Graduate School or Not
Engineering Students Consider Continuing Their Education in Dual Degree Programs

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You are a College Graduate. What’s next?

- [ ] Engineering Career
- [ ] Non-Engineering Field
- [ ] Engineering Graduate School
You are a College Graduate. What’s next?

38% Engineering Career
30% Non-Engineering Field
32% Engineering Graduate School

Nationally
Sheppard 2001
Saks 2008
NSF 2008
“Should I Pursue Graduate School?”

GUIDING QUESTION
Do students carefully consider their choices?

SET OF RESEARCH QUESTIONS

What factors considered?  Where to apply & in what field?  Who consulted for decision?
Longitudinal Cohort at SPU APS Core School

LOCAL SAMPLE (May ‘07)
Suburban Private University

What do you plan to do after graduating from college?

N = 40 students
10 Dual Degree students

Note: Different distribution than National Sample

Note: Some students fall into multiple categories, and three students had no data was collected during their four year.
A Dual Degree Option?

- Undergraduate degree & master’s degree concurrently

- Consistent with the recommendations of recent reports regarding undergraduate and graduate education 2020 2005, Duderstadt 2007

- Nationally, 51% of the 96 Doctoral Research Universities’ Engineering Departments have option Carnegie 2006

- Locally, 20% of the students in the Mechanical Engineering Department at the school studied choose this program
Data Collection

- Gathered data about general plans
  - Persistence in Engineering (PIE) survey instrument (Apr ‘07) Chen 2008, Eris 2005
  - Semi-Structured Interviews (May ‘07)
  - Follow-up Questionnaire (May/Jun ‘07)

- Follow-up Questionnaire
  - Undergraduate and Graduate degree plans
  - Verifying plans following completions of degree
  - Dual degree information
  - Job search and plans for future
Example Questionnaire

- Dual degree information

M1 How did you search for graduate school programs?

M2 What fields were you interested in studying?

M3 What factors did you consider in your decision to pursue graduate studies in this field?

M4 How did you choose your dual degree master’s program?

M5 Please describe the range of graduate programs and/or schools you applied to.

M6 How would you describe the graduate school application process?

M7 How prepared do you feel to pursue your graduate studies in [field]?

M8 What are you looking forward to?

M9 Any concerns?
Coding Responses

- Map to the questionnaire
- Applied to the semi-structured interviews (if available)
- Capture the students’ decisions
- Have sub-codes
  - Categorical Variables
  - Ordinal Discrete Variables
Coding for Responses

- Search process for program/job
- Range of programs/jobs (applied)
- Decision process/reasons
- Factors considered in decision
- Basic plans (confirmed)
- Fields of interest
- Application process description
- Level of preparedness
- Excitement
- Concerns
- Transition (from one area to another)
EMERGING THEME

student intention

GUIDING QUESTION

Do students carefully consider their choices?

SET OF RESEARCH QUESTIONS

What factors considered?  Where to apply & in what field?  Who consulted for decision?
Salient Codes to Intention Theme

▪ **Search** process for program/job
  
  Internet resources, hard-copy, career center, …

▪ **Range** of programs/jobs (applied)
  
  Only this school

▪ **Decision** process/reasons
  
  Sought advice, past experience, easy

▪ **Factors** considered in decision
  
  Enjoyment, financial, future opportunities, comfort
### Examples

<table>
<thead>
<tr>
<th>LESS INTENTION</th>
<th>WITH INTENTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Search</strong></td>
<td><strong>used many tools</strong></td>
</tr>
<tr>
<td><strong>Range</strong></td>
<td><strong>broad and specific</strong></td>
</tr>
<tr>
<td><strong>Decision</strong></td>
<td><strong>faculty advisors</strong></td>
</tr>
<tr>
<td><strong>Factors</strong></td>
<td><strong>provide the opportunities for dream job</strong></td>
</tr>
</tbody>
</table>

| none            | used many tools |
| applied only to the one program to "give the option later" | broad and specific |
| no one          | faculty advisors |
| missed all other deadlines and did not seek a job | work mentors |
| thought the degree would probably help get a job later | friends and family |
| does not have to move or adjust to a new program | provide the opportunities for dream job |
| • Allows to take classes that still wanted to take | • helps build upon the work has accomplished in undergraduate and internship experiences |
Dual Degree Decision Making at SPU
With Intention

“I knew I was going to apply for the [dual degree], because, I think last year in ... the summer internship, I thought I wanted to learn more about [civil engineering]. So, I knew I wanted to apply, and so I was working on that [my application] fall quarter.”

- Anna (Semi-Structured Interview)

“I'm very interested in programming, data analysis, and modeling. I also felt the [dual degree] would make me more attractive to Physics PhD schools.”

- Tim (Questionnaire)
Dual Degree Decision Making at SPU With Less Intention

“I really only considered [this school]. I decided that it would be worth it to get a Master's in a year, especially since I wasn't sure what I wanted to do several years from now.”

- Logan (Questionnaire)

“I felt that continuing at [this school] would be the most practical, since I already am familiar with the school, and already have a research assistantship lined up for next year.”

- Mike (Questionnaire)
Conclusions

- This small sample reveals some distinct patterns
  - *Intentional* - students perceive the dual degree as a way to achieve their goal
  - *Less Intentional* - students perceive it as a way to maintain a lifestyle

- Size limits the ability to fully define the dimensions of these groups

- Preliminary exploration of the data
Implications and Future Work

• Implications:
  Dual degree programs geared differently for differently intentioned students
  Might recruitment and retention activities in engineering education influence student intention

• Future Work:
  More to Explore in Undergraduate-to-Graduate transition
  ▪ Look at larger data sets to more fully define categories
  ▪ Look at schools that do not have the dual degree to compare
References


Acknowledgement

This material is based on work supported by the National Science Foundation under Grant No. ESI-0227558, which funds the Center for the Advancement of Engineering Education (CAEE). Any opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

CAEE is a collaboration of five partner universities: Colorado School of Mines, Howard University, Stanford University, University of Minnesota, and University of Washington.