Seminar Series

Flipped Classroom: It Can Work and Not Work!

Thursday – September 18th
2:00 pm – Bell Engineering – Room 2286

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We formally introduced the “flipped classroom” within our Swanson School of Engineering curriculum during the 2013-2014 academic year. Six required engineering courses from freshmen to senior and across multiple disciplines, each with high enrollments, were selected to engage in the flipped initiative. The courses selected include: Freshman Engineering Programming, Senior Dynamics and Modeling, Sophomore Mechanics and Statics, Sophomore Mechanical Design, Junior Facilities Design, and Junior Bio-Thermodynamics. In the “flipped classroom,” class time is used for active learning, practice and demonstration of skills, and individualized support, with the instructor serving more so as a mentor versus a “conveyor of facts and knowledge”. To enable this new learning approach, students were encouraged to watch instructor-created video lectures outside of class. Across the various courses, we employed a common approach to development of the videos. Further the faculty met on a routine basis, as part of a formalized learning community, to discuss issues associated with implementation of the flipped classroom. To determine if the flipped initiative worked as intended, common assessments beyond traditional cognitive assessments were employed across the six courses: the College and University Classroom Environment Inventory, a structured observation protocol known as the Teaching Dimensions Observation Protocol (TDOP), and a survey completed by students along with faculty interviews. Given the common approach and comparative assessments, we observed mixed results regarding the uptake of flipping by the students. The experiences and reflections of multiple instructors in teaching this flipped course will be discussed.

Dr. Mary Besterfield-Sacre is an Associate Professor and Fulton C. Noss Faculty Fellow in Industrial Engineering at the University of Pittsburgh. She is the Director for the Engineering Education Research Center (EERC) in the Swanson School of Engineering, and serves as a Center Associate for the Learning Research and Development Center. Her principal research is in engineering education assessment, which has been funded by the NSF, Department of Ed, Sloan, EIF, and NCIIA. Dr. Sacre’s current research focuses on three distinct but highly correlated areas – innovative design and entrepreneurship, engineering modeling, and global competency in engineering. She is currently associate editor for the AEE Journal.