



Anne Dare is a Master's student in Agricultural & Biological Engineering (ABE) at Purdue University, and holds a joint appointment with the Global Engineering Program (GEP) as its Global Design Team Coordinator. She received her B.S. from Purdue University in 2008. As an undergraduate, Anne spent several summers working throughout Indiana with the USDA Natural Resources Conservation Service as an Agricultural Engineer Trainee. Anne's M.Sc. research involves developing a model of the attributes that define an engineer's global competence and assessing those attributes in students participating in international experiences. Anne's Ph.D., which will also be at Purdue, will define impact metrics and subsequently evaluate non-governmental organizations or other agents working in the area of water (purification, distribution, irrigation, etc.) in multiple international locations. Employed water technologies will be evaluated for their appropriateness within communities, and analyzed for their potential for broader application.



Agricultural & Biological ENGINEERING

Thesis Defense

Speaker: ANNE DARE

Title: ASSESSMENT OF GLOBAL ENGINEERING COMPETENCIES

Major

Professors: Dr. Rabi H. Mohtar & Dr. P.K. Imbrie

Date: Wednesday, April 13, 2011

Time: 8:00 am

Place: ABE 301

Abstract:

To develop solutions to grand challenges, engineers must be prepared to work effectively in and with the complexities of new and diverse environments and analyze problems holistically from various cultural frames of reference. Engineering educators must be able to assess the ability of their courses and programs to address the (core) competencies necessary to operate effectively in a global environment. This study utilizes a set of 12 global competency-type attributes mapped from Purdue's Engineer of 2020 Target Attributes to determine if it is possible to measure change in the self-assessment of these attributes as a result of participation in three programs. With this knowledge, the next iteration of instruments for assessing global competence in engineering students can be developed and employed.

This thesis presents assessment results from primarily engineering students participating in one of the following global learning opportunities: (1) Introduction to Global Engineering, a first-year engineering seminar course, (2) short-term study abroad programs hosted and approved by the College of Engineering, and (3) Global Design Teams, an international service-learning opportunity. Students were asked to participate in a self-assessment pre- and post- their respective experiences. Instructors and community partners, in the case of Global Design Teams, were also asked to provide feedback on the experience they believe they provided to the students and the quality of the students' work. The educational setting of these experiences, as well as statistical analysis by demographic factor is discussed.

Results from this study indicate that all three programs significantly influence students' self-assessment of their awareness and abilities of the assessed learning outcomes. Furthermore, first-year students tend to self-assess themselves higher than more senior students. It is proposed that first-year students are not aware that they lack certain knowledge, skills, and abilities, and more senior students are aware that they know less about the world, so the more senior students have a tendency to self-assess themselves lower, especially after having an international experience where their lack of knowledge, skills, or abilities was made self-evident.