

Long Term Vision to Enhance Online Learning in FASE

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Context

This document sketches a vision for where we would like to end up, in terms of teaching and learning, one to two years from now, once this pandemic is behind us. We will invest a lot of time and energy this summer into enhancing online instruction and we want to maximize the return on this investment. Specifically, the overarching objective of our efforts should be to take a permanent step forward in enhancing FASE's teaching and learning in general. The goal of the document is to help the leadership of the programs (e.g. Chairs and Associate Chairs) reflect and consider this transition at a higher level before diving into addressing the many important details involved in implementing online learning at the program and individual course levels.

As a starting point, it is helpful to imagine what teaching and learning will look like in 10 years in order to see what actions we decide to take now could move us towards this. Put differently, rather than working this summer to create an imperfect facsimile of our existing in-person learning pedagogy, we should instead try as much as possible to use this as the first step towards something new and better. While longer-term, in-person learning will still be predominant within this "new normal", we should seek synergies in order to improve, enrich or deliver it more effectively, through our efforts this summer.

This vision does not provide or prescribe a one size fits all approach to online learning. This is best determined by individual instructors and their departments. However, the vision will help guide these efforts. Moreover, this vision identifies themes with guiding questions and shared principles around teaching and learning in general, and their application online.

Guiding Questions

Over the time since the shutdown, some overarching themes and many related questions have arisen that can help broaden and guide our thinking. These questions are compiled here into themes.

Overall learning experience

A fully online university experience goes beyond the delivery of content in courses. High level principles and values underlying the educational experience at UofT and in FASE in general are identified in our university's [vision for undergraduate education](#) and [FASE' Academic Plan](#). Co-curricular engagement, community, and a sense of belonging are essential dimensions of the overall experience, whether this is online or in-person. Creation of psychological safety and trust are needed as a foundation for learning, in order to enable the engagement and virtual-

classroom interactions that will be essential to vibrant and effective online teaching and learning.

- How can we promote community within online courses, programs, and student's overall learning experiences?
- How and where should we integrate collaborative or team-based learning?
- How can we leverage co-curricular programs to better support/engage with online teaching?
- What norms and culture should we intentionally foster for incoming students, first year students in particular? (e.g. honour code, online course engagement and conduct)
- How can we foster the psychological safety needed to allow students to more actively be present in online courses (e.g. use of chat, discussion boards, microphones and cameras)? What other ways can student be engaged to help foster online interaction and community?
- What can we reasonably expect of our students to share, so that instructors and classmates can get to know them?
- How can we promote online extra-curricular engagement in the fall? (e.g. virtual orientation for first year students? online engagement in clubs)?

Instructional Technology

Quercus (Canvas) is a powerful learning management system that is underused by many instructors. Moreover, integration of additional apps can open even more options to instructors, that might well continue to be used once we return to primarily in-person instruction. Unfortunately, some students, teaching assistants and even instructors do not have the internet access nor the tools (e.g. Tablets) needed to fully take advantage of online teaching learning.

- How can the existing capabilities of Quercus be better leveraged and how should it be enhanced?
- How can the internet connectivity for instructors and teaching assistants be improved, where needed? What are the minimum requirements?
- What tools should instructors obtain over the summer (e.g. tablet-based computer? home white board? High-quality microphone and webcam?)
- What systems should be put in place to best support instructors? What types of support will only be initially needed and which should be retained longer term? How should the Education Technology Office expand its service to support these shifting priorities?
- To what extent should consistency of technological platforms used across courses be encouraged?

Workload

Student and faculty workload in FASE are already a challenge. Faculty work hard on their teaching and research while students spend many hours on their courses and assignments. For students, promoting greater learning independence online may enable a stronger sense of autonomy, thus reducing perceived workload. However, attempts to simply move on-line the

pedagogy traditionally used in-person could increase student workload. Moreover, the transition to online learning coupled with the pandemic may detract from student motivation, possibly aggravating the sense of a high perceived workload. The merging of homelife with online learning may further aggravate this challenge.

- How can we reduce student workload both next year and long-term while still meeting learning outcomes?
- How can we leverage the time we invest this summer to reduce the workload of instructors long-term by better integrating technology?
- How can integrating online with in-person instruction (blended instruction) improve learning for the commuter students, who make up a substantial part of FASE's student body?
- Can we reduce contact hours both next year and long term by partially inverting more of our courses, in order to make better use our in-person time and available classroom space?

Equity and Accessibility

In congruence with our University's [statement of purpose](#), the online educational experience we design must foster "*an academic community in which the learning and scholarship of every member may flourish, with vigilant protection for individual human rights, and a resolute commitment to the principles of equal opportunity, equity and justice*". At a basic level, student access to the required technology should be considered. Moreover, design of web context should incorporate [AODA](#) & [W3C's Web Content Accessibility guidelines](#). More broadly, we can use this as an opportunity to refine our courses in order to make them more inclusive and accessible.

- How can students who don't have the required technology be supported?
- How can we enhance accessibility and inclusivity through online instruction and long-term in our courses in general? (e.g. update course materials to increase use of inclusive language).
- How can we use this opportunity to revise our courses to better support the learning and experience of students from under-represented communities (e.g. from low-income families, students with family responsibilities, first-generation students whose families may not understand university expectations)
- How can universal design and online courses/classes/tools be used to create more accessible and flexible programs/courses/pathways?
- What proactive steps can be taken to cultivate a networking environment that encourages all students to reach out rather than feeling even more isolated?

Assessment and Feedback

Formative assessment and feedback is essential to learning. Online instruction can provide more opportunities for guided self-assessment with feedback. Conversely, there may be fewer, different or perhaps more opportunities for collaborative learning and the informal study-group sessions that can be so beneficial to learning, community building and students' sense of belonging.

- Can online instruction provide students with more support and formative feedback than they traditionally received?
- How could online summative assessment actually be more effective than our traditional in-person exams?
- What can be done to build academic integrity into the learning and assessment process of a course from the outset?
- How can authentic assessment approaches be used to preserve academic integrity and promote skill development among our students?
- How can instructors solicit regular student feedback during the terms to help them improve their courses?

Planning for the longer term

Long-term, in-person learning will still predominate in FASE. However, we will invest a lot of time and energy into enhancing on-line instruction over the next 6 to 12 months. We should strive to maximize the return on this investment by seeking synergies in order to improve, enrich and deliver in-person learning more effectively. These efforts will thereby help FASE take a step forward in enhancing our teaching and learning in general and let us lead in defining a better “new normal” for engineering education.

- What opportunities does online offer that that could be an improvement over in-person learning?
- When and where is in-person learning essential or far better, and how can we make better use of this in-person contact time long-term?
- Where should FASE focus its efforts for the 2020-21 year: first year courses? core courses? Lab courses?
- Where can we most easily develop higher quality online instruction so that what we do, we do well?
- Should we re-distribute teaching team allocations to support this adaption to online learning?
- How can FASE best leverage existing infrastructure (e.g. TEAL) in order to support this transition?
- How can we build in flexibility to let us move courses from in-person to online or vice-versa should future waves of the pandemic require this? How can we build in more resilience for other possible future disruptions (e.g. snow days, black-out)?
- Where do we want to expand our online course offerings long term (e.g. summer offerings of core and elective courses, Specialised M.Eng. certificates)?
- How can the online resources we create be used long-term to enrich the new normal for in-person teaching?

Principles

- The quality of the learning experience is essential, and this goes beyond just effective delivery of content. Redesign of courses for online instruction should consider the full learning experience including the many relational and affective dimensions of effective teaching and learning.
- Student workload should not be increased through online teaching and learning. Given the current high workload of most FASE students, opportunities to reduce workload should be sought through course redesign and refinement.
- Considerable time and effort will be needed this summer to create quality online experiences. However, opportunities should be sought to enhance courses through technology in ways that yield returns in terms of reduced faculty workload.
- Clarity in the desired learning outcomes should provide the foundation for course and program translation to online. Programs and instructors should reconsider and prioritise their overarching learning outcomes in order identify where to best focus efforts and resources.
- Ongoing formative assessment and feedback should be integrated throughout the learning process. This will help students to learn independently and can be done effectively online, for example through ungraded self assessment quizzes incorporated throughout digital learning modules.
- Summative assessment should be designed from the outset course, around how students are expected to use the knowledge after they graduate. This type of authentic assessment can allow students to demonstrate mastery at higher Bloom's levels and thereby reduce the potential for academic misconduct. Students need to be guided towards these higher expectations throughout the course. Moreover, summative assessment can be distribute throughout a course
- Academic integrity is a priority. This should be developed in partnership with students from the beginning of a course or program. Possible mechanisms include creating an environment of trust, incorporation of authentic assessment, and promoting norms and a culture of honour.
- Equity, diversity, and inclusion should be considered in the redesign of courses and the overall online learning experience. This includes equitable access of students across time zones and technology constraints and increased flexibility in course load/enrollment status and degree pathways.
- Instructors should incorporate flexibility so that digital learning objects can easily be translated to enhance in-person learning or perhaps shared across courses.
- Academic freedom should be protected while encouraging collegiality and respecting the need for program level coordination so that student learning is coherent and align with the program-level learning outcomes.