A Center for Engineering Education Research (CEER) Seminar

Changing the Classroom Experience in the College of Engineering and Applied Science: The impact of Educational Training on Future Faculty and Student-Centered Pedagogy on Undergraduate Students.

Whitney B. Gaskins
Post-doctoral Research Candidate for the Automated Analysis of Constructed Response (AACR) Research Group

Friday, February 7, 2014
11:00 – 12:00
3540 Engineering

Abstract
Finding evidence of the importance of the undergraduate classroom environment, Seymour & Hewitt (1994) report that of the twenty-three issues cited most frequently by students in their study as problems in engineering majors at least nine, include poor teaching by science and engineering faculty members and a preference for the approaches used in teaching non-science and engineering courses, are related to classroom experiences. Recent research has also shown engineering students leave the college due to negative experiences which impact performance and learning. If classroom experiences can be improved to make a positive experience colleges could see an increase in retention and performance. The objective of this study is to improve the engineering undergraduate classroom experience by: 1. Training future faculty to be effective teachers by increasing their teaching self-efficacy. Teachers’ sense of self-efficacy can influence the learning and motivation of students, even if students are unmotivated or considered difficult. Studies have found a positive relation between teachers’ efficacy beliefs and several student cognitive outcomes, such as achievement and performance and skills. 2. Changing the pedagogy used in an engineering course to Challenge Based Learning (CBL) method to make a student centered classroom. Research has shown that student-centered learning approaches are efficacious in improving student learning (Hightower 2011). In particular, the CBL methodology proposed by Apple Computer Inc., which employs a multidisciplinary approach in encouraging students to use their knowledge and technology to solve real-world problems, (Apple 2009). The first objective of this study was to increase teaching self-efficacy of graduate students who are interested in careers in academia. Graduate students showed a significant increase in their teaching self-efficacy after participating in the CEEMS Fellowship program that consisted of seminars and classroom teaching experiences not only in the undergraduate classroom but the K-12 classroom. Addressing objective 2, changing the pedagogy showed students felt more engaged in their learning. Findings also suggest that the CBL method helps learners of various learning levels.
Biography
Whitney B. Gaskins is a PhD Candidate at the University of Cincinnati studying Biomedical Engineering with a focus on engineering education. Her research is focused on improving learning environments for all students by examining pedagogy, teacher training and perception and stereotype threat. She also studies the effects of stress in the classroom environment and the effect that it has on health and academic performance. Whitney has been recognized by the National Technical Association (NTA) for her novel approach to studying students, specifically underrepresented minorities and women. She has been a Graduate Engineering Education Consortium for Students (GEECS) fellow sponsored by the National Science Foundation. Whitney serves on three separate diversity councils at the University, for the Senior Vice-President for Academic Affairs and Provost, the Associate Provost for Diversity and Inclusion and the Interim Chief Diversity Officer. Whitney earned her Bachelor of Science in Biomedical Engineering from the University of Cincinnati and has a Masters of Quantitative Analysis from the University of Cincinnati College of Business. Along with her scholastic achievement, Whitney has worked as an engineering professional for companies including General Electric, Atricure, and Toyota.

Post-doc lunch
We would like to invite any current DBER post-docs to join Whitney for lunch after the talk from 12-1 to share your experiences as post-docs at MSU with her. If you would like to participate, please RSVP to Mary Pease (peasem@egr.msu.edu) AND Alica Henney (henney@egr.msu.edu) by 5 PM Thursday so we can order food.

http://ceer.egr.msu.edu/