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Talking Back to Teacher

Interactive slides, digital notes, and student blogs about study tips help revitalize the classroom lecture

By JOSH FISCHMAN

Richard J. Anderson may have solved the problem of the class loudmouth. "You know, in almost every class there's someone who takes it over," says Mr. Anderson, a professor of computer science at the University of Washington, in Seattle. "He sits in the first or second row, and every time you ask a question his hand shoots up." And after the first few classes, the rest of the students tend to give up participating.

With computers on their desks that have touch-sensitive screens that read pen strokes, however, it's easy for anyone to raise a "virtual hand." Mr. Anderson, instead of scribbling a problem on the blackboard, scribbles it on a screen image — a slide — on his computer. The image then shows up on his students' computers. They scribble their answers on top of Mr. Anderson's slides and send them back to his computer, where he can riffle through them like the pages of a book. "I can display different answers on a slide projector," Mr. Anderson says. "One person's view doesn't dominate."

"It makes large lecture classes more involving," agrees David Ouyang, who will be a sophomore this fall at the University of California at San Diego and who took a computer class with a similar system last semester. "You don't get shut out."

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The program Mr. Anderson created is called Classroom Presenter. He developed the free software, now in its third iteration, about six years ago to counteract the ubiquitous use of PowerPoint, which, as one colleague told Mr. Anderson, "sucks the life out of a class." Classroom Presenter is now in use in institutions from San Diego to Grove City College in Pennsylvania and Virginia Tech in Blacksburg.

The software has also spawned a spinoff designed to work on any computer, not just on pen-based devices. And a Presenter-like commercial program called DyKnow — which has the ability to import movies and audio — has broken out of computer-science courses to be used in art-history classes and in English composition.

But even as enthusiasts have taken up these programs, some doubts have emerged. One problem is that they largely rely on tablet PC's, notebook-size, touch-screen computers that have yet to gain a substantial following among students.

And studies have not clearly shown the software leads to better classroom performance by students. "We think it works, but the assessments haven't been clear-cut," says Vincent F. DiStasi, an associate professor of chemistry and chief information officer at Grove City College. Students do seem more actively involved, but the jury is still out on whether that involvement translates to educational achievement.

Beyond PowerPoint

Back in 2001, Mr. Anderson was simply interested in breaking out of the PowerPoint doldrums. He was working on technology for distance education, and searching for ways to make it more exciting for students and more of a two-way street. PowerPoint, he thought, wasn't helping things. "It's strictly one-way communication," he says. "Professors prepare their slides and show them, and students just sit there silently."

But that year, while on sabbatical at Microsoft Research, the company's lab, about a half-hour from his university office (if Seattle's sometimes-snarled traffic cooperates), he began to get intrigued by the possibility of tablet PC's and so-called digital ink. Tablets let you write on the screen with a penlike stylus. (Microsoft produces the tablet's operating system.) Hook up a tablet to a slide projector, and the ink becomes a good way for professors to jazz up PowerPoint, by writing underlines and circles and arrows while they are talking.

Mr. Anderson and his colleagues began to tinker with a program that would save those highlights and transmit them, along with the slide, to the tablet PC's used by students.

More importantly, it would allow students to send the slides back with their own markings. "I can show data that can be graphed in several possible ways, ask students to draw the best graph, and instantly have them transmitted back to my tablet," Mr. Anderson says.

On that tablet, the students' answers appear as a small strip of icons on one side of his screen. "This is the really good part," Mr. Anderson says. Quickly running his stylus down that strip, the icons enlarge one after another. In a few seconds, Mr. Anderson can view the entire set, and pick the correct answer to project as a slide. "Or I can pick an incorrect answer that highlights a teaching point that I want to make," he says.

Beth Simon, a faculty member in computer science and engineering at San Diego, says, "I've even had students submit 'I'm lost.' That's been great. Then we can go over just what the confusion is."

Because all answers are anonymous, students don't have the anxiety of raising their hands to say "I'm lost" or volunteer an answer that may turn out to be wrong. "It gets rid of a lot of social pressure," says Joseph G. Tront, a professor of electrical and computer engineering at Virginia Tech. "There are no names associated with the answers, so you tend to see a lot more classroom participation."

Equivocal Results

Achievement has been harder to get a handle on. One positive result has come from Murray State University, in Kentucky, which gave tablets to some students in a chemistry class using Classroom Presenter and compared their performance on standardized tests with that of students without tablets. Most of the students scoring in the highest percentiles were tablet users.

But other assessments have yielded more equivocal results. Mr. DiStasi, who just completed a two-semester evaluation of the software and computers in courses with several instructors at Grove City, found that students did not feel they were more attentive or better prepared for exams.

Mr. DiStasi thinks the explanation lies in the instructors. "These teachers did not use the inking ability of the program," he says. "They were just showing slides. So they weren't engaging the students."

It is even harder to engage students if they don't have tablets in the first place. And most don't. The machines cost several hundred dollars more than regular laptops. Plus, they don't have the large screens and multimedia capabilities that students want.

But what if students could get and submit inked slides on whatever computer they owned? Ms. Simon and her San Diego colleague William G. Griswold decided to try that with a program called Ubiquitous Presenter. "It's Classroom Presenter, but you can get slides on your laptop or your desktop computer in your dorm room," she says. Students

without a pen device can't write on slides very easily, but they can check multiple-choice boxes.

Blogging by selected students is another feature of Ubiquitous Presenter. "We pick a few students in class to take 'master notes' on my slides," Ms. Simon says. "Other students can watch them in real time and even send messages to ask questions."

Mr. Ouyang was a blogger last year in an introductory course on the programming language Java. "I would say things like 'Here are some hints to get you started on this question,'" he recalled. "Sometimes I think professors can be too knowledgeable and leave students behind. We're closer to the students and can talk from more of a 'just starting' perspective."

Students could toggle back and forth between Mr. Ouyang and the other class bloggers to get different ideas. And there was a personal benefit to having 100 classmates looking at his scribbles, Mr. Ouyang found: It made him take much better notes.

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