at least sufficient.

The simulations generated by the generator described in this paper are not simulations of physical systems. These simulations are for modeling human interactions, such as those encountered in political science studies or management studies. One of the early pedagogical applications of the generator was in the study of world politics at the Political Science Dept. at the University of Melbourne.

By innovative, careful and informed manipulation of the simulation generator the learning experience can be focussed on knowledge, understanding and skills required in international relations theory and practice or other subject matter emphasizing human interactions, including language and organizational management. Inherent to the design of simulations is that they are a problem-solving activity within a context. For web-based simulation, the flexibility offered by the synchronous and asynchronous communication is unmatched by traditional teaching methodology.

Role Play Simulation Generator

The Role Play Simulation Generator (RPSG) is based on the abstraction that human interactions are communicative events requiring information exchange. There are four types of information interacting in the simulation: the information provided to each role by the lecturers, structured and prepared information by participants (in the form of formal writing), information entered and/or read by the participants in conferences and information exchange between participants. In order to cater for different group size, parallel simulations can be run in parallel worlds using the same simulation information set up by the lecturer.

The game scenario in the RPSG is typically setup by the information the lecturer provides or it can be a dynamic scenario. There are four types of such information:

- Information presented to the students before login. Every user will see this information and hence is being used as general orientation of the game.
- General Information after login. To reduce the amount of repetitive work by the lecturer, this is the material presented to all authorized students. The overall goal of the group may be established at this point.
- Information to specific world: When required, different worlds may run slightly different scenarios which are set up using this type of information.
- Information specific to the role: By creating differential information to different role, there will be genuine need of the students to communicate in order to achieve a common goal. However, this information type may be used to create individual learning goal for the student. In political science simulation, this type of information was used by the lecturer to give specific instructions to particular roles in order to steer the direction of the game..

Initial role position can be set up either by the lecturer (using one form or other of the mechanism described above) or provided by the students through the writing of a "role profile" task the result of which may be made available to all the players in the same world. There is yet no provision for sharing role profiles across worlds in our current implementation.

The role is played through two different messaging systems: a general-purpose message to any member within the same world and/or participation in conferences. The general-purpose message is very similar to email.

The conference is implemented to reflect the various kinds of forums found in politics, commercial and other environment. The "participation rights" of each role (i.e. whether a role is allowed to read, write or create) is setup by the lecturer during the creation of the simulation. There are also multiple document types within a conference and the "participation rights" of each is independently set. For instance, it is possible to set up a "News Agency" as a conference in which there are three types of document: draft, submitted and news. Every roles in the world will have "read" right of the document type "news". There may be several roles called "Reporter A", "Report B" etc. who will have read, write and create rights for the document type "draft". Reporters also have the right to convert "draft" into "submitted". "Reporters" can work on their drafts, discuss such

drafts among the reporters without any other roles looking at the document. When satisfied and/or agreed among the reporters, the "draft" may be converted to "submitted". Another role "Editor" may have read and write right (but no create right). Hence, editor can only work on "submitted" document. The editor may also have the right to convert the document type "submitted" to "news" effectively broadcasting the news to the rest of the world.

The simulation is driven by a dynamic scenario that from the technical point of view is organized as "tasks". Lecturers can also set "tasks" for specific roles. These tasks can have time limits. When a role acts on a task, the output of the action becomes a task for other roles. These tasks serve as scaffolding for the students guiding them progressively towards the final overall goal of the learning experience. When necessary, these tasks can also be used for assessment purposes.

Advantage of the Simulation Generator

Role Play simulations (in the form of face to face interaction such as SimSoc), using generic email systems (such as that reported by Vincent, 1998) or using Groupware product such as Lotus Notes are common. However, the task of setting up of such simulations has proved to be beyond the interest and technical ability of many, if not most academic lecturers. There may indeed be many reasons for this. Some examples are fear of using new and unfamiliar technologies, reliance on technical staff to provide the means for teaching, funding issues, it is time consuming to both learn how to use the technology and to implement it.

The advantage of the Simulations Generator is that educators can design and implement a web based simulation as easily as navigating through a web-site. The use of a Simulation Generator empowers forward looking, innovative lecturers to experiment with creating simulations and getting the students to interact, collaborate, discuss, lobby and practice the skills and theories demanded by their field of study.. It empowers educators by reducing the dependency of the academic on the technical staff.

Pedagogical Application & Evaluation

The current Role Play Simulation Generator is also being used in LOTE (Language Other Than English) (French & Chinese) [Note: by the time this paper is presented, we would have completed a few round of teaching and we can present some early evaluations]. Another use for Year 2 English learning is also being trialed as this paper is being written.

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