Interest in Engineering: Importance of Classroom Experiences

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Keywords

Retention, Engin

Introduction

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Marra, Rodgers,
& Terenzini, 198

The main purpos

Survey: Three surveys administered at the beginning and end of the first semester in college, and at the end of the second semester in college were used to assess students' interest in engineering and to identify events and experiences that lead to an increase or decrease in interest in engineering. In the survey, students were asked to indicate if they have experienced an increase, decrease, or no-change in interest in pursuing a degree in engineering. Those students that indicated a change in interest, were further asked to identify events and experiences that led to this change in interest.

Data Analysis: The data obtained was analyzed based on the change in interest experienced at the end of the first and second semesters, with some students indicating that they experienced an increase in interest in engineering, others experienced a decrease in interest in engineering, and some experienced no change in interest, relative to the beginning of the semester. For those students that experienced a change in interest, the investigators also analyzed their responses in terms of what led to this change in interest.

Results and Discussion

Gender Distribution and Pre-college characteristics: All first semester engineering students at this large land grant university in the mid-Atlantic region begin their education in a first year engineering program, before moving to an engineering major. As Table 1 indicates, most participants were male with an average high school grade point average (GPA) of 3.68 ± 0.37 (mean ± standard deviation), ACT and SAT math scores of 27.40 ± 3.33 and 621.70 ± 67.81, respectively.

Table 1: Gender distribution and pre-college characteristics of participants

Parameter

Figure 1: Changes in interest in engineering at the end of the first semester

An increase in interest was also reported by the

Table2: Pushes and pulls: what retains and what repels students from engineering

PUSHES	PULLS
• Low grades • Academic difficulty • Lack of help from professors • Proudness of students and teachers • Curriculum is difficult and densely packe	• Academic success • Career opportunities • Enjoying math classes • Help from the professors • Course work and projects • Interest in problem solving

In this study, classroom experiences were further categorized as engineering class experiences, non-engineering class experiences, and unknown source. During both semesters, most of the students experienced an increase in interest due to the engineering class experiences (data not shown) This led to believe that engineering classroom experiences are important to maintain students' interest in engineering. Although good grades in math and sciences courses are important and normally reinforced in the engineering curriculum, from a student perspective, engineering classroom experiences matters. Further studies must be conducted to understand the relationship between engineering classroom experiences and student retention in engineering.

Conclusions

Students are introduced to engineering concepts and to the profession mainly through engineering classroom experiences. These classroom experiences are essential not only to prepare students for engineering, but also to foster the development of an engineering identity, which has been linked to retention in engineering. In this study, engineering classroom experiences are shown to be important to promote students' interest in engineering.