

A Model for Development of Employer Engagement at a Small Campus

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Abstract

Retention of engineering students is a key issue in engineering education, particularly with respect to motives of training a diverse engineering workforce. In addition to other academic and individual factors, student feelings of community and career awareness are contributors to engineering students' persistence toward degree completion. As part of developing retention efforts for a new engineering Bachelor of Science degree program at Penn State Hazleton, we have created a recurring program of employer engagement to center students' focus on the role their education plays in their overall career development and to begin to integrate students within the regional engineering community. The various industry engagement activities offered target all levels of student progress, and focus on several areas of career skills and networking within the larger engineering field. This paper will describe our program of employer engagement activities as a model, and will propose further research avenues toward assessment of program expected outcomes.

1. Introduction & Background:

Job attainment and engagement in the engineering profession are important outcomes identified by engineering programs for graduates. While all programs strive to meet these goals, a gap has been identified for students in their "professional socialization," acquisition of workplace skills and attitudes needed for recent graduates to develop successful professional careers [1].

Improving these skills may also influence student persistence toward an engineering degree. Student attitudes toward engineering have been identified as playing an important role in persistence decisions [2]. Specifically, student perceptions of engineering as they relate to future career success are strong predictors of student persistence [3]. Assisting students to develop professional skills and establish connections to the workplace while still in school may assist them to complete their degrees and to achieve better success through their workplace transition.

In Hull-Blank et al.'s study on the career self-efficacy of freshmen at a university [4], the authors present an argument for career goal development as a catalyst in boosting student retention. A group of 433 students were surveyed to determine their career goals, academic persistence, self-esteem, educational self-efficacy, and school and career commitment. The results from their study supported "previous research identifying the importance of defined goals in retention and retention-related factors" [4]. The researchers found that students who had a more long-range view with regard to their job-related career goals were better able to make decisions related to persisting in their studies.

Additional research on the unique challenges faced by an ever-increasing population of non-traditional learners, including adult learners and those students attending as commuters, highlights the need for more student support services [5], particularly those that offer a conduit to "achieving...educational and career goals" [6]. Issues of engaging commuter and non-traditional

students throughout all levels of the student body are of particular interest to the engineering program at our campus, which serves a mix of adult and traditional students (9 adults of 20 total recent graduates), with a large number (70% of recent graduates) of students in the program commuting to campus. As noted in the National Association of Colleges and Employers (NACE) 2014 Student Survey, researchers found that of the 43,864 students polled, almost 50% of graduating seniors indicated that they did not utilize the career services provided to them by their universities [7]. Incorporating these elements of career development into the curriculum of today's busy student ensures that no one misses the opportunity to fine tune their career self-efficacy.

With that in mind, we have created a program of Career Engagement activities at our campus designed to engage all students and to allow them to develop student skills and confidence in these areas. The remainder of this paper will discuss the nature of these activities and assessment performed to evaluate their effectiveness and impacts.

2. Description of Career Engagement Activities

The Pathway for Corporate Engagement model was created to foster engagement and development of student skills in the areas discussed previously. Programming of this type was first offered as a pilot for Information Sciences and Technology students in 2012-2013 at a sister campus. The program introduced 20-25 students to alumni/industry experts and recruiters from several local Fortune 500 firms. As a result of the real-world projects, industry lecture series and panel discussions during the pilot study, 6 students (25%) received offers for and accepted internship and/or full-time positions with these organizations. We adapted this program to serve the engineering curriculum at Penn State Hazleton in 2013.

This employer engagement model we employ is integrated with existing classroom activities and helps to bridge the gap between the support services that exist outside of classroom but that may not be leveraged by already time-constrained engineering students. By embedding elements of career development and professionalism into the engineering curriculum, students are exposed from freshmen year on to the key professional skills that employers seek from graduates as modelled by the industry professionals themselves, including: critical thinking/problem solving; oral/written communication; teamwork/collaboration; information/technology application; leadership; professionalism/work ethic; career management [8]. With more than 70% of open positions being secured through networking [9], it is important to introduce students to this skill as early as possible in their college career, and to ensure that students are able to develop these skills to achieve future career success. Through these classroom interactions, these employers have the opportunity to positively and relevantly impact this future workforce to the benefit of their industry while informally mentoring engineering students and helping them to identify ways to develop these key skills as a part of their educational journey [8].

To implement this program within our engineering curriculum, beginning in 2013, we offered a series of employer engagement initiative events targeting energy engineering students at our campus. Though any students were permitted to attend any of the activities, each of the activities targeted a specific level of students. These events provided opportunities to learn or practice a variety of professional skills, and to network with professionals working within the field of engineering. The primary activities were Panel Discussion events (targeted toward freshman and sophomore students), an Industry Lecture Series (targeted to upper-division students), an Engineering Alumni Dinner (for upper division students), and corporate-sponsored Real-World Projects (integrated with Senior Design). Student attendance at each of these events ranged from 10 to 25 with a core group of 15 engineering students attending and/or participating in 16 distinct Career Engagement events over the past three academic years. Students were specifically introduced to over 15 different industry partners through these events. Current best practices for these initiatives are provided in the following sections.

2.1. Panel Discussions

Panel Discussions (sometimes marketed as Pizza with a Professional) events are held once a year and are hosted within an engineering class. They are intended to introduce students to several different positions that can be pursued within their field. Attendance was typically 20-30 students, or around a typical full class at our campus. These initiatives were targeted toward freshman and sophomore students and serve as career awareness activities that help them identify with their future careers. The events consist of a panel of three to five professionals (preferably recent graduates). Previous panels have featured one larger employer with employees/alumni from several different departments, or a variety of employers representing the myriad directions that students can take with their degrees. The panels are asked to discuss their pathway to a career and experiences transitioning from student to professional life, with the conversation moderated by a faculty member or career services representative. Each panel concludes with time for informal networking over a meal to allow time for deeper conversations, mentoring and individual questions.

2.2. Industry Lecture Series

The Industry Lecture Series events feature volunteer speakers (again, frequently alumni) from local industry. As with the Panel Discussions, attendance was typically comparable to class size of 20-30 students. We hold two to three lectures each year, depending primarily on speaker availability and faculty classroom time availability. Though these initiatives are targeted at junior and senior levels students, and are usually hosted within an upper-division course, all students and faculty are invited to attend. The presenters are asked to focus on emerging trends within their fields and technical aspects of their business, to help demonstrate connections between course work and needed professional skills. Through this, lecturers typically conduct some “soft branding” of their organization for future recruiting. We specifically seek speakers who have openings for interns or new graduate hires, and as such, these events are typically scheduled in

the fall during the time when most students are beginning to make plans for the following summer. Guest lectures via video conferencing have been used for distant speakers, and also to allow capture for use within other classes to enrich the curriculum, or to allow students from other campuses to virtually attend.

2.3. Engineering Alumni Dinner

The Engineering Alumni Dinner is part of an annual event held by the campus Office of Development. Engineering alumni are invited to the campus to attend presentations by students and a catered dinner. Senior design team students, along with groups of students participating in independent research projects, present the status of their work to solicit feedback and suggestions from the alumni. Typically, students are encouraged to emphasize the unique or interesting parts of their project. This provides an opportunity for students to speak to a slightly different audience from typical “research project” technical communication assignments. The catered dinner follows the presentations, and students are encouraged to sit among the alumni attendees to foster further discussion. These events give students opportunities to practice their own oral communication skills, to practice talking to others about their work and to network with the alumni. Alumni Dinner events have also previously been preceded by professional skills workshops (e.g. resume writing and critiques, professional etiquette), to help students prepare to best represent themselves.

2.4. Real-World Projects

This initiative helps energy engineering students connect to industry partners through the incorporation of a real-world project embedded into their full-year capstone (senior design) course. These projects, over the span of three years, have provided students with relevant industry examples to problem solve and connect curriculum to career. They have also offered students industry-based experiences to add to their resumes, and facilitated informal mentoring and networking opportunities with several local, national and international corporate partners. In some instances, these partners have recruited students for future internships and/or jobs, particularly after working with them on these projects.

3. Assessment

A survey was conducted to assess the impact of these initiatives. Current students and recent graduates were asked a series of questions related to their reactions to the activities as well as concrete outcomes, such as interviews and job offers. A list of the questions asked is given in Appendix A. A total of fourteen responses to the survey were collected (5 current students, 9 alumni), seven (50%) of whom had participated in one of the employer engagement events described here. Of those seven, four indicated participation in multiple employer engagement events.

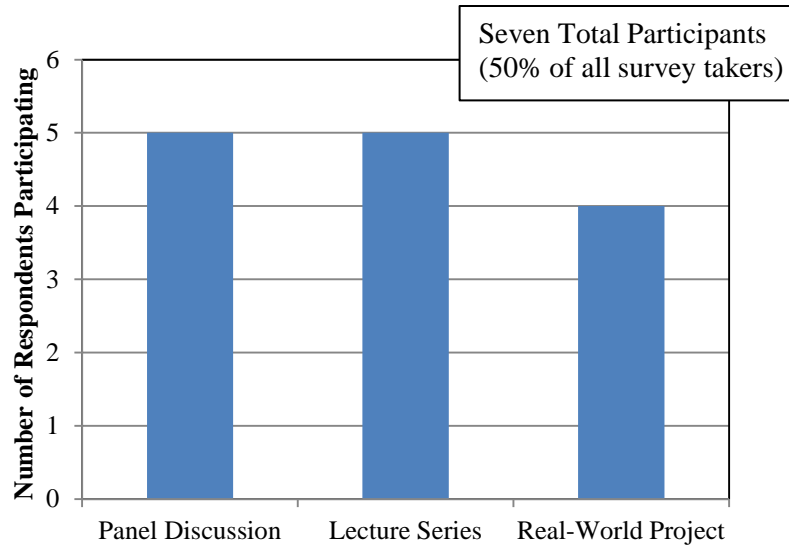


Fig. 1 – Participation by activity type as indicated by survey respondents.

Participation in each of the activities was roughly equal, 5 students each indicating the Lecture Series and Panel Discussion (Pizza with a Professional) and 4 indicating the Real-World Project. These data are shown graphically in Fig 1. Of those who participated in events, four (57% of participants) indicated continued interactions with the employer. In terms of interactions, three students asked questions in follow-up phone calls, two had subsequent resume reviews and two sought informal career advice, as shown in Fig. 2. Three of the seven who participated in the events indicated that they were able to interview for a job as a result of participation in the employer engagement programming, with one of the three receiving a job offer, shown in Fig. 3. Of the respondents, 79% felt that the employer engagement activities at the campus somewhat or significantly improved their awareness of careers and the importance of networking in their field.

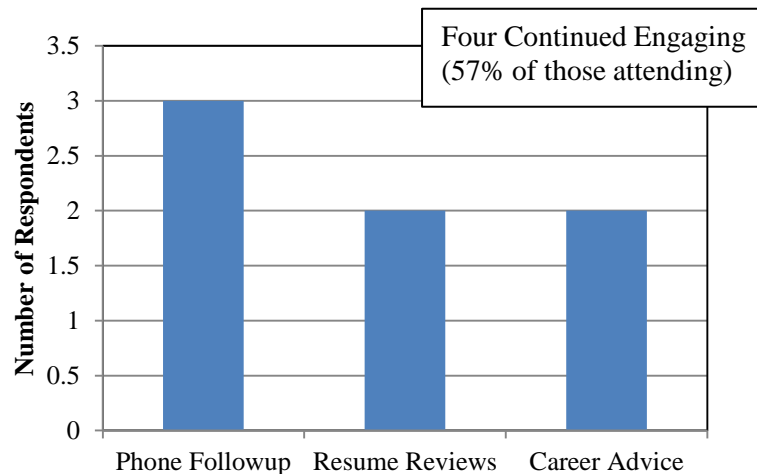


Fig. 2 - Respondents' reported continuing engagement activities other than job interviews.

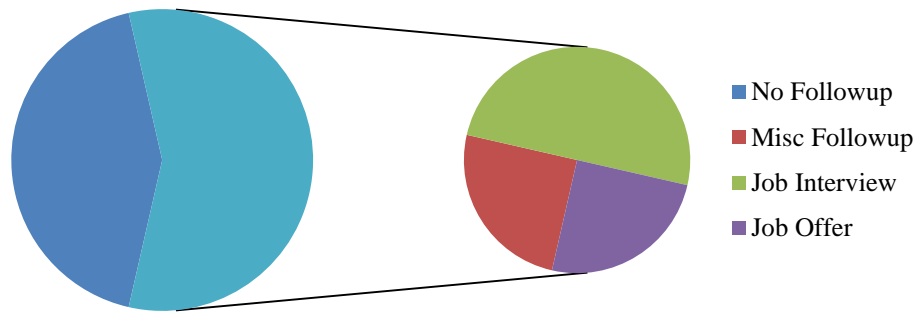


Fig. 3 - Respondents having continued interactions with corporate participants.

In 2015, an additional survey of 19 employers who engaged with students at this campus and four additional campuses within this state university system was conducted by career services. A list of the questions asked is given in Appendix B. Respondents reported that these employer-embedded events led to additional mentoring activities with 121 students, including answering additional career-related questions, assistance with industry networking, and informal mentoring. Of the employers who responded, 75% also reported that these engagement activities added value to their company's recruitment efforts, as shown in Fig. 4.

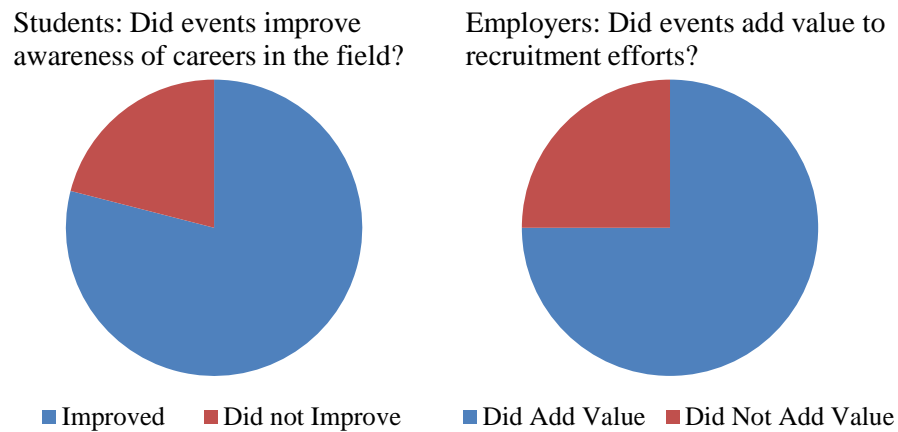


Fig. 4 - Student and Employer perceptions of the value of the events.

4. Discussion and Conclusions

The Career Engagement program at our campus offers opportunities for students of all levels to interact with professionals in engineering and to develop their career skills from their first year as students. The initiatives offered as part of this program targeted a variety of learning

objectives, including identification of career goals, career awareness, and development of professional skills. In addition to providing these learning opportunities for students, the program also produced stronger ties between the energy engineering program and the employers who participated. It is hoped that these ties will serve as future avenues that can provide internships and job opportunities for students, as well as continued participation in Career Engagement events. On multiple occasions, alumni who had participated in Career Engagement events as students went on to participate as lecturers/panel members during the early stages of their professional careers. The primary challenges encountered with offering these programs were related to administration and planning. Establishing the relationships with employers requires a time commitment on the part of faculty or staff. Our university retains an individual in the position of Regional Employer Engagement Coordinator, which was of great assistance in this process.

Though the sample size for the surveys were small, some qualitative interpretations are possible. This program has received positive feedback from students/alumni and industry participants. Most students reported that the events improved their awareness of careers in their field, and multiple students were able to receive internship/job interviews that they attributed directly to the activities. By offering the initiatives as part of regularly scheduled engineering courses, we were able to engage the large number of adult learners and commuters in the program, and to provide opportunities for students at all levels. We plan to continue refining career engagement programming in the future and to conduct additional research on student learning benefits that result from participation. Continued research also aims to increase the number of survey participants in order to achieve a greater degree of statistical power in the results.

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Appendix A: Survey Questions

- Please indicate your status as a student or alum at Penn State Hazleton (Freshman, Sophomore, Junior, Senior, Alumni)
 - As an alum, please indicate which of the following best describes your current situation (Employed within your field, Still seeking employment, Pursuing graduate school).
- As a student at Penn State Hazleton, did you attend or participate in an employer engagement event including but not limited to Employer Panel Discussions, Industry Guest Lectures, or Real-world Projects hosted by a corporate partner?
 - Which of the following events did you attend? Please select all that apply. (Employer Panel Discussion, Industry Guest Lecture with Engineering Firms, Real World Project) [*Names of companies provided*]
- Have you continued (or did you) to interact with any of the employers that you engaged with at Penn State Hazleton after the initial event?
 - In which ways did you continue to interact with employers beyond the initial meeting? Please choose all that apply (Follow-up phone call to ask a question, Resume Review, Informal mentoring in the form of career advice, Interview prep, Job search assistance)
- Did you have an opportunity to interview with a company because of a connection that you made while attending or participating in an employer engagement event at Penn State Hazleton?
- Did you receive an offer of employment as a result of attending or participating in an employer engagement event at Penn State Hazleton?
- Overall, how would you rate the impact of employer engagement activities at Penn State Hazleton upon your awareness of the importance of networking within your field as a student? (Significantly improved..., Somewhat improved..., Did not improve...)
Overall, how would you rate the impact of employer engagement activities at Penn State Hazleton upon your awareness of careers within your field? (Significantly improved..., Somewhat improved..., Did not improve...)

Appendix B: 2015 Employer Engagement Survey Questions

Thank you for your engagement with our students, staff and faculty this year. We appreciate you taking the time to complete this survey.

1. Please indicate the type(s) of employer engagement activities in which you participated with our Eastern Region campuses in 2014 - 2015 (select all that apply):

- Employer Spotlight (Employer Information Table)
- Panel Discussion (Pizza with a Professional)
- Industry Guest Lecture
- Student Org Presentation
- Real-world Project
- Job Shadowing
- Industry Career Development Mentoring -CN ED 280
- ERCCE Session Presenter
- ERCCE Exhibitor
- Offer Program
- OCI at an Eastern Region campus
- Other

2. Please rate your experience with students during these employer engagement activities.

Strongly Agree Somewhat Agree Neutral Somewhat Disagree Disagree

- Students were well prepared for the event
- Students consistently showed interest/enthusiasm during the event
- Students exhibited content and/or general knowledge during discussions and Q & A sessions

3. Based on these activities, how many students did you interact with following the initial program/event to:

- Answer additional questions
- Assist with networking
- Provide informal mentoring
- Other

4. Based on these activities, how many students did you interact with following the initial program/event in order to conduct:

- 1st round interview
- 2nd round interview

- Other

5. Of those you interviewed, how many resulted in a hire?

- Internships
- FT position
- Other

6. Overall, did these activities add value to your organization's recruitment strategy?

Yes Somewhat No

7. If you answered somewhat or no, please explain why and share activities that would add value to your recruitment process.

8. Please add any other reflections and suggestions for improved career development and employer engagement events for our students.