Thesis Defense

Speaker: ANNE DARE
Title: ASSESSMENT OF GLOBAL ENGINEERING COMPETENCIES

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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 then 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.