Exploring Cases On-line with Virtual Environments

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Abstract

A project team at the University of Virginia has combined the text and graphic format of the World Wide Web with the live interaction of a MOO (MUD, Object Oriented; where MUD stands for Multi-User Dimension) to create an on-line virtual environment for the presentation of instructional cases to Instructional Design students and professionals. The effectiveness of case methodology for the development of professional thinking has been demonstrated in a number of collaborative and competitive projects using a variety of communication technologies. The Web/MOO environment will simulate the collaborative nature of "live" interactions while taking advantage of ability of communication technologies to bring together geographically diverse individuals at minimal cost. The original project was solely MOO-based, but the decision to combine the Web and MOO environments was made after a pilot study revealed the difficulty of managing lengthy texts in a MOO environment. Future work with this project will include additional pilot studies, case competitions, and the integration of the model into case-based university courses.

1. Introduction

We have combined the graphical format of the World Wide Web with the real-time interactive environment of a MOO (MUDD Object Oriented) to develop an on-line virtual case environment that can be used to link participants from geographically or professionally disparate locations as they explore cases and develop their case responses. While this environment could be useful in practically any discipline, we have elected to focus upon Instructional Design casework. In this paper, we will provide a background on case methodology and the use of teams for collaboration and competition within learning environments. We will then describe how cases can be delivered, with a focus on our on-line case environment and our initial Instructional Design case. Finally, we will relate what we have learned about crafting an on-line case environment, closing with a description of research underway.

2. Case Methods: What Are They and Why Are They Used?

Instructional Technology (IT) majors typically spend a great deal of time learning Instructional Design theory and applying these theories to the production of instructional materials. Too often, however, these applications are not developed in response to a real instructional need. There is no client to work with and no real-world problem to explore. On the other hand, securing the involvement of real-world clients can be difficult when the Instructional Design "consultants" are students who are still learning. Case methods are particularly useful in this situation, as they provide a nearly risk-free environment in which students can explore a real problem, attempt to understand it, and then consider and generate a response.

Case-method teaching has been used extensively in the preparation of lawyers, physicians, and business people, but cases are only now beginning to be widely employed in education (Merseth, 1991). Instructional cases can be used to encourage the development of professional thinking as individuals formulate reactions to case materials. Case methodology is especially effective if students are required to identify facts and issues, to de-center and view events from different perspectives, to apply current professional knowledge and research, and to predict consequences of various courses of action (McNergney, Herbert, and Ford, 1993). In this way, the use of case methods can help students to forge important connections between the academic and the experiential, between knowledge and practice (Cooper and McNergney, 1995).

The effectiveness of case-based teaching is supported by Kleinfeld, who has demonstrated that teaching with cases can help students to understand the meaning of events, increase their ability to frame edu-

cational problems, and improve their thinking regarding alternative courses of action (Kleinfeld, 1989, 1991).

3. Cases and Team Collaboration / Competition

Most educators believe that teachers who learn to work collaboratively perform more effectively as teaching professionals. This strategy has proven effective within team competitions where it was found that a case scenario provides a rare opportunity for professional collaboration for solving real-life problems (McNergney, Herbert, and Kent, in press). Ellsworth (1994) explains that collaborative-learning students take on a more active role in the learning process. They become problem-solvers, contributors and discussants. Collaborative learning situations also increase cross-cultural awareness, increased interest, focus and synthesis (Ellsworth, 1994).

Cases have been used as the basis for competitions in which judges evaluate analyses presented by collaborative teams of student teachers from different institutions (McNergney, Herbert, and Ford, 1993). Such competitions allow participants to work collaboratively within the framework of a given system of procedures, an environment not unlike the professional workplace. Professionals maintain their status and social worth because they possess knowledge that others do not, and case competitions explicitly encourage the integration of professional knowledge and practice--knowledge of both "knowing" and "knowing how" (McNergney, Herbert, and Kent, in press).

Virtual competitions have been held over the Internet via mailing lists, e-mail, and through text and graphical presentations on the World Wide Web (WWW or Web for short). One such competition involved five teams of student teachers from three countries. Virtual competitions hold a tremendous advantage over live competitions in their cost effectiveness in regard to both time and money. Additionally, virtual competitions allow greater flexibility in bringing together a wide range of individuals and cultures for interaction in a common collaborative setting (McNergney, Herbert, and Kent, in press).

E-mail and Web technologies, however, are not real-time events. We hope to use the MOO (MUD, Object Oriented; where MUD stands for Multi-User Dimension) environment to capture the collaborative nature of a "live" competition using technology that lets us conduct real-time case competitions that allow international participation for very little expense.

4. How Are Cases Delivered?

Written cases used for classroom discussion were the first format proposed to the education community and continue to be the most popular form in use (Shulman, 1986). Emerging technologies are allowing new and innovative applications of teaching cases. Videotape can be useful in capturing actual events, or realistically simulated events, to serve as the basis for a case, and supporting text materials can guide both teachers and learners in the use of such cases in instructional settings. CD-ROM technology has been used in several instances to overcome limitations inherent in the linear format of video by making it easier for users to interact with the case and supporting instructional materials.

The Internet and telecommunication technologies have also provided new vehicles for delivering cases to learners. Listserv mailing lists (such as cases@bsuvc.bsu.edu) have been used for both discussion and formative evaluation of text cases. Because of its ability to transmit text, graphics, sound, and short movies, the World Wide Web offers substantial potential for the development and presentation of case materials.

MOOs present another interesting medium for case use. MOO-based cases are unique because of the real-time, interactive communications that can take place in the MOO environment. Bennahum (1994) describes MOOs as being very much like electronic mail (e-mail) in that computers are linked via phone lines. However, in a MOO, the communications are real-time events taking place between participants in a text-based virtual environment.

However, MOOs are much more than real-time chat. MOO environments are populated with text-based descriptions of objects that can be manipulated. For example, a virtual chair can be "sat" in by a MOO participant. A virtual letter can be read as well. As such, virtual rooms, objects and exhibits are programmed for people to interact with. Role-playing is an instructional method that allows students to experience first-hand realism of case materials as they assume the perspectives of individuals represented in a case (Ertmer, 1995). MOOs also allow individuals to assume different identities with ease and allow geographically separated individuals to collaborate in a common setting.

MOOs have been used in a growing number of academic applications. The development of writing skills has been a popular use of the MOO environment at the university level, but other applications include the use of MOOs for the discussion and sharing of research information, as a forum for social research, and in the creation of unique social and cultural environments. In several instances entire courses, ranging from freshman composition to computer programming, have been successfully conducted in MOO settings (Bennahum, 1994).

5. The On-line Instructional Design Case

The case we have employed presents an Instructional Design problem in a corporate "training and develop-

ment" setting. Case documents provide biographical information on the principal players, a description of trainee responsibilities, transcripts of the initial client/design team meeting and a follow-up design team meeting, and a flow chart developed by the design team. In responding to the case, we ask participants to address the following questions, which have been patterned after the professional knowledge model developed by McNergney and Medley (1984):

- What are some of the most important issues reflected in this case?
- What do you already know that is pertinent to situations like this one?
- How would you respond? What plan of action would you suggest? and
- What do you think the outcome would be if that plan of action were implemented?

To date, we have developed and used several versions of the on-line case environment: MOO-only and MOO plus Web-based case materials. The paragraphs that follow describe our work and the outcomes we have obtained to date. (This paper was submitted to the proceedings on June 29, 1995; the results of additional inquiry will be reported at the conference.)

6. MOO-Only Case Environment: What We Learned

Our initial case environment was based solely in a MOO (IATH-MOO, Institute for Academic Technology in the Humanities, University of Virginia). Our large meeting room was designed to convene all participants. Four breakout rooms adjoined, each with a complete set of case materials. Some of the case materials were documents that could be read; others were "videotapes" (text transcripts that scrolled slowly up the screen, as if replaying an interaction) of important meetings that could be played. Once in a breakout room, a team's discussions could not be heard by participants outside of the room.

In the Spring of 1995, 11 students from a graduate course in advanced Instructional Design participated in a tryout of the case MOO. None had ever visited a MOO. The students were dispersed to computers in a single computer lab. To begin, students spent about one hour on an introductory tutorial. Printed and on-line materials led them step-by-step through the basics of MOO navigation, communication, looking at objects, and writing on notes. On completion of the tutorial, the students virtually gathered in the main case room, were divided into three teams (two teams of four students and one of three), and departed for their on-line breakout room. Four facilitators circulated among the teams, and were available for consultations during the 1.5 hour case session. At the end of the session, we physically reconvened to discuss the experience. Here's what they told us:

- The way the MOO "videotapes" functioned made them too difficult to use. While the transcript was playing back, any other activity, such as someone entering the room or team members chatting in the room, interrupted the playback on the screen.
- Reading all of the case documents on the screen was similarly difficult. Some participants resorted to printing out screen captures of the case materials.
- Holding the introductory orientation and the case exploration during the same session resulted in "overload," particularly for the less experienced computer-users. Students recommended holding two separate sessions.
- Despite the technical problems, most of the students were excited about the case and the potential of the MOO for on-line discussion.

7. Web & MOO Case Environment

As a result of our MOO-only pilot inquiry, we made some modifications to our approach to an on-line case discussion. We removed all case contents from the MOO and placed them on the WWW. The MOO environment was reconfigured to serve primarily as a discussion environment. Participants now pursue the case materials with both WWW and MOO connections open simultaneously. They are directed first to explore case documents and case questions on the Web, then to go the MOO to discuss the case and possible responses to it, and then to return to the Web to draft their individual responses and submit them. This new format has undergone several cycles of evaluation and revision to date.

8. Research Underway

During the month of July, 1995, several research activities will take place. First, another pilot will be run with two teams of graduate education students. This session will be observed, participants interviewed, and logs of the on-line discussions examined. Based on this information, the Web/MOO environment and our case methods will again be revised and improved.

The case materials will then be employed as we study how novice Instructional Designers explore a real-world design case. Participants in a summer offering of an Introduction to Instructional Design class will participate in two on-line sessions: as a group in the Web/MOO introductory activities, and as part of a smaller team of 3-4 students during the Web/MOO

case session one week later. As a result of this study we hope to be able to offer a qualitative analysis of how novice designers go about addressing Instructional Design issues, as well as how they function as a team and on the Internet.

While all of our work to this point has been with students at the same geographic location and at the same level of expertise, there are several, more expansive studies planned for the near future. First, we will host a series of virtual case competitions, with teams representing Instructional Design programs from colleges and universities across the country and internationally. Second, we plan to compare the performance of novice instructional designers (still enrolled in graduate degree programs) with that of professional designers (with at least several years experience). Finally, and perhaps most importantly, we hope to employ this model as we offer case-based university courses from the University of Virginia to students across the country and world, via the Internet.

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