

Digital Innovations in Teaching and Learning: Interactive Computer Environments in the Undergraduate Classroom

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Instructional use of interactive three-dimensional computer models is transforming undergraduate education at the University of California, Los Angeles. A surge of faculty interest in virtual environments over the past ten years has resulted in a broad spectrum of projects now making their way into Humanities and Social Sciences classrooms. Art history and architecture students can now interactively explore the digital Roman Forum developed by UCLA's Experiential Technologies Center (the successor organization to the Cultural Virtual Reality Lab) in place of filmic slides or PowerPoint presentations. Near Eastern Languages and Cultures students can tour through Qumran, the settlement associated with the Dead Sea Scrolls, in a computer reconstruction developed by the Qumran Virtual Reality Project, or compare the first century Herodian Temple Mount with the eighth century Umayyad structures on the site through the real-time visual simulation model developed jointly by the Urban Simulation Team at UCLA and the Israel Antiquities Authority. Archaeology students can experience the ancient Egyptian sites of Karanis and Karnak created with support from UCLA's Office of Instructional Development and Academic Technology Services. Spanish and Portuguese students can culminate their studies of the pilgrimage route in Spain with a virtual visit to the Romanesque Cathedral of Santiago de Compostela, complete with authentic period music. In American History classrooms, students can experience the wonders of the World's Columbian Exposition of 1893 by interacting with a model developed by the Urban Simulation Team.

The proposed paper will describe the results of over 600 student surveys administered in the past two years by the UCLA Experiential Technologies Center (ETC) staff to solicit reactions to this new form of instructional technology. The survey instruments were completed following regularly scheduled class meetings held either in a technology-enabled classroom or UCLA's Visualization Portal (a campus facility with a 160 degree spherically wrapped projection screen specifically designed for displaying these virtual environments). In the surveys, Likert-style ratings gauged the students' overall

experience with the computer model, their understanding and interest in the content of the virtual environment, and their reactions to the technology as a learning tool and compared to more traditional types of instructional technologies. Multiple choice and ranking questions explored the students' interest in using the virtual environments outside of the classroom and the aspects of the environment most important for creating an engaging learning experience. Short answer questions delved into the students' likes and dislikes, and thoughts on the learning benefits of interactive computer models.

The paper will also explore instructor reactions to the classroom use of interactive computer models. Concurrent with the student surveys, ETC staff administered instructional technology questionnaires to twenty five undergraduate instructors from around the country who participated in an NEH Summer Institute focused on "Models of Ancient Rome" and conducted personal interviews with twelve instructors actively using the models in their classrooms to explore faculty reactions to teaching with virtual environments. The results of these surveys identify the perceived challenges and benefits to classroom use of interactive computer environments, general concerns about instructional technology, curricular integration, perceived and experienced pedagogical impacts, and instructor expectations for virtual environments.

The paper will conclude with an analysis of how the student and instructor reactions to the UCLA environments are informing ongoing project development, and a discussion of future research regarding digital pedagogy in the Humanities.

Associated websites:

- UCLA Experiential Technologies Center (<<http://www.etc.ucla.edu>>)
- UCLA Academic Technology Services (<<http://www.ats.ucla.edu>>)
- The Urban Simulation Team at UCLA (<<http://www.ust.ucla.edu>>)
- UCLA Office of Instructional Development (<<http://www.oid.ucla.edu>>)