Here’s the challenge. Despite the literally millions, if not billions, of dollars invested in new learning technology over the past decade, there has been little—if any—overall improvement in student learning. For most universities, technology has become a sinkhole into which dollars are poured with disappointing returns. The reason, says Carol Twigg of Rensselaer Polytechnic Institute’s Center for Academic Transformation, is because too often technology is simply layered onto the old coursework with instruction delivered the way it’s always been done (2003).

What if, Twigg asked, we redesigned instruction to use technology better? And, what if we turned the current paradigm on its head and said new technology must not only improve student learning, but also save money?

Armed with an $8.8 million grant from the Pew Charitable Trusts, Twigg created the Program in Course Redesign and engaged 30 institutions—research and comprehensive universities, private and community colleges from across the United States—to redesign and rigorously evaluate technology-assisted instruction.

The results? An impressive two thirds of the institutions reported improved student learning and more active learning; no institutions reported decreases in learning. At the same time, all participating universities and colleges saw reduced costs—with an average savings of 40%. Just as useful, the 30 institutions identified and outlined five different models for integrating technology successfully into higher education classrooms, models Twigg has written about widely (Ibid. See the link to additional publications at the end of this article).

And that’s how EWU entered the picture. Larry Kiser, executive director of the Teaching & Learning Center, was intrigued by Carol Twigg’s student-focused approach to learning technology and by the results her Center has documented. So when he read Twigg’s call for proposals for “R2R—Roadmap to Redesign” from institutions interested in further testing her concepts, he talked to Provost Brian Levin-Stankevich and together they made it a priority to get Eastern into the running.

Re-thinking high-demand courses

One area in which Twigg’s Center has had the most success is using technology to reconfigure how high-demand courses are taught. These are the “101” foundational courses that typically feature large class sizes, and account for a major percentage of a department’s teaching load. For Eastern’s Psychology department, General Psychology was a good candidate to test Twigg’s claims. The department enrols almost 1,000 students a year in PSYC 100, in classes of 80 to 100 students.

Taking up the challenge, Professor Bill Williams cautiously agreed to work with Kiser to put a proposal together. The department got behind him when the Provost agreed to provide an incentive to pilot the project at Eastern: Academic Affairs would underwrite start-up costs and all dollars saved by the redesign would stay in the

"Eastern’s Roadmap 2 Redesign a Win-Win for Students and Faculty"
department to be used as faculty saw fit—in additional research time, service or curriculum development.

“That’s huge,” says Kiser. And so was the proposal that Williams developed. Not content to use one of Twigg’s five proven models, Williams created his own “EWU hybrid” that adds an important small-group seminar component that, it is hoped, will enrich learning even more. The result is that EWU submitted one of the top proposals among a highly competitive field of applicants. Beginning January 3, 2005, Eastern joined 20 institutions around the country in testing our own “Roadmap 2 Redesign.”

**Eastern’s R2R: Small-Group Seminars**

When Bill Williams talks about the new R2R Psychology course it is impossible to miss the excitement in his voice. Especially when he talks about the technology, arriving daily and piled in boxes throughout his cluttered office. “You’re not going to believe the technology,” he says with a grin. “It’s really new.”

But not just new. It’s all designed to enhance student learning, creating more active and interactive experiences. Despite classes of up to 240 students.

Convinced that increasing the size of lecture classes from 100 students to 200 or more would only incrementally affect student learning (classes of 100 are already too large for individual attention), the Psychology department is reconfiguring PSYC 100 from 10 sections to only four, producing a 60% savings in instructional personnel costs. While the number of sections has been reduced by six, the level of learning will not decrease. That’s where the technology—and the course redesign come in.

Instead of five classes a week of large-group lecture (the old model), the course now meets only three days with the professor, in a specially-equipped, high-tech lecture hall (freeing faculty to spend more time on lecture preparation and individual student help). The other two days are available for online tests, independent course work and—this is the unique EWU component—small-group seminars of only 12 students, led by student mentors.

Two specially designed classrooms have been created just for the seminars. They feature computer-linked, wireless, interactive whiteboards on which students will be able to present projects or papers, with the capability to pull together music, pictures, movies or graphics. A conference table set-up facilitates group interaction, which will be led by student mentors—“super senior” undergraduates with 3.9 or 4.0 GPAs or a passionate dedication to the discipline. They are not paid, but receive credit for their work in facilitating the seminar sessions. The mentors are coordinated by a Preceptor, hired by the Teaching & Learning Center, to manage all the logistical aspects of the new program, freeing the faculty to focus on student learning. The seminar classes are devoted to discussion and project work, with a focus on enhancing language use as well as course information.

“Our primary goal for the seminar sessions is to encourage collaborative learning,” said Williams. “We really want to form learning communities in which the mentor students serve as models and also learn more about their chosen field of study.”
Eastern’s R2R: The technology

But the technology is not limited to the seminar rooms. Martin Hall’s lecture room also has a large, touch-sensitive white board so the instructor can provide an interactive presentation—modeling the kinds of presentations the students will be encouraged to develop in their seminar sessions. Throughout the lecture the instructor has the option to use short quizzes to test understanding of key concepts (the course software has 5,000 quiz questions sortable by objective and chapter). Quizzes can be projected on the whiteboard and students use “clickers”—just like those used by couch potatoes—to electronically record their answers. Immediately the instructor has quiz results, enabling her to adjust the lecture or move forward to the next concept.

“The clickers and white boards are great technology, but their primary purpose is to engage students in active learning,” says Williams. “Even the best lectures are passive experiences. The clickers give students an incentive for paying attention and get them actively responding to questions that would take too much time to do individually with a class of 100. The lecture quizzes are low-stakes—you can’t get an ‘A’ in the course just by doing well on the class quizzes, but we think this will help give students feedback on what they’re learning and help them do better.” Feedback is not limited to class quizzes. Supplementing both lectures and seminars are online interactive modules that allow students to reinforce their on-campus learning at home or from any web-connected computer, 24/7. Students can retake online quizzes (every quiz is different), improving their performance and encouraging them to keep at it. And peer-review software involves the students in writing brief papers that are not feasible in traditional large classes.

Measuring learning is not just limited to Martin Hall’s lecture space. Because of EWU’s quarter system, Williams will be able to offer two sessions of the newly designed course—in Winter and Spring quarters. This will enable the department to introduce the technology in stages, monitor what works, make changes the second quarter and do a thorough analysis of the program this coming summer. The clickers, for example, will be used only in the small-group seminar settings during Winter quarter. If they are successful there, about 50 will be introduced into the lecture format in the Spring, with full launch expected in the Fall of 2005.

“It’s all about giving students choices”

Student learning in the R2R program is being measured against current baselines and Williams is confident the results of the EWU pilot will find a national audience. EWU is already benefiting from mentoring relationships with other universities participating in R2R and hopes to provide counsel to other institutions that want to replicate what we’re doing in Cheney, Washington.

The bottom line, however, is not a nationally presented paper or recognition for our experimental approach to using technology in the classroom. “It’s all about giving students choices,” says Williams. R2R provides a range of learning opportunities for students—lectures, quizzes with immediate feedback, small-group interaction, and online, independent learning. R2R is not designed to replace the traditional ways in which instruction is delivered at EWU, but to find creative ways to enhance the
student experience while at the same time freeing up faculty for tasks that enrich their discipline and the university.

“The fiscal reality for state-assisted universities like Eastern is that if we want to provide faculty and staff with more opportunities for research and service, we must be creative in finding more effective ways to allocate the resources the State gives us for instruction,” says Provost Brian Levin-Stankevich. “R2R is based on the premise that we will not compromise our dedication to quality learning. At the same time, its proven savings opens up new opportunities for how faculty can spend their time.” If the new General Psychology redesign is successful—and Bill Williams is confident it will be—it can be a useful model for other departments with large-enrollment courses. He has built extra space into the seminar rooms just for observers, so faculty and staff can see firsthand how the R2R approach works.

“R2R is not for every classroom,” admits Levin-Stankevich. “But it has tremendous potential as a tool for large-enrollment courses. We can be a national leader here at Eastern in the scholarship of teaching and learning and in using technology both to help students learn better and also to expand opportunities for faculty. It’s a win-win.”

For more information about Eastern’s R2R program, contact Bill Williams at 509-359-7946. For a useful bibliography on using technology to improve learning, the Center for Academic Transformation’s website has a wide range of articles and monographs, available at: http://www.center.rpi.edu/ResArti.html

Reference: