Harvard Succeeds in the Teaching of Teachers

It's never easy watching oneself on videotape, but Harvard University physicist Melissa Franklin was especially nervous because she was about to witness what her students see. Worse, after 4 years in the classroom, she still rated her teaching abilities as merely "less than execrable"—so how would she look on tape?

The exercise was not as painful as Franklin imagined. Instead, she actually learned how to improve her teaching skills: Not only will she never again talk while erasing a blackboard (the students, she learned, need such moments to digest what they've been hearing), but she has cut down on those self-deprecating remarks offered to lighten the mood but which, instead, made her appear lacking in self-confidence. "Once you see it for yourself," she explains, "you don't need to be Piaget to figure out [its impact]."

LAURA WULF/HARVARD UNIV.

Self-improvement. Melissa Franklin watches herself in action.

The venue for Melissa Franklin's epiphany was a session at the Derek Bok Center for Teaching and Learning, founded in 1976 and one of the oldest of a handful of such university centers. The idea behind the program is that proven teaching ability is rarely a requirement for initial employment—indeed, it is too often lacking—despite the fact that graduate teaching assistants and junior faculty carry the bulk of the teaching load at most research universities. "The old approach was, 'Here's the textbook and good luck,' " says Daniel Goroff, a Bok Center associate director and a senior lecturer in Harvard's mathematics department. "Now we try to provide some real support."

Goroff has several weapons in his arsenal. The simplest are generic teaching tips like the one learned by Margot Seltzer, an assistant professor of computer science. Like most other teachers, Seltzer rarely endured more than a few seconds of silence after asking the class a question. Instead, she'd let the students off the hook by providing her own answer. Not long enough, Bok counselors told her. "Now I allow an uncomfortable, growing silence of 15 seconds or more, after which I tease and abuse the students into offering some kind of answer," she chuckles.

But the Bok Center also tackles more complex issues. Consider the experience of biologist Daniel Branton, who each year teaches a large lecture class. Ten years ago, Branton brought in a dozen teaching assistants who lacked confidence and the skills to lead the students through the problem-solving techniques Branton wanted to instill. The solution was "microteaching"—that is, having the assistants conduct a 10-minute slice of a lecture in front of the others and a camera. Each performance was critiqued by Branton and the assistants, guided by Bok Center counselors.

Branton was initially skeptical—"I believed some people are unchangeably terrible explainers," he recalls—but the experience has changed his opinion. "Getting people to focus on presentation instead of subject matter is extremely helpful," he says. "It gave my assistants experience and confidence." Even as a 20-year chalkboard veteran, Branton learned a few things: His posture was sloppy, and he waved his hands too much. Now he dutifully herds each year's new batch of assistants to the center.

Branton's not the only newly convinced shepherd. The word has spread to the point where many departments actively promote the center's services among faculty. The economics department has even made it a requirement for continued employment, providing faculty with an appropriately economic incentive. And the center also tries to meet the special needs of every discipline. Graduate students scheduled to teach calculus observe other teachers and teach two practice classes in front of Bok Center counselors before striking out on their own. And physics grad students, often required to teach from day one, get a crash course.

For all Harvard's enthusiasm with the program, however, the Bok Center scrupulously avoids sharing its files with anyone but the teacher. That means no input on tenure or other academic decisions. "We'll tell a department if the teacher was here, but not how they did," says Goroff. "We're not the teaching police. We're here to help."

–David Freedman

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dents may be turned off by a focus on memorizing and abstract theories. And students now are much more diverse in their goals and backgrounds. At the Massachusetts Institute of Technology (MIT), for example, a changing student body prompted an experiment this fall in introductory physics, in which freshmen learn in small classes with less lecturing and more activities.

To accommodate student diversity, the new classrooms aim to nurture talents beyond memorization and good note-taking. So, be it at Dickinson or MIT—and whether the subject is physics, biology, or chemistry—more educators are adopting what is called discovery learning. Students make predictions, perform an investigation, and then analyze results. If this sounds a lot like research, there's a reason: The idea is to give students the flavor of the experimental process.

One example of this approach is the chemistry curriculum at the College of the Holy Cross in Worcester, Massachusetts, which is centered around lab investigations rather than the lecture. On the first day, freshman students explore whether pennies get heavier or lighter with age; that leads to experiments on the composition of pennies and the concept of density. Several semesters later, advanced students use the same discovery mode to explore the kinetics of reactions of cobalt compounds. "We wanted students to learn chemistry the way chemists actually do chemistry," says department chair Richard Herrick.

Dipping into science

To engage those students who aren't inherently interested in abstract theories, many of these discovery courses are organized around real-world problems. For example, on the first day of introductory chem lab at the University of California, Berkeley, there's no one actually in the lab: Students have fanned out along the shores of a lake in a nearby park to see if the water is safe to drink. They plan their strategy, take samples, and test