Inter-Faculty Research and Experiential Learning

Background
To improve the student learning experience, The Faculty of Engineering is in the design-build phase of a project to build the Engineering Center for Experiential Learning (ExCEL), a multi-purpose building planned to house student clubs and teams and act as a living lab for sustainable building technologies. As such, it is envisioned that the building, along with associated programs, would provide students with extensive opportunities for experiential learning.

To ensure the building supports experiential learning, a group of students was hired to conceive and develop experiential learning opportunities within the Engineering curriculum. Thanks to the support of FWI, the Faculty hired as part of their Experiential Learning Analysts team, a student to support inter-Faculty collaboration, envisioning that the ExCEL building, designed to be a living lab for sustainability research, would offer opportunities for collaborative, cross-faculty projects, as well as offer opportunities for experiential learning in courses offered by other Faculties in addition to Engineering.

The project identified potential stakeholders and partners, generated ideas, and raised some challenges. This summary report highlights some of the completed and ongoing projects developed by the Inter-Faculty Research and Experiential Learning Analyst.

Resources Developed
The outreach to various researchers and course professors done over the summer spans most other Faculties within the University. A database of connections made and the interest areas for collaboration has been developed to facilitate ongoing relationships as the ExCEL project moves forward. Some of the key highlights of these potential collaborations and conversation are expanded on below.

Experiential Learning in the Curriculum
For those collaborators interested in using ExCEL as a teaching tool, the gap between implementing the discussed ideas and now presented an obstacle, given that the ExCEL building is yet to be built. In order to engage collaborators in this initiative sooner, existent similar resources were explored. Some of the identified tools currently available are the Engineering Technology building (ETB), and CANMET-MTL research center at McMaster Innovation Park. These buildings present a great opportunity to run sustainability related activities, which can then be transferred to or complemented by the ExCEL building.
The pilot of the envisioned web based portal that would be used to allow students and researchers to access the ExCEL buildings data is underway. Currently data from McMaster’s Institute of Climate Change Weather Station is accessible, as well as some building performance data of ETB provided by Facility Services.

From conversations with professors external to Engineering, the opportunity to utilize building features as experiential learning tools is not as applicable to course curricula as it is within the Faculty of Engineering. However, the ability to view and learn about sustainable building features and their economic, social, and environmental impact, presents an opportunity for inquiry and discussion on issues related to sustainability, topics which are discussed widely across all Faculties. With this in mind, tour-based assignments have been developed and their incorporation into various courses proposed, including SOCTY 2X03: Inquiry in an Engineering Context I, GEOG 3EE3: Energy and Society, ENG 4A03: Engineering and Social Responsibility, and SUSTAIN 3A03: Societal Tools for Systemic Sustainable Change.

Although there were few new data collection features proposed by potential collaborators for the ExCEL building, collaborators were interested in the case study example the ExCEL building could provide as a discussion topic for their classes. It is expected that the interest in this collaboration will grow as the ExCEL building becomes more tangible and there are more specific examples to reference.

Research
Taking advantage of the building design time, an important aspect of the project has been to promote the possibility of proposing new building features for research and/or educational purposes. One example of such cross-Faculty research is an Urban Wind Turbine. In this case, professors from different Faculties have independently shown interest in the feature, opening up a great opportunity for Inter-Faculty collaboration. Urban Wind Turbine research is of interest to the private sector as the turbulent winds caused by stationary objects, create major performance and reliability challenges. This presents yet another opportunity for funding and collaboration.

Other Projects and Ideas
With the great movement put forward by the university to improve student’s learning experience, many working groups and projects have emerged in all Faculties with the purpose of creating experiential learning opportunities. However, there isn’t a one-stop location where students can find these opportunities and easily access all the information. An idea to provide awareness, connection, and meaning for students to get involved in experiential learning opportunities is underway. The Experiential Learning Portal is being proposed as a supporting tool of the Learning Portfolio, allowing students to easily identify opportunities to achieve the learning objectives established in their own Learning Portfolio. There are hundreds of experiential learning opportunities on campus including internships, volunteering, and student clubs, all of which provide great
opportunities for student personal and professional development. The Experiential Learning Portal can serve as a clear display of the interconnection of academic education, experiential learning opportunities, and the skills required in the job market; motivating students to partake in experiential learning activities by exposing their great value.

**Conclusion**
The summer project on inter-Faculty research and experiential learning has opened up pathways for collaboration both within and outside the Faculty of Engineering and the ExCEL building. Activities that use ExCEL as an educational and research tool have been initiated, creating and strengthening Inter-Faculty relationships with the Faculty of Engineering. It is recommended that the ExCEL Steering Committee maintains regular communication in order to support the pilot period, and learn more about the ways in which the ExCEL building may enhance these collaborative initiatives.