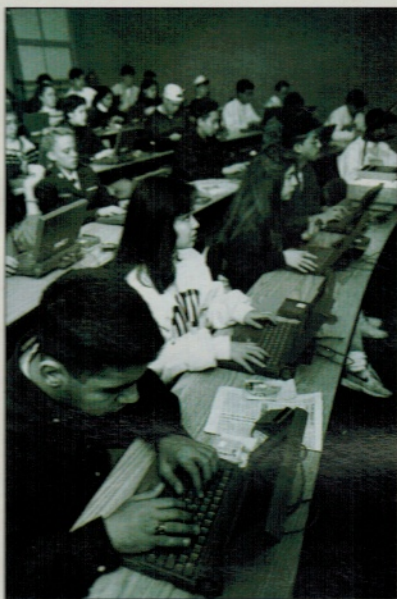


On Campus

DUKE UNIVERSITY

A Paperless Classroom



Computers are connected by infrared light in a programming course at Duke.

Something unusual is ricocheting unseen around George Stetten's computer programming classroom at Duke University: infrared light. The beams of light come from wireless infrared transceivers, hooked up to the students' Apple PowerBook laptop computers. In an experiment in classroom networking begun last spring and continuing in the spring 1995 semester, students can do their programming on the laptops and project their work remotely on an overhead display. Also using the infrared technology, Stetten can take over and control any student's

laptop from his own computer.

"With this system, everybody in the classroom gets to see everybody else's work," says Stetten, an assistant research professor in biomedical engineering and director of Duke's Visualization and Image Analysis Laboratory. "And with my keyboard, I can type on a student's computer," Stetten adds. "I can lean over anybody's shoulder in the class. As a teacher, I don't have to show the same thing to 20 or 30 people in a row."

What's more, infrared communications and a networking program called Timbuktu enable students to set up mini-networks outside class to work on problems together. Stetten believes this approach fits neatly into the typical student's lifestyle.

Traditionally, Engineering 53, required of all engineering majors, is taught in a conventional classroom-and-lab format, Stetten explains. Usually, he says, students take notes in class and then go to the lab, sometimes days later, to do their assignments on a hard-wired Unix station. But Stetten says department chair James McElhaney wanted to

try a more immediate hands-on approach.

At McElhaney's request, Stetten piloted the class last spring, teaching the popular "C" language to a group of 43 freshman volunteers, about a third of whom had no programming experience and a roughly equal number of whom had advanced skills. The students' job was to test and help work the bugs out of the infrared transceiver technology, developed and donated by the Photonics Corp. of San Jose. The result, says Stetten, is a near paperless classroom.

One obvious advantage to infrared, says Stetten, is that it doesn't require a specially wired classroom or laboratory. And because infrared doesn't go through walls, there's no possibility of interference in neighboring classrooms.

Stetten believes that students who learn programming "with their fingers" will learn more readily. And the approach may offer an advantage for holding students' attention in class, he says. "It's hard to fall asleep when your screen might be displayed on the big screen in the front of the classroom any minute."

For more information, contact George Stetten, (919) 660-5131.

—JEFF MEADE