Research Brief
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Graduate School or Not? Engineering Students Consider Continuing Their Educations in Co-terminal Programs

Authors: Kristyn Jackson, Tori Bailey, Sheri Sheppard, and Helen Chen
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The paths students follow after completing a bachelor's degree in an engineering field are varied and expectations about the numbers of students who will pursue engineering work or graduate school are supported by various studies (see full paper for references). This study explores how decisions to do graduate work in engineering are made. Among the questions examined are: What factors do students consider? How do students decide where to apply for graduate work and in what field? Who is involved in the decision?

Preliminary answers to these questions for one particular group—those choosing to pursue a dual degree in engineering—are discussed in this paper.

Implications of Findings

The small sample of students in this study reveals some distinct patterns. Some students perceive the dual degree as a means to an end, allowing them to add to their undergraduate degree in ways that will better prepare them to pursue various opportunities (e.g., the workplace or a PhD program). Other students see it as an opportunity to maintain what they perceive as a comfortable lifestyle a little longer. Students in the former group appeared more intentional in their decision to pursue a dual degree, whereas those in the latter seemed less intentional.

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While this small sample does not allow full exploration of the dimensions of these two categories, it does allow the identification of the existence of these two (and perhaps more) groups. The findings in this paper also raise as many questions as they answer. For example, what role does the faculty play in students' consideration of the dual degree program? What other factors (e.g., parents, education, co-op experience, etc.) come into play?

With more schools adding dual degree programs, it is hoped that these results will provide insight into how students decide to pursue the degree, and will add to the rather limited literature on students entering engineering graduate programs.

Methods and Background

Participants in this study were part of the larger Academic Pathways Study (APS) of the Center for the Advancement of Engineering Education (CAEE). This Longitudinal Cohort consisted of 160 students (40 from each of the four core institutions) who entered college having expressed

interest in studying engineering. This paper focuses on the 40 participants from one of the core institutions referred to in this paper as the "School."

A three-step process was designed to help the researchers identify the subset of these students who had considered a dual degree program, and then elected to enter such a program. The first step involved looking at data collected from the 40 students in the Longitudinal Study and categorizing responses into: students planning to pursue a dual degree program, students planning to pursue graduate work at another graduate school, or students pursuing a job. Nine students were identified as planning to pursue a dual degree program.

The second step involved verifying students' general plans via a closure questionnaire (customized based on the classifications in step one) that students completed during the last few weeks of the school year (June 2007). An additional student planning to pursue a dual degree program was identified, bringing the total to 10.

In the third step, the questionnaires along with structured and semi-structured interviews (conducted as part of the Longitudinal Cohort data gathering) were coded. The codes and subcodes were generic and designed to capture factors important in students' planning. One theme that emerged was related to the intentionality of the decision to pursue a dual degree. The coding allowed participants to be placed into groupings that showed distinctive patterns of how these students went about deciding to enter a dual degree program.

What We Found

One of the reasons the researchers were interested in looking at students who had decided to pursue a BS/MS dual degree program was a concern about the reasons behind this choice. The team wanted to know if students were pursuing this option because they perceive the process of finding information about the school and program and filling out the application, as easy and they may not have fully investigated other graduate or career options.

As the data was evaluated, the team did see phrases that concerned them about the students' decisions, but were also surprised by the thoughtful reasons for pursuing the dual degree given by some students.

All 10 students applied exclusively to one of the School's dual degree programs. Data indicated that students were not simply being funneled into the graduate program at the School; some students had more intention behind their decision. Four students were classified in the decision with intention group; four students were classified in the decision with less intention group; and two students were harder to classify. (Details of the analysis and student quotes can be found in the full paper through the link below.)

Students classified as making their decision with intention came to their decision in several different ways. They may have planned the dual degree from the beginning of their college career or known that the degree would help them accomplish the work that they would like to pursue.

As with the previous group, students who appear to have made their decision without as much intention also came to their decision in different ways, though there appears to be more similarity in their considerations. These students tended to decide to pursue a dual degree because they

perceived it as an easy and comfortable path, or they were unsure what to do. These students' decisions were less methodologically decided and less goal-driven than the decision-with-intention students.

The remaining students were difficult to place in either of the other two groups described. One had an external purpose behind his decision, but was slightly wavering and had a back-up plan. He did not mention strong reasons for wanting to pursue the dual degree other than the ability to obtain the Master's degree in only one extra year.

This paper is a preliminary exploration of the decisions students make about graduate education. There is still much more to understand about the undergraduate-to-graduate decision process and transition. This is becoming increasingly important as more students undertake graduate education, and as national leadership calls for a debate on the relationship between undergraduate and graduate education and the practice of engineering.

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