

What Engineering Instructors can do to Reduce Student Resistance to Active Learning

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Friday, October 5th, 2018, 2:00pm – 2:50pm, Location: EB 2.04.02

Abstract

Research has shown that active learning promotes student learning and increases retention rates of engineering undergraduates. Yet instructors are reluctant to change their teaching approaches for several reasons, including a fear of student resistance to active learning and low course evaluations. Recent research has investigated a variety of factors that influence students' reactions to active learning. The good news is that strategies instructors employ when explaining and facilitating active learning in their classes are more influential than characteristics of the students, the course, or the instructor and are effective across a range of individual and group-based active learning approaches. This presentation will review the results of this research, which is based on a national study of 1,051 students who completed the Student Response to Instructional Practices (StRIP) survey in 18 introductory engineering courses where active learning was implemented. Follow-up interviews with the instructors of these courses provide more detail about specific strategies for reducing student resistance to active learning, and the variety of ways that instructors implement them in different engineering courses. These findings are further validated by a systematic literature review, which extends the findings to other STEM disciplines and identifies strategies that move outside the classroom to course planning and instructor persistence over several semesters.

Biography



Maura Borrego is Director of the Center for Engineering Education and Professor of Mechanical Engineering and STEM Education at the University of Texas at Austin. Dr. Borrego is a Deputy Editor for *Journal of Engineering Education*. She previously served as a Program Director at the National Science Foundation, on the board of the American Society for Engineering Education, and as an associate dean and director of interdisciplinary graduate programs. Her research awards include U.S. Presidential Early Career Award for Scientists and Engineers (PECASE), a National Science Foundation CAREER award, and two outstanding publication awards from the American Educational Research Association for her journal articles. All of Dr. Borrego's degrees are in Materials Science and Engineering. Her M.S. and Ph.D. are from Stanford University, and her B.S. is from University of Wisconsin-Madison.