

Faculty bios for educational research projects

[Bonnie Bachman](#) is a professor in the S&T economics department, but was in the business and information technology department in 2012 when she applied for and received an educational research mini-grant for \$4,200 to do a team project with another BIT instructor, Yingchou Lin. In the project, “Using Course Collaboration and Inductive Learning to Enhance Student Team Effectiveness,” Bachman and Lin collaborated to align their courses so that an MBA cohort took a teambuilding and leadership course with Bachman before taking managerial finance with Lin, which included team projects. They wanted to see whether the team and leadership training Bachman offered was effective in addressing many problems with team work that Lin was observing.

[Beth Cudney](#) is an associate professor in the S&T engineering management and systems engineering department. Her project, “Evaluating the Impact of Interactive Technology in the Classroom on Students’ Perception of Learning,” was awarded \$1,980 in 2015. Her project attempted to show how tailoring teaching methods to a variety of student learning preferences would increase learning and student attitudes toward the course.

[Daniel Forciniti](#), professor of chemical engineering, was awarded \$4,720 in 2014 to pursue his project, “Assessment of Textbook-Free Courses in the Biochemical Engineering Field as a Vehicle for Lifelong Learning.” Forciniti’s hypothesis was that lifelong learning would best be fostered through students being exposed to alternatives to a textbook in order to cover the most current knowledge available in the field.

[Kellie Grasman](#), lecturer in engineering management and systems engineering, was part of a four-member, interdisciplinary team in 2011, whose project, “Evaluation of a Hybrid Problem-Based and Just-in-Time Inductive Teaching Method Example for Risk Analysis Instruction” was awarded \$7,500. The other instructors were Ryan Hutcheson, Katie Grantham and Jeff Thomas. The project affected more than 2,000 undergraduate students at Missouri S&T by integrating risk curricula into three large courses through case studies and Just-In-Time teaching strategies. The goal of the project was to simulate an engineering experience in order to identify and analyze risks by using a free software tool that was developed by the PIs, Risk in Early Design Application.

[Xiaoming He](#), assistant professor of mathematics and statistics, was awarded \$4,732 in 2014 for “Development of a Conceptualized Guided Coding for the Course of Mathematical Foundation of Finite Element Methods.” The project involved He redesigning his lectures and homework assignments, as well as final projects, into a new way of teaching conceptualized guided coding in order to bridge the gap between theory and application.

[Ana Ichim](#), assistant teaching professor of economics, was awarded \$5,500, along with [Sarah Steelman](#), assistant teaching professor of economics, in 2015 for their project; “Introducing and Evaluating Innovative Teaching Techniques in Economics Principles Class.” Their intervention was to introduce a team-based, student-designed game that incorporated economic principles as part of the curriculum in their required courses, in order to see how it affected student engagement and learning.

[Nishant Kumar](#), associate teaching professor of mechanical engineering, was the recipient of two educational research mini-grants with a combined total of \$4,455. His first grant was in 2012 on the topic “Student Usage and Perceptions of Virtual Office Hours that Extends Beyond the Traditional Face

to Face Settings.” He wanted to explore whether offering virtual office hours would increase student participation in instructor office hours vs. a traditional office setting. In 2013, he was awarded a grant to develop “Using ‘Conceptual’ and ‘Assessment’ Problems to Enhance Student Learning of Fundamental Concepts Taught in an Undergraduate ThermoFluid Mechanics Class.” Kumar’s strategy was to develop unique homework problems that students could not use unauthorized sources to complete and thereby increase their “struggle” with the material to promote learning and student-instructor interaction.

[Jossalyn Larson](#), assistant teaching professor of English, was awarded \$2,500 in 2015 for her project, “Visualizing Research & Writing: Improving Student Self-Confidence through Focus Groups and Library Interaction.” Larson redesigned her “Research and Writing” class to incorporate small, student-led focus groups as well as librarian interaction, while putting much of the lecture material online so students could use class time to work with their discipline-specific groups on writing and editing.

[Nick Libre](#), assistant teaching professor of civil engineering, was awarded \$3,500 in 2015 for his project, “Evaluation of Section Properties App for Mechanics of Materials.” Libre developed an application to help students get up to speed on some prerequisite material (statics) for his large mechanics of materials classes, and he wanted to measure the effectiveness of his tool on student learning.

[Doug Ludlow](#), professor of chemical engineering, was awarded \$5,950 in 2011 to develop “Using Student-Produced Videos to Enhance Learning Engagement in a Chemical Engineering Thermodynamics Course.” Ludlow introduced a strategy for students to replace their traditional term research report with a short YouTube-type video on a topic that would demonstrate their understanding of principles of thermodynamics.

[Yinfa Ma](#), Curators’ Distinguished Teaching Professor of Chemistry, was awarded \$4,750 in 2013 for his project, “Class Redesign for Chemistry 375 – Principles of Environmental Monitoring.” Ma wanted to measure student satisfaction and learning after redesigning a traditional lecture class on environmental monitoring to a class involving water sampling, tree core analysis and air sample collection via field trips and usage of state-of-the-art instruments for data analysis.

[Susan Murray](#), chair of the psychological science department, was professor of engineering management and systems engineering when she received \$2,000 in 2012 to pursue the project, “Electronic Flashcards as a Tool to Improve Exam Readiness.” The project was designed to find out how the use of electronic flash cards, either made by the students or the instructor, helped in preparing students for exams, as well as measure what students thought about the tool and how much they used it.

[Fiona Nah](#), professor of business and information technology, received \$4,400 in 2013 to study “The Impact of Blended Learning on Student Engagement.” Nah wanted to measure whether blended learning (i.e., instruction mediated by technology) would have an impact on student engagement, student satisfaction, student-instructor interaction, student-student interaction, and student achievement in her electronic and mobile commerce course.

[Katie Shannon](#), associate teaching professor of biological sciences, received two mini-grants, one for \$1,410 in 2012 for “Design and Implementation of a Study to Determine if a Cell Model Project Attains Desired Learning Outcomes” and one for \$3,500 in 2015 to study “Do Flipped Lectures Increase Student Engagement With Course Material?” In the first study, Shannon wanted to discover whether a particular

assignment in her cellular biology class, for example making a 3D model or website of a cell, would be more effective in student learning than the traditional assessment methods. The second project was linked to her redesign of the same class, where each Friday the class was “flipped” so that students could work together to do problem-solving and discussion. The funding was used to analyze the data she received from online video views, student questionnaires and test grades to see how effective the new class design was.

[William E. Showalter](#), associate teaching professor of civil engineering, received \$563 for his project, “Using Radio Controlled Toys to Incorporate Experience into Teaching Construction Operations.” He wanted to promote active learning by experimenting with radio controlled (Rokenbok) trucks as a simulation in his construction operations classes because he had found that students have difficulty visualizing construction operations.

[Greg Story](#), associate professor of physics, received \$1,700 in 2012 for his project, “Development of Free Data Base for Modern Physics Homework Problems.” Story used his funds to engage five undergraduate students who had already taken his course to help design new homework problems so that current students could not use files to complete their homework. He wanted to address the glaring discrepancy he saw between homework and test grades and improve student learning.

[Jeff Thomas](#), associate teaching professor of civil engineering, was part of a four-member, interdisciplinary team in 2011, whose project, “Evaluation of a Hybrid Problem-Based and Just-in-Time Inductive Teaching Method Example for Risk Analysis Instruction” was awarded \$7,500. The other instructors were Ryan Hutcheson, Katie Grantham and Kellie Grasman. The project affected more than 2,000 undergraduate students at Missouri S&T by integrating risk curricula into three large courses through case studies and Just-In-Time teaching strategies. The goal of the project was to simulate an engineering experience in order to identify and analyze risks by using a free software tool that was developed by the PIs, Risk in Early Design Application.

[Dave Westenberg](#), associate professor of biological sciences, was awarded \$3,895 in 2013 to study “Flipping the Microbiology Laboratory to Improve Student Perception and Increase Student Interaction.” Westenberg wanted to measure student attitudes toward and preparation for his microbiology lab class after it had been “flipped” using online lectures, video demonstrations and quizzes that were completed outside of the laboratory.