

A Liberal Education Certified: A Panel on Integrating Liberal Education in a Large, Research-based Institution

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Lydia Wilkinson is a lecturer in the Engineering Communication Program at the University of Toronto, where she teaches courses on written, oral and visual communication. She has a Bachelor of Education, an MA in Drama and Performance Studies, and is pursuing a PhD in Drama that focuses on the intersections of engineering and theatre.

Mr. Alan Chong, University of Toronto

Alan Chong is a Senior Lecturer with the Engineering Communication Program at the Univ. of Toronto, and is the communication coordinator for Civil Engineering, where he teaches a second year communication course, and administers a third year civil engineering portfolio.

Ms. Deborah Tihanyi, University of Toronto

Deborah Tihanyi is Associate Professor, Teaching Stream in the Engineering Communication Program at the University of Toronto.

Dr. Penny Kinnear, University of Toronto

Penny Kinnear currently works with the Engineering Communication Program at the University of Toronto where she focuses on the development and delivery of Professional Language support for a highly student body. She has a background in applied linguistics, second language and bilingual education and writing education. She is co-author of the book, "Sociocultural Theory in Second Language Education: An introduction through narratives." Her current research projects include a longitudinal study on professional identity development of Chemical Engineering students and a study of meaning-making language and behaviour in student design teams.

Dr. Robert Irish, University of Toronto

Associate Professor, Teaching Stream in Engineering Communication

Prof. Ken Tallman, University of Toronto

Ken is an Associate Professor, Teaching Stream with the Engineering Communication Program at the University of Toronto. Ken's responsibilities include coordinating communication instruction in the Department of Electrical and Computer Engineering and the Department of Materials Science and Engineering. Ken's current research interests focus on better understanding creativity in the engineering design process.

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Engineering programs that provide opportunities for interdisciplinary collaboration, hands-on learning, and creativity are seen to help develop professionals more aware of their world and invested in its improvement. This liberal education can be achieved in multiple ways, through project-based learning, design-focused curricula, and exposure to non-technical disciplines, including the humanities and social sciences (HSS). Programs that successfully incorporate these approaches are often found within smaller, teaching-focused colleges, which can focus resources on creating these opportunities. Notably, Rose-Hulman, Harvey Mudd and Olin College, ranked top three for undergraduate engineering education in the 2015 US News and World's university rankings, have mission statements articulating a student-focused experiential approach to engineering learning, while boasting enrollments of at most 2,200, and a single college focus: engineering and technology.

Achieving this type of holistic education is more challenging for larger multidisciplinary research institutions. The University of Toronto (Uoft) for example, has a student population of over 84,000 spread across three campuses and seventeen different degree granting Faculties (the equivalent of Colleges within the American system). Its Faculty of Applied Science and Engineering (FASE) has an enrollment of close to 5500 undergraduate and 2100 graduate students spread across a further eight departments. The size and complexity of Uoft's administrative model makes a centralized change in teaching philosophy challenging to implement across programs, and without embedded and integrated HSS offerings, students often look to outside Faculties for their complementary studies requirements. In this situation, students face multiple challenges: administratively, they compete with their HSS colleagues for spots in popular courses; culturally, they must adapt to new pedagogical approaches and classroom norms; and practically, they are forced to juggle the hefty demands of an engineering workload with the expectations of an HSS classroom. This panel discusses the small-scale approach developed at UofT to circumvent many of these challenges while ensuring that our students are provided with meaningful opportunities in the liberal arts.

Seven years ago UofT's Engineering Communication Program (ECP) introduced a suite of HSS electives to provide students with an alternative path to a liberal education. Led by faculty members from ECP in their area of specialization, these courses expose students to a new discipline using familiar approaches and content. Today, we offer six such electives-- Representing Science on Stage, Science and Technology in the Popular Media, Language and Power, Engineering and Science in the Arts, Language and Meaning, and The Power of Story--as well as the opportunity to earn a Certificate in Communication. Awarded to students who complete three of these courses, the Certificate reflects the FASE's success in promoting and rewarding student engagement in educational opportunities outside the core curriculum.

In this panel of the Associate Professors, Teaching Stream, and Lecturers who teach these courses, we explain our context at a top-flight research university, before discussing our courses and assessing their success in providing a liberal education for our students. A discussion period

will allow us to share insights into how our approach could be adapted to programs that share characteristics of our institution.

*Note that this abstract is for a panel, and as per LEES guidelines identifying information has not been redacted.