Mathematica Laboratory Instruction in Calculus and Applied Mathematics

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Rockhurst College began experimenting with alternative calculus curricula in 1990 and became a test site for the Duke University Project CALC program in the fall of 1992. Specifically, we were looking for a calculus curriculum that emphasized conceptual understanding, had a demonstrated commitment to modeling real-life applications, and used modern technology as a fundamental tool to both solve problems and present ideas. From the beginning we made extensive use of the laboratory materials developed at Duke University and Bowdoin College that were an integral part of Project CALC. Our efforts to build a laboratory-rich environment has recently resulted in the creation of a Mathematics Technology Classroom. The physical and logical design of the classroom has brought some anticipated successes and challenges, and a few surprises.

The Mathematics Technology Classroom was designed for collaborative learning and active student involvement in the day to day delivery of the material and, by design, encourages experimentation with alternative teaching methods. It contains a projection system that sends computer, camera and video images to all the student stations. It is also equipped with a sophisticated sound system to complement the video capabilities. Long term plans include integrating the technology in the room with a campus satellite system to build an interactive mathematics program with area high schools.

Currently we are using Mathematica version 2.2.2 operating on a variety of Macintosh platforms all connected to a Sun Workstation fileserver. Technical information regarding the physical layout and the equipment component of the classroom will be provided. Issues of funding, building and maintaining a technological learning environment will also be included. Examples of curricular materials designed specifically around the technology in the room will be displayed.