

Work in Progress: Peer-based Programming in Undergraduate Engineering

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The University of Windsor is a mid-size comprehensive university located in Windsor, Ontario, Canada. The Faculty of Engineering currently has a cohort of approximately 1500 full- and part-time undergraduate students, of which approximately 20% are female and 25% are international. Offering programs that create a supportive community for our diverse group of students is the responsibility of the faculty's WINONE Office of First Year Engineering. Since WINONE's inception in 2007, when the faculty undergraduate enrollment was approximately 1000 students, WINONE has served as the home department for all first-year students who take a common set of courses. In addition, WINONE offers extensive outreach programming to local schools and community organizations and performs recruitment for all undergraduate programs in the Faculty of Engineering.

The University of Windsor has specifically focused resources to support the student experience as described in its Strategic Mandate Agreement with the Government of Ontario (SMA) [1]. Associated programming should produce improved students' perceptions of their post-secondary experience. In addition to using institutional retention metrics as one indicator of student experience, the National Survey of Student Engagement (NSSE) is a tool that is useful in gauging the long-term effectiveness of the proposed initiatives as an impact on students' subjective experience as an undergraduate engineering student.

This paper provides background and status of current and planned initiatives in the Faculty of Engineering at the University of Windsor to build a peer-mentoring program by way of individual initiatives that together will benefit our undergraduate students both as mentors and mentees.

Background

While literature supports undergraduate research-based peer programming that includes teams of faculty and graduate students mentoring the undergraduate students [2], [3], the University of Windsor's Outstanding Scholars program is one that provides all undergraduate students multiple research placements with a faculty mentor and their graduate students. The experience of other institutions in hosting peer-based tutoring services [4], specifically Queen's University in Kingston, Ontario, Canada, where Douglas Tutorials, a free undergraduate-based peer-tutoring service are offered for first-year engineering students. WINONE's recent decision to implement a similar service to increase first year GPAs and establish mentoring connections that span from first year to fourth year across the student body should ultimately result in improved retention rates [5] and an improved student experience.

Current programming

WINONE Tutorial Scholar Award: The recent introduction of the WINONE Tutorial Scholar Awards provides a monetary award for third- and fourth-year students who achieved excellent grades in their first-year engineering courses and express a desire to mentor students in their first year of the undergraduate engineering program. Free semi-weekly walk-in tutoring sessions are

held each semester for first-year students who are seeking assistance in any of their first-year courses. During the two-week final examination period, tutoring sessions are held daily. The hope is that students seeking academic advice will also use the opportunity to engage the mentors in conversations about other important topics related to their student experience (e.g. cooperative education, choosing a major, involvement in student clubs, etc.). Care is taken during the award application process to ensure that, in addition to academic excellence, representation across gender and ethnicity are considered when selecting the recipients, to maximize the represented groups taking part in the program [6]. Several administrative issues have developed in recent years that suggest the Office of First Year Engineering would benefit from engaging a pool of engaged mentors in their third and fourth year of studies. For example, WINONE receives numerous requests from students for individual tutors. In the past, WINONE has appealed to volunteers in the senior undergraduate class to contact the requestors and make their own private arrangements. In addition, WINONE receives requests from prospective secondary school students to shadow an undergraduate student for a day as they attend classes and tutorials on campus. To date, WINONE relies on student volunteers to respond to their individual requests. Structured programming that promotes undergraduate peer-mentors in the Faculty of Engineering can benefit WINONE as the facilitator of these types of requests as well as the student mentors, ensuring that students are properly screened through application process and receive official recognition of their service within the faculty.

Iron Pin Ceremony: Despite first- and fourth-year courses that address topics like ethics and professionalism in engineering, the consensus amongst administration was that additional programming should be introduced to address academic dishonesty within the faculty. With this intention, the first Iron Pin ceremony was offered in the fall semester of 2018. High achieving students have expressed their frustration with the recent trends and are very supportive of and enthusiastic about the founding of the Iron Pin Ceremony in the Faculty of Engineering. Incoming students take an oath that they will uphold the core values of the University of Windsor and the Professional Engineers of Ontario [7]. They sign and submit an oath sheet and are given a copy of the oath on a wallet-sized card. If, by the time they enter their second year of studies, their record is without any incidents of academic or non-academic misconduct, then they receive a bronze medallion at an annual ceremony. The silver medallion is awarded to third-year students and the gold to those entering their fourth year. Students are reminded to wear their iron pin and all its medallions when they attend the Ritual of the Calling of an Engineer, a nationwide customary ceremony at which they receive their iron ring and pledge to uphold the ethics and obligation of their chosen profession [8]. Our hope is that the Iron Pin Ceremony will instill a sense of pride and community amongst the undergraduate cohort and remind them about their obligation to work ethically and practice equity from their first day of classes throughout their undergraduate program. The awarding of a medallion each year will remind them of their promise and renew their dedication and sense of moral compass.



Future Programming and Assessment

In the future, WINONE will implement a program to officially recognize students for their consistent participation as mentors, outreach and recruiting volunteers, local engineering and

leadership conferences attendees, members of faculty student societies, etc. from their first to fourth years of study. For students to qualify for the program and receive official recognition for their ongoing and consistent participation, they must meet minimum requirements each year. For example, students will be required to register their participation in at least one qualifying event in their first year, two events in their second year, three events in their third year, and four events in their fourth year. Students completing the program would be recognized at an annual Deans' reception. Celebrating the accomplishments of our undergraduate role models by showcasing their involvement in the Faculty of Engineering, the University of Windsor, and the local and global community will inspire incoming students to follow similar paths and provide those students with a more positive student experience.

Students' individual successes, first as mentees, then as peer-mentors, and finally as graduates and alumni will also have a positive impact on the quality of our undergraduate engineering programs and ultimately the University of Windsor student experience. The shared pride and sense of community that the Iron Pin brings to the undergraduate cohort will hopefully improve academic integrity within the faculty. Effectiveness of the programs may be gauged by monitoring metrics such as program retention rates, NSSE data, and incidents of academic and non-academic misconduct within the faculty. Results will not be known for years, but the appropriateness of initiating these peer-based programs provides benefits to our students that cannot be disputed.

References

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