

article:1262

Developing and Assessing Students' Entrepreneurial Skills and Mind-Set

The Engineering Entrepreneurship (E-SHIP) minor at The Pennsylvania State University was created in 2001 in the College of Engineering with a grant from General Electric and with collaboration from the Smeal College of Business and the School of Information Sciences and Technology (IST). The paper describes the minor and provide information about the assessment to date.

The E-SHIP minor is comprised of four core courses including Entrepreneurial Leadership, E-Ship Business Basics (for engineering students) or Introduction to Engineering Design Principles (for business and IST students), Technology-Based Entrepreneurship, and E-Ship and New Product Development. All classes are taught by faculty members who have experience in venture creation. The faculty members are encouraged to use problem-based learning methods, stressing teamwork and interdisciplinary collaboration. Additionally, students who enroll in the minor are exposed to a variety of components including a speaker series, a "venture fund" for student teams, venture competitions, and collaborations with local and university researchers.

A series of four research questions were used to guide the assessment of the minor. These questions are as follows:

1. How does the minor affect students' motivation and self-efficacy?
2. Are students more successful in tackling ambiguous problems and thinking innovatively?
3. Are students more likely to see the connections to aspects of problems outside those related to their individual discipline, especially relating to business and finance?
4. Do students exhibit other necessary skills to become an entrepreneur?

In order to answer the above questions, a mixed-methods approach consisting of both qualitative and quantitative data collection was used to allow for a more pragmatic and powerful assessment. A total of twelve focus groups comprised of students enrolled in the core courses provided rich data on the perceived benefits of the minor. Additionally, an online survey consisting of various rating scales measuring self-efficacy and leadership beliefs was administered to all students who enrolled in the core courses as well as a small comparison group. Other data collected included pre- and post-tests of content knowledge.

Given the difficulty of measuring the constructs in the questions guiding assessment, the quantitative data from the survey failed to support any statistically significant differences between the comparison group and the students in the minor. However, the qualitative data from the focus groups and the pre- and post-tests provided support that the minor was having a

beneficial impact on the students, including self-perceived improvements in creative thinking, presentation skills, and seeing the connections to other disciplines.

The lessons learned from the development and assessment of the E-SHIP minor are as follows:

- Implement assessment as early as possible in order to best guide the program development and to enhance funding from external and internal funding sources.
- Encourage students to believe that they can define a great new product with huge potential to meet a product need.
- Provide students with a variety of experiences in diverse teams and high pressure-presentations, with tough questioning by entrepreneurs.
- Look for “starter technologies” within your own institution and have student teams work with the researchers.

Author 1: Sven Bilen email: sbilen@psu.edu

Author 2: Elizabeth Kisenwether email: exk13@psu.edu

Author 3: Sarah Rzasa email: ser163@psu.edu

Author 4: John Wise email: jwise@psu.edu

[: Back to 2006 Winter Issue Vol. 2, No. 1](#)

[: Back to List of Issues](#)

[: Back to Table of Contents](#)