

## Unexpected Outcomes

Several unforeseen but positive outcomes emerged from the educational research projects for students and instructors alike.

In professor of chemical engineering Doug Ludlow's project, students made videos about a topic they wanted to focus on instead of writing a final paper. "The nice thing about this is that they made something that could be shared with other students," he said. Ludlow began developing a library of the informational videos, which students in later classes could refer to.

"In the previous course design, they wrote a paper that only the instructor read. This way, students were much more willing to watch a video than to listen to an oral presentation," he said. The idea also spread to another chemical engineering class through word of mouth.

Beth Cudney, associate professor of engineering management and systems engineering, was able to offer a Six Sigma Green Belt for students who wanted to take the exam offered by the Institute of Industrial and Systems Engineers. More than 90 percent of those from her class taking the exam are passing. This gives students a leg up on career possibilities and starting salaries with this certification on their resume.

Ana Ichim, assistant professor of economics, and Sarah Steelman, assistant teaching professor of economics, wanted to find a way for students to share the economic games they had developed as part of their course projects. Since there were so many students in the courses, they hosted an optional game fair outside of class time to showcase the projects, allowing them to be played and judged by their peers in one enormous competition. The game fair has grown more popular each semester with 320 students attending the two-hour event in the latest semester it was held.

Katie Shannon, associate teaching professor of biological sciences, found an unforeseen benefit in her flipped classroom of students forming connections with one another. "The benefit that I wasn't expecting is allowing the students to get to know each other," she said. "Comments on their evaluations showed that they made friends, felt more like they belonged. Even on lecture day, when they do think-pair-share, they already know the people around them and are used to talking to people."

Jossalyn Larson, assistant teaching professor of English, was surprised by the level of connection that happened between her and her students in the redesigned course. "I teach 100 students in the fall and 75 in the spring, and I've already given up on remembering any of their names," she said. "I found that since going through the process, they talk to me as though I know their research in a real unique way. And I can tell you, too, that I've had more requests for letters of recommendation from students who take my class. One student wrote, 'Because of the structure of the class, I feel that you know me better than any of my other professors.'"

Larson's students' research projects led to them developing a Peer to Peer Journal, an undergraduate research journal published online through Missouri S&T's Scholars Mine. The student groups themselves decide which papers will be published based on impact and interest. They work together to co-edit the publication.

Several instructors talked about the professional development aspects of the educational research. Kellie Grasman, lecturer in engineering management and systems engineering, said, "The thing that really was impactful for me and for the campus as well was legitimizing the work related to Scholarship

of Teaching and Learning,” she said. “The CERTI grants were valuable to encourage the connections, and encourage publications and actual SoTL. For some schools and campuses, that is not an emphasis at all. For faculty, NTT or not, spending time on that type of work may not be valued.

“That has progressed at S&T over the years -- the understanding that this is valuable work, and it’s not necessarily the same as hard engineering and technical research. It’s very important because we are trying to ensure that our students are ready to go out and take on the world.”

Nishant Kumar, associate teaching professor of mechanical engineering, says he was able to include the scholarly work and presentations he did for his two educational research projects on his promotion dossier when he was an assistant non-tenure track professor. “It was absolutely worth the extra effort.”

“Overall, this has been really good for my professional development as an NTT,” says Katie Shannon, associate teaching professor of biological sciences. “I have opportunities to get grants, go to conferences and still be academically engaged. I feel like what I’m doing is important and valued at the campus level. I’ve always felt like my department is really supportive, but nice to feel like the campus is supporting your efforts in teaching.”