E-PRIDE - maximising student academic and career success

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ABSTRACT: The College of Engineering and Engineering Technology (CEET) at Northern Illinois University (NIU) is committed to student career success. The College offers programmes in engineering and technology that maintain high quality and are accredited by the Accreditation Board for Engineering and Technology (ABET) [1]. In its efforts to determine the attributes of student career success, the College has identified five factors of success: placement, readiness, internships, diversity and engagement (E-PRIDE), all critically important to student career success. The centrepiece of this programme is to develop connections between students and external partners of the College. The ability of a student to connect with one or more of the stake holders and seek academic and career success is the key outcome of the project. The focus of the programme is *engagement*. There are several studies that correlate engagement with academic and career success [2][3].

INTRODUCTION

Mentoring Model

The student population of NIU's College of Engineering and Engineering Technology (CEET) is well-suited for peer mentoring. Many CEET students are both first-generation college students and first generation engineers. Those students may not be as familiar with engagement opportunities available to them on campus and within CEET [4]. A peer mentor would be particularly helpful to these students, as the mentor could facilitate mentees' engagement within CEET and the university as a whole, making those mentees more likely to be engaged - and more likely to graduate. Furthermore, due to the experiential nature of the programmes at CEET-NIU, it is easier to connect students with relevant mentors.

As mentioned before, the benefits of engagement are two-fold: academic and career success. Also, improving retention not only helps enrolment numbers, but it also results in higher graduation rates. This is particularly important in the United States of America where there is acute shortage of engineers. Graduating more engineers during a time when engineers are in high demand addresses a national priority and a critical requirement for economic prosperity through innovation and entrepreneurship. With E-PRIDE in place, it is the expectation that NIU and CEET will be able to meet the current scarcity within the marketplace for well-trained engineers. The model has been discussed and meets the approval of all the stake holders. Actually, several members of the alumni group and corporations have agreed to actively participate in the project. The proposed model is as follows:

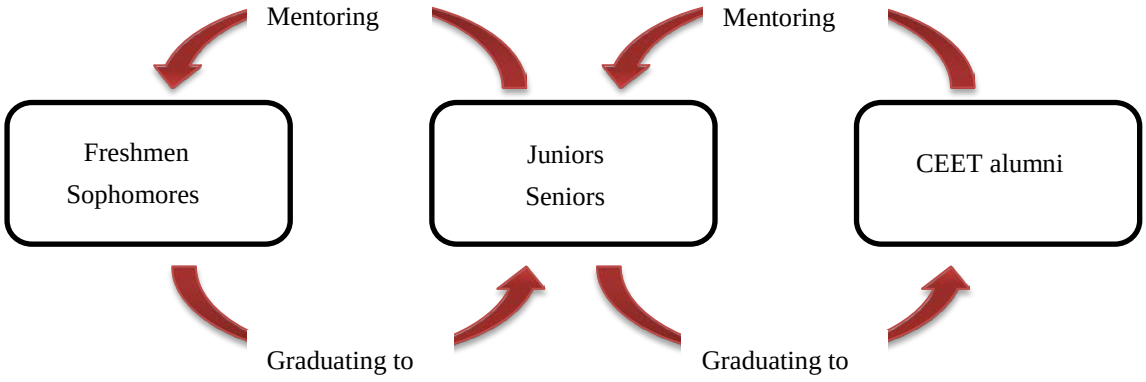

Figure 1. E-PRIDE model.

As illustrated in Figure 1, the proposed mentoring model will have two stages or tiers. As the figure demonstrates, each stage creates a natural pipeline for the next stage. In other words, mentees eventually become mentors, who eventually become successful, active alumni and future participants in the programme. The two tiers of the programme are explained below.

Tier 1

Tier 1 would consist of CEET juniors and seniors mentoring CEET freshmen and sophomores. The structure would be a 2x2, 2x4, 2x6 or 2x8 format, with two mentors and two, four, six or eight mentees forming individual mentoring groups or families. The specific structure would be determined by both available funding and mentee interest, though the smaller the mentoring family, the more effective the mentoring will be when implemented.

The mentors will be given a common charge and will have a common purpose. It is expected that each mentee may have a different issue, but it is critical to implement the programme with a common purpose and vision.

There will be either a staff member and/or graduate assistants who would serve as coordinator(s) or programme leaders, for the Tier 1 mentoring programme.

Tier 2

Tier 2 will consist of CEET alumni and corporate sponsors invited to serve as mentors for junior and senior CEET students. Juniors and seniors are more ready for help with career planning, and alumni mentors would provide valuable insight and support into the job search and placement process. The intrinsic desire to be a mentor and willingness to devote time for mentoring is critical to the success of the programme.

ORGANISATIONAL INFRASTRUCTURE

Programme Leaders and their Responsibilities

Student involvement and their ownership of the programme is significantly important for the longevity of the proposed programme. One of the embedded attributes of the engineering programmes at NIU is student leader development. The College supports almost 17 student chapters of engineering professional societies and provides eight different national level student design competitions. Students from these organisations may be chosen to become student leaders. Additionally, half- or full-time graduate assistants would serve as programme leaders. Those leaders would:

- Serve as liaisons between CEET/Office of Student Engagement and Experiential Learning (OSEEL) and mentors/mentees.
- Work with CEET and OSEEL to plan events, train mentors and monitor mentor/mentee activity throughout the semester.
- Work closely with the CEET Student Success Specialist (SSS), so programme leaders can refer students who are having difficulties that require help beyond the scope of the mentors' roles to SSS.
- Receive guidance from CEET and OSEEL staff, but be responsible for the day-to-day aspects of the mentoring programme.
- Have previous experience dealing with college students, training, and general NIU and CEET information. YouTube videos and other promotional material will be provided to all participants for awareness.
- Have strong communication and event-planning skills.

Mentees

Mentees would be freshmen and sophomore CEET students who have completed less than 60 hours of course work in an engineering major. Those mentees would:

- Actively participate with their assigned mentoring family.
- Attend group and individual events with their mentoring family.

Mentors

Mentors would be junior and senior CEET students who have completed more than 60 hours of course work in an engineering major. Those mentors would:

- Be assigned multiple mentees.
- Work for up to five hours/week and 14 weeks/semester interacting with mentees.
- Be familiar with both CEET and campus resources, like tutoring, advising, campus events, etc.

MENTOR/MENTEE INTERACTION

The success of the model will depend upon the value added component it brings to the participants. Although it is expected that most of the work proposed in the E-PRIDE programme will be on a volunteer basis, some students may have to be paid to increase guaranteed participation. Legitimate hours would be compensated for mentors for activities including:

- Tutoring - either by the mentor tutoring, if he or she is a subject-matter expert, or by directing mentees to existing tutoring resources on campus.
- Class selection and scheduling - by helping mentees understand what is covered in different courses, what types of courses the mentees' programmes include, etc.
- Tours - including campus resource tours and CEET building/laboratory tours.
- Other previously-approved events - including NIU athletics events and other relevant events through offices like Career Services, OSEEL, CEET, etc.

CRITERIA FOR PARTICIPATION

Mentees and Mentors

Priority will be given to freshmen who want to participate as mentees. If capacity and funding permits, transfer students will also be invited. Students can remain mentees until they become juniors. Mentoring positions will be announced and juniors and seniors will be encouraged to apply. Applications will be reviewed for both previous involvement in extracurricular activities or community service, as well as academic performance.

Mentees will be recruited through the Summer Math Bridge Programme, the Dean's Talk at Orientation, and UEET 101: Introduction to Engineering. As mentioned above, mentors will be recruited through the CEET Ambassadors Club, student project groups and organisations, upper-level major courses, alumni, corporate partners, and faculty and staff referrals.

The infrastructure for the proposed E-PRIDE programme has been described above. This infrastructure will also help the College accomplish the goals of other components of the programme.

INTERNSHIP, ENGAGEMENT AND PLACEMENT

CEET has developed partnerships with more than 500 companies in the region, and there are several opportunities and mechanisms available for those companies to become engaged with students. The College also allows for several research design programmes (corporate scholars programme, capstone experiences, thesis, engineers in residence programme, special projects, funded research activities) to be suggested and sponsored by industry.

It is ensured that the research programmes have active interaction with the sponsoring company. The College also invites alumni to assess and judge the quality of the projects upon completion. This mechanism allows for active engagement between student and employers who are either alumni of the programmes or are corporate partners who see value added in establishing partnership with the College and have faith in the College's ability to produce qualified graduates with exceptional skills.

The external stake holders are also invited to be a part of advisory boards and provide their expertise to benefit the success of the students under the mentorship programme described above. The multipurpose partnerships with peers, alumni and employers also provides the students with motivation to learn and graduate. Their persistence to succeed is also enhanced by these interventions and support activities [5].

The aim of the project will be to provide internship opportunities to all of the students enrolled in CEET within the next three years. Also, the associated goal will be perfect placement upon graduation for all students. It is normal that if the employers have worked with CEET students, witnessed their work as interns and have interacted with them, the chance of students' receiving an employment offer from the company they have engaged in is significantly high. The College intends to enhance the chances of student career success through engagement, internships and placement. Global internships are also a possibility due to College's increasing relationship with global partners and its work with several multinationals.

READINESS

One of the best testimonials to a quality programme capable of producing qualified students is its accreditation. Accreditation involves a comprehensive review of the programme, which includes quality of faculty, quality of facilities, course content and its delivery, assessment, and evaluation and its effect on continuous improvement, leadership, relationship with external stake holders, etc. Once the programmes are accredited, it can be assumed that the programmes have the requisite quality to prepare career-ready students.

Once the engagement piece, as described above, is supplemented to an ABET accredited programme, the functionality of the graduates is significantly enhanced adding to the readiness of the students. CEET is committed to addressing the readiness aspect of its students and continues to make investments to provide state of the art facilities with exceptional tools to enhance the learning outcomes of its students. A learner-centred environment with significant resources, opportunities for exploration and experimentation, and mentoring support provides the students with a transformational experience [6].

The College has more than 40 state-of-the-art laboratories and a significant number of engineering tools available for use by students. There is a continuous effort to enhance the facilities and tools to foster teaching and learning. Several multimillion dollar grants and a recent $45 million donation of software addressing product life cycle management is a recent addition to the impressive list of tools already available in the College.

DIVERSITY

In the US engineering colleges, addressing diversity of the student body is a critical issue. The ability to attract women and minorities into engineering and technology programmes will dictate economic success in the future. Despite being an economic leader in the world, the US has less than five percent of the world's total technical entry-level workforce. If not addressed, the US economy will suffer tremendously for lack of the optimum number of well-trained engineers [7]. One way to address that inequity is to convince more women and minorities to join technical programmes and, then, to create opportunities for success for all of the diverse student body.

The E-PRIDE programme will create a success model for all and the minority student organisations, such as the National Society of Black Engineers (NSBE), the Society of Hispanic Professional Engineers (SHPE) and the Society of Women Engineers (SWE) to provide a networking and engagement platform for women and minorities to mingle and mentor each other, and students from other backgrounds. The mission of the College is *success for all* and creating an environment, which is conducive to the success of all students is the primary intended outcome of the E-PRIDE project. Diversity of faculty is also an important component of the success of the project. Creation of role model ships and a mentorship environment for the support of diversity will enhance the success of the project.

CONCLUSIONS

Several universities in the US are developing models of success for students to succeed in their academic and professional careers. The success models are addressing issues related to enrolment management, inclusion, engagement and enhanced quality of programmes. CEET at NIU has been experiencing a steady increase in its student enrolment.

With high levels of placement already, E-PRIDE is an attempt to further enhance chances of student success both academically and career wise. E-PRIDE is geared toward bringing the community of stake holders together to invest time, effort and resources to ensure student success in order to prepare the future technical workforce of the world to continue the process of innovation.

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