

CAMPUS TECHNOLOGY

From Syllabus
Media Group

INNOVATORS 2005: New Jersey Institute of Technology

Innovation: Three-Dimensional Electronic, Paperless, Digital Architectural Design Studio

Innovator: New Jersey Institute of Technology

Challenge

"We want to prepare students for 21st century architectural practice," says Glenn Goldman, professor of Architecture and director of the Imaging Laboratory at the **New Jersey Institute of Technology**. "Despite the fact that digital media has been used in architectural design studios at universities for two decades, architecture students are generally taught to design and draw the same way their instructors learned—with traditional media first; perpetuating the myth that one has to learn how to work 'by hand' before one can use information technology for design and communication." Goldman goes on to say, "Firmly believing that IT enhances design, allows for more creativity, and empowers the designer (and design student); we decided to eliminate the traditional parallel rule and immediately start freshmen students designing with electronic media."

Technology Choice/Project Design

"Selection of technology was based on pedagogical appropriateness, cost, and manageability," says Goldman. Consideration was given to the cost of individual student purchases, as well as the department-provided support (constrained by the fact that they only had two full-time staff members to manage approximately 1,000 student and faculty accounts with associated workstations, servers, teaching, and specialized laboratories, etc.). Students purchased their own computers, and most software applications were provided through the School of Architecture Imaging Laboratory network.

Key Players

The program was designed for the freshman class that entered September 2004 and will be repeated (with some updates/modifications) for the class entering September 2005. The project was initiated by Goldman, who was assigned by Urs Gauchat, dean of the School of Architecture, to coordinate the first year and revise the curriculum as part of a department-wide curricular study initiative. In addition, Goldman was assisted by John Cays, adjunct faculty member and practicing architect, who coordinated the Architectural Graphics course and was a full participant in the development of the syllabus and course requirements.

Results

Students were required to make frequent "public" presentations to their colleagues and critics using constructed, printed, and projected samples of their work. There was extensive use of freehand sketching and drawing, designing, and presenting with physical models and digital media. Students were given opportunities to learn, and then required to use in a design context a variety of digital applications. Scanning, digital photography, raster painting, and

vector modeling and drawing applications were all required for discrete projects—creating a “need to know” as incentive to learn applications in order to complete assigned tasks to become comfortable with the idea of using more than one application for any project; applying the most appropriate (or most appropriate available) program or component of a program. Furthermore, Goldman removed profession-specific abstractions and complexity by starting with three-dimensional modeling, and then moving to two-dimensional representation. Goldman and his team wanted students to understand the potential of a variety of media available that could be used for architectural design. At the same time, they needed to be able to begin to understand and produce original works of design.

Surprises

Despite the fact that they thought they were clear and explicit in their printed/online specifications and expectations for student computer and supply purchases, Goldman was staggered by the amount of unbudgeted time he spent (via telephone, face-to-face, and e-mail) explaining the project to incoming freshmen and their parents, during the summer prior to the semester. But Goldman was also surprised and pleased by the willingness of both the students and first-year faculty to undertake and implement the pedagogical change.

Next Steps

“The project will affect subsequent years in the five-year Bachelor of Architecture program as digital media become ubiquitous in every design studio. There will be more flexibility in staffing design studios, relying on the new generation of students to develop and communicate their ideas effectively with multiple media without needing explicit ‘how to’ instruction from the faculty,” says Goldman. “Meanwhile, the freshman year will be modified slightly in response to student and faculty comments, providing even more opportunities for instruction and use of digital media in the design and presentation processes.”

Advice

Says Goldman, “Do not go cheap on resources. For this to work, the software applications need to be broad enough (painting, drawing, modeling, rendering, and compositing), and hardware powerful enough (fast and well-supported graphics card, reasonably fast CPU, 1-to-2GB RAM, etc.), to enhance rather than inhibit the design process. Get a team of faculty and IT support personnel who believe in the project and are willing to put in the effort to make it work.”

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