

## **AC 2008-1106: ENGINEERING FACULTY BECOMING ENGINEERING EDUCATORS AND RESEARCHERS**

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Wendy James is a PhD student in the College of Education at Oklahoma State University. Currently she has a fellowship promoting collaboration between the College of Education and OSU's Electrical and Computer Engineering department on an NSF funded curriculum reform project called Engineering Students for the 21st Century. She has her M.S. in Teaching, Learning, and Leadership from OSU, and her B.B.S. in Mathematics Education from Hardin-Simmons University in Abilene, Texas. She has nine years teaching experience at the high school and college levels with courses in math and math education.

### **Karen High, Oklahoma State University**

KAREN HIGH earned her B.S. from the University of Michigan in 1985 and her M.S. in 1988 and Ph.D. in 1991 from the Pennsylvania State University. Dr. High is an Associate Professor in the School of Chemical Engineering at Oklahoma State University where she has been since 1991. Her main research interests are Sustainable Process Design, Industrial Catalysis, and Multicriteria Decision Making. Other scholarly activities include enhancing creativity in engineering education, critical thinking, and teaching science to education students and professionals. Dr. High is a trainer for Project Lead the Way pre-Engineering curriculum. Dr. High is involved with the development of an undergraduate entrepreneurship minor at Oklahoma State University.

## **Engineering Faculty Becoming Engineering Educators and Researchers**

Starting back in 1998, congress, industry, and forums began to pressure universities to increase the number of engineering graduates along with their knowledge and abilities for the sake of the US economy. As a result, engineering faculty have been examining the teaching and learning of engineering in order to align with industry claims of graduates' needed knowledge and professional-skills when entering the workforce. For the past two years, the *Journal of Engineering Education* (JEE) has trumpeted the need to establish engineering education as a rigorous-based field of science in which systematic studies build upon one another in order to generate progress in the field. Thus, there is a call for engineering faculty to develop their understanding of teaching and learning theory along with its applicable practices while also developing as educational researchers. In order for such developments to occur, many of the changes in engineering educators' knowledge, beliefs, and practices will stem from not only changes in classroom and research practices, but also in their understanding of the nature of knowledge, namely their epistemological positions.

The purpose of this project is to study engineering faculty who conduct engineering-educational research to find out how they developed their current expertise in order to offer other practicing engineering-education researchers, whether new or seasoned in the field, direction in further developing their own expertise in the field. Semi-structured, open-ended interviews were used as the main means of data collection in order for themes to be inductively generated across the particular case-studies.

In this initial work, two themes surfaced: engineering faculty develop understanding of educational theories, practices, and research techniques as it relates to projects they are *doing* and epistemological positions were most affected during week-long workshops.