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THE CHRONICLE OF HIGHER EDUCATION

Information Technology

From the issue dated November 12, 2004

When Good Technology Means Bad Teaching

Giving professors gadgets without training can do more harm than good in the classroom, students say

By JEFFREY R. YOUNG

Alison Lesht, a senior at Connecticut College, dreaded going to her organic-chemistry classes, held in one the college's wired classrooms.

It wasn't that the material was dense and challenging. It was because her professor "would write on the PowerPoint slides complete sentences, which she would then read," explains Ms. Lesht, who is majoring in biology and minoring in religious studies. "It didn't really add anything to the lecture. It just made everything more complicated and convoluted."

"I call it 'PowerPoint abuse,'" she says. "It's pretty widespread."

Colleges have spent millions on "smart classrooms" packed with the latest gadgets to assist teaching -- computerized projection systems, Internet ports at every seat, even video cameras with motion detectors that can track the movements of a lecturer. But colleges have spent far less time and money giving professors the skills to use even the simplest technology effectively.

The result: Students say technology actually makes some of their professors less effective than they would be if they stuck to a lecture at the chalkboard.

The problem was underscored in a national survey released last month by the Educause Center for Applied Research, a group supported by 300 colleges and several corporate sponsors interested in academic technology. After surveying and interviewing students at 13 colleges of different types, researchers for the group said they were surprised by the number of negative comments about how professors used technology. "The qualitative findings revealed students' strong feeling that faculty use technology poorly," said the researchers' report. "Many students commented on their instructors' lack of skill."

Some complaints involved the kind of PowerPoint abuse bemoaned by

Related materials

Colloquy Live: Join a live, online discussion with Howard J. Strauss, technology-outreach coordinator at Princeton University, about what should be done to bridge the disconnect between colleges' vast expenditures on classroom technology and the poor (or nonexistent) uses to which many professors are putting that technology, on Thursday, November 11, at 2:30 p.m., U.S. Eastern time.

Survey: Showing how not to use technology in the classroom

Ms. Lesht, but other technological teaching blunders were cited as well. Some instructors wasted class time fumbling with projectors or software. Some required students to use chat rooms and other online features that went unmoderated, or that seemed to have been tacked on to the syllabus as afterthoughts. Some devoted too much time to teaching students some quirky Web tool at the expense of delivering course material.

Similar examples were described by more than a dozen students at various colleges who were interviewed by *The Chronicle*.

"I think you could go to any campus and find these things," says Warren Arbogast, a consultant who helps colleges decide what kind of technology to purchase.

Students also complain, however, when professors make no attempt to use new tools, putting pressure on faculty members to try high-tech tools even if they are not comfortable with them.

"Expectations have changed," says Douglas Havelka, assistant professor of management information systems at Miami University, in Ohio, who says students want PowerPoint or Web presentations. "There is a tendency for us to be very responsive to their wants and their desires because we are very sensitive about those student evaluations."

Though many colleges offer optional training sessions or workshops on how to use technology in teaching, some professors say they are too busy with research to participate, especially when tenure committees put so little emphasis on effective teaching.

"Faculty learned in an environment much like Charlie Brown's teacher -- I talk, you listen," says Mr. Arbogast. "Now we roll in an electronic gadget and say, 'Use this.'"

A few colleges are working to improve the training faculty members get, and to offer more incentives for the effective use of technology in the classroom, says Mr. Arbogast, who believes that such efforts are the only way to realize the promise of the investments institutions have made.

"Those that are doing it," he says, "are seeing the rewards."

Dull Presentations

The most common technology used in the classroom seems to be PowerPoint, and it is also the most criticized by students.

A good PowerPoint presentation can enliven a lecture by offering imagery to support key points, and having a prepared set of slides can keep professors from straying off on tangents. Many students also praise PowerPoint slides for being easy to read, noting that professors' chalkboard scrawls can be illegible.

But students say some professors simply dump their notes into PowerPoint presentations and then read them, which can make the delivery even flatter than it would be if the professor did not use slides.

"Sometimes they don't use it to make their points," says Sara E. Sullivan, a sophomore at Suffolk County Community College. "They use it in lieu of their lesson plan."

As one student told researchers in the Educause study: "The majority are taking their lectures and just putting them on PowerPoint. ... With a chalkboard, at least the lights were on and you didn't fall asleep."

And unlike overhead transparencies, which professors can annotate with a pen during a lecture, PowerPoint slides cannot be easily changed during class.

"Sometimes overheads are better because you can draw on them, and that's kind of an interactive feature that's gone away with PowerPoint," says Bryan P. Duffie, a senior at Ohio University's main campus.

Increasingly, professors are placing their PowerPoint slides on the Web before or after class -- a feature that students find convenient and helpful. But while students often ask for this service, it can also make them less likely to attend classes.

When students do show up for such classes, they can use the classroom's costly technology to focus on things other than the lecture. "If he's reading me a PowerPoint and I could read it myself later, then I'll check my e-mail," says Brian J. Rizman, a junior at Saint Joseph's University, who says that some classrooms have a computer at every seat.

Stephen H. Loomis, chairman of the biology department at Connecticut College, says he is not surprised by such attitudes. His first attempts at using PowerPoint yielded similarly poor results.

"What I've found is that a lot of times it allows students to disengage instead of becoming more engaged in the topic you're covering," he says. "I don't think the majority of people are using it well."

Mr. Loomis, who has tenure, says that he devotes a considerable amount of time to finding new ways to use technology in his classes, and that his methods seem to be popular with students. He says, for instance, that he asks students in his human physiology courses to go through lessons on a CD-ROM that comes with the textbook before class, and that discussions in those classes have been richer as a result.

He is on the board for the college's center for teaching and learning, which offers summer workshops for professors on how to design Web sites for their courses and how to make effective use of PowerPoint. But he says that his untenured colleagues who hear about his high-tech experiments say they are too busy with research and other obligations that they feel will help them get promoted.

"The support systems are not in place right now to really promote effective use of technology," says Mr. Loomis. "I basically waited until I was a tenured full professor until I started getting into this kind of stuff."

Steven Strand, academic administrator in the life-sciences core-curriculum program at the University of California at Los Angeles, says that when he

first started using PowerPoint and posting the slides on the Web, attendance in his classes dropped by 20 percent. "If you give them the whole thing, they assume they don't have to come to the lecture," he says.

Now, he produces slides riddled with blanks and missing information, which he fills in aloud during lecture. He also uses slides to spice up what he is saying, by sprinkling in the occasional cartoon or illustration. "We're good visual learners," he says. "And we don't visualize by looking at words."

Malfunctions

When professors are unfamiliar with the technology, they are also more likely to waste class time troubleshooting, students say.

"It does become distracting when you're sitting in a class for only an hour, and for 15 minutes of that class the professor mutters as they try to get something to work or try to track down somebody to make it work," says Wrienne T. Mitchell, a senior at Ohio University, in a refrain echoed in the Educause report.

Some students also complain about the way professors use course-management systems such as Blackboard and WebCT, which have become ubiquitous on many campuses.

One of the most popular features of such systems is the online discussion forum. But not all online discussions are helpful, and professors sometimes require students to participate but do not incorporate the discussions into the course, so that the discussions seem like busywork. As one student told the Educause researchers: "Students don't read other students' responses, only those posted by the faculty member. They write responses in order to fulfill the participation requirements of the class."

Liz Potter, a senior majoring in physics at Iowa State University, says one of her classes has an online discussion forum that, while not a required activity, is not very useful. "To be honest, it's my daily laugh of the day," she says. Instead of talking about the substance of the course, participants usually make anonymous postings in which they criticize the instructors or whine about how hard assignments are. "I'll go and read what people are complaining about, and I'll chuckle about it," she says.

Madeleine M. Henry, a professor of classical studies, is one of the two professors jointly teaching the course, which has some 300 students. Ms. Henry says this is the first time she has used chat rooms or other features of WebCT, which she thinks are helping to manage the large class. "I was expecting more intellectual engagement" in the discussion forums, says Ms. Henry. As she reads anonymous complaints that quizzes are too hard, she has thought to herself, "You know, pal, you actually could sit down at your book and figure out what you need for the next quiz instead of" complaining, though she adds that many students are taking the course to fulfill a requirement rather than as part of their major.

"There's a potential," she concedes, "for time wasting if you're spending too much time in these rooms and you're not getting anywhere."

Students, however, argue that more professors should make use of interactive features in course-management systems and work harder to integrate them into courses. And some complain that professors simply ignore the tools completely.

Casey J. North, a senior at Miami University, says that only one of his professors has made use of Blackboard, even though the software has been available on the campus for years. He says that even some of the basic features of the software, such as providing a one-stop Web location for distributing the course syllabus, online readings, and other materials, would be helpful. "It is rarely ever used, and I think it could be a very effective tool," he says.

The Educause researchers noted the same trend. "It's somewhat disappointing to see that the interactive features that faculty used least were the features that students indicated contributed the most to their learning," the report said.

Smart Rooms

Many of the features of smart classrooms also go unused, says Mr. Arbogost, the technology consultant. "I'm talking lots of money put into equipment that's ladled into teaching spaces, and it's not doing anyone any good," he says.

Technology can make teaching more interactive, and that quality is what students are drawn to, he says. But many colleges offer training sessions for professors that are too focused on tools and not on strategies to use them well, he argues. "I could care less if they use a Dixie cup and a string for their technology," he says. "I try to tap into 'Why did you get into teaching in the first place?'"

He says college officials should also offer professors more financial incentives for attending such workshops. If administrators are planning to spend millions of dollars on electronic hardware for a new classroom building, for instance, he says they should budget at least $50,000 to give small grants to faculty members who participate in training.

"If you're going to ask your faculty to take this much time, you need to give faculty some kind of compensation," he says.

Howard J. Strauss, technology-outreach coordinator at Princeton University, agrees that colleges are too focused on smart classrooms. He says colleges should equip every classroom with a few basics, mainly a computer with Internet access attached to a projection system. Then, he says, colleges should encourage all professors to take small steps, rather than have only a few mount courses with bells and whistles.

"A lot of the stuff that people try to do in smart classrooms is done badly," he says. "What we really need instead of smart classrooms is smart teachers and smart learners."

One institution that has taken an aggressive approach to faculty training is Virginia Tech. For years, Virginia Tech has offered professors new office computers as rewards for attending its three- or four-day summer

technology workshops. The program has been attended by 96 percent of faculty members.

"The sales pitch about technology was, it was going to change the academy because it offers you opportunity for interactivity," says Anne H. Moore, associate vice president for learning technologies at Virginia Tech. But that doesn't happen without training. "It's not automatic."

The students who sit through the good, the bad, and the ugly of weekly class sessions agree.

As Artin Bastani, a senior at Miami University, advises, "If you're going to attempt to use technology, either use it right or don't use it at all."

HOW NOT TO USE TECHNOLOGY IN THE CLASSROOM

In a recent survey of students at 13 colleges conducted by Educause, a higher-education technology group, students said they liked technology -- when used well -- but some gave their professors failing grades when it came to using PowerPoint, course-management systems, and some other kinds of classroom technology. Some specific complaints:

- **Reading PowerPoint slides verbatim:** Many professors cram slides with text and then recite the text during class, which some students say makes the delivery flatter than if the professor did not use slides.

- **Wasting class time fumbling with software and cables:** Professors who are uncomfortable with technology can spend too much time troubleshooting instead of teaching.

- **Failing to moderate chat rooms:** Some professors require students to make weekly contributions to online chat rooms, but then never monitor the results or mention the discussions in class, making the discussions seem like busywork.

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SOURCE: Educause Center for Applied Research

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