ASEE AMERICAN SOCIETY FOR ENGINEERING EDUCATION

Expert interviews: shifting student attitudes towards social responsibility and the role of the engineer

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Background and Motivation

With the economy becoming increasingly globalized, the population of developed countries aging, and the population of undeveloped countries growing, there is a greater need for engineers to understand the complexities of the global market and of social contexts (National Academy of Engineering, 2005). This growing need calls for shifts in engineering education, such that graduates may contribute as socially responsible engineers in the workforce.

While different models have been implemented to incorporate these competencies in the engineering curriculum, each are associated with their challenges. One approach involves a designated upper-year engineering ethics course, but can give students the sense that ethics is tangential to engineering (Heckert, 2000). Another approach incorporates ethics courses throughout all levels of the curriculum; this has been criticized for its shallow exploration of engineering ethics (Heckert, 2000). A final approach involves integrating engineering ethics within technical courses, so that students explore the social context of engineering (Manion and Kam, 2000; Lathem et al., 2011). An effective model to integrate engineering ethics and an exploration of social impacts with technical engineering content would therefore be important for the development of responsible engineering graduates.

Study Objectives

The aim of this study is to characterize changes in student attitudes towards social responsibility and the role of engineers during the early stages of their educational program. It is hypothesized that student engagement with a series of expert interview videos, which highlight perspectives from professional engineers, will enhance their appreciation of the role of the engineer, as well as engineering impacts on the society, environment and economy.

Methods

At the start and end of the study, participants will complete a questionnaire gauging their perceived level of understanding of the role of the engineer, and the impacts of engineering on the society, environment and economy. A mixed methods approach will be used to analyze responses collected. Throughout the study, participants will view and annotate five expert interview videos. Their comments and responses to defined questions will be analyzed to identify themes in student attitudes. Clusters of students may be identified based on their program of study, number of video annotations submitted, and time spent viewing the videos. At the end of the study, participants will also complete an open-ended reflection about potential changes in their attitudes regarding the role of the engineer, and implications for their current studies and future careers.