Leadership in Teaching and Learning Fellowship Recipients

Engineering

Shelir Ebrahimi – *Improvement of ENG 1P13 Through Continuous Feedback, Evaluation, and Monitoring of Teaching Team and Students' Experiences*
Co-Investigators: Elizabeth Hassan, Robert Fleisig, Colin McDonald, Hiu Yu

Creativity/innovation is one of the important shared values of ENG 1P13 teaching team. To us this means adapting, changing, and experimenting to continuously improve learning for students. The main objective of this project is creating an assessment platform that provides us with the information to help with implementing new ENG 1P13 course through our shared values and to continuously improve our learning through this 2- semester-course. The experience of this research eventually results in creating an online engagement framework to evaluate the learning process and course structure from different points of views. We want to ensure everyone learns and succeeds regardless of their background, ability levels, and needs. This research will be done through three approaches:

1: Monthly digital newspaper: One of the main learning outcomes of ENG 1P13 is "learning and demonstrating design thinking". Iteration, failure, and learning from this process is an important part of design thinking. Our goal is to teach students to be process-oriented, not result-oriented. To encourage students to do so, a monthly digital newspaper will be allocated to students' experiences (mainly failures and lessons learned) where they can share their learning stories throughout the course. By this means, "share as you learn", we hope that students are encouraged to be more creative and iterate their design more, regardless of the outcomes, and learn from each other. This also provides an opportunity for students to connect with other peers outside their classrooms.

2: Evaluate the overall impact of ENG 1P13: Since Fall20 is the first year of implementing ENG 1P13, it is important to evaluate the effectiveness of this new program in comparison with the previous format. Therefore, it is important to hear from different groups of students to see how successful we are in implementing our goals. In this regard, series of surveys and focus groups will be conducted to get feedback from our current first year students who are the last cohort of the old version of ENG 1, as well as incoming first year students. By this means, we try to gather all the information we can to improve our program to enhance students' learning experiences.

3: Course evaluation by Tas: About 100 Tas are part of the teaching team of ENG 1P13. Although instructors will meet with Tas on a regular basis, IAIs are the main bridge between instructors and TAs. In this large teaching team, getting feedback from all people involved is crucial. Considering the course teaching team as "instructors", "students", "IAIs", and "TAs", instructors evaluate Tas, students evaluate IAIs, IAIs are evaluated only by students and instructors. In this format, Tas are not a big part of the course valuation although they spend lots of time with students and monitor students' progress through the course very closely. In this research, a series of surveys will be developed for course evaluation by Tas. Looking at the effectiveness of a course from a TAs point of view along with teaching evaluations by students is a more holistic approach which yields in interesting information for instructors and curriculum designers.

Vince Leung – *Alignment and Integration of Laboratory Curriculum in Chemical Engineering*
Co-Investigators: Charles de Lannoy & Li Xi

The objective of the proposed research is to measure the impact of alignment and integration of laboratory curriculum in the chemical engineering program on student experience and performance. The project will find creative ways to reduce workload in the laboratory curriculum to alleviate student anxiety and improve their experiential learning experience. Furthermore, vertical alignment of the three laboratory courses will increase cohesion and create a more unified learning experience for the students. Lastly, the project seeks to enhance students' understanding and improve their academic success by integrating fundamental chemical engineering concepts from other courses into the laboratory curriculum

Health Sciences

Emma Apatu – *Transforming the Master of Public Health Program to Meet Workforce Needs*
Co-Investigators: Lawrence Mbuagbaw, Joel Tiller, Sarah Neil-Sztramko

The Master of Public Health (MPH) program is housed in the world-class Department of Health Research Methods, Evidence, and Impact (HEI) and is on the cusp of fostering the ideal of inclusive excellence. Through a series of internal and external stakeholder engagement initiatives in 2018-2019, we have sought to identify next steps for the program's development. With a renewed program vision, **Creating a healthier and more equitable world through evidence-informed public health research, education, and practice,** the program is ready to develop and refine a new set of strategic goals and objectives that will position the MPH program to be more ' responsive' to current and future health challenges. In order to accomplish this, we must continue to engage with public health stakeholders locally and nationally to ensure we are continuing to meet our student's needs in an evolving public health landscape. One identified program gap is an explicit commitment to, and formal learning opportunities related to addressing issues of, health equity. In response, the MPH program is prepared to pilot a research workshop that teaches students how to address health inequality by showing them how to use the PROGRESS+ framework in research. Additionally, the MPH program would like to do a better job of communicating its students' stories and successes, showcasing their diversity and ways in which they are advancing health equity through their research. The overarching aim of this proposal is three-fold: 1) To develop the MPH program's goals and objectives, by engaging stakeholders who are familiar with public health workforce gaps in a Delphi process to formulate these guiding statements; 2) Pilot test a health equity research workshop that teaches students how to use the PROGRESS+ framework in their research; 3) Create and implement a multiplatform marketing plan for the MPH program, in support of advancing the developed goals and objectives, that highlights the stories and diversity of our students through its digital platforms: website and Twitter.

Elzbieta Grodek – *Francophonie et Diversité: Redesigning the French Language Curriculum in Alignment with the Common European Framework of Reference for Languages (CEFR)*

This project is part of a larger initiative led by the Department of French involving the redesign of the French language curriculum in accordance with the principles of the Common European Framework of Reference for languages (CEFR). The CEFR, introduced in 2001 by the Council of Europe, emphasizes plurilingualism and intercultural communication skills in teaching languages, and as such, is particularly relevant to the Canadian social and educational context. It provides a common basis for the creation of language *syllabi*, curriculum guidelines, textbooks, and assessments. The goal of this new curriculum is to enhance students' learning experiences and outcomes and better align the French language program with McMaster's vision and priorities.

The specific project developed within the LTL Fellowship will focus on the modernization of teaching methods by incorporating action-oriented (task-oriented) pedagogy, in line with high-impact innovating pedagogical practices. The project entails the creation of four curricular components (multimedia modules), accompanied by an instructor's guide, which will complement adopted textbooks. Each module will relate to a specific set of topics and will include written documents, video and audio clips, listening comprehension exercises, formative evaluation following the DELF/DALF examination model, review of grammar and a series of tasks. The "task" is a core concept of the new curriculum. Completion of tasks activates knowledge, skills, and previous experiences of learners who, in order to execute the task, need to also resort to language competencies (linguistic, pragmatic, socio-cultural, strategic). As a matter of fact, the task-oriented pedagogy is congruent with the problem-based learning model pioneered at McMaster.

The modules will also foster essential transferable skills that can be shifted from one discipline and work environment to another, the development of which is recommended by the Strategic Mandate Agreement 3. Topics will be related to *francophonie et diversité* and to McMaster priorities, in particular to the commitment of building a Brighter World and advancing human and societal health and well-being. Emphasizing knowledge about francophone countries and the importance of intercultural communication addresses the Faculty of Humanities focus on "examining human culture in the past or present, at home or abroad [that] teaches creativity and empathy [and is] sought by today's employers."

Introduction of the task-oriented approach and alignment of the French language program with the CEFR brings state-of-the-art research in teaching languages to McMaster students of French language and literature. It gives students access to international standards in language education and evaluation, and it enables them to earn universally recognized diplomas awarded by the French Ministry of Education.

The redesigned curriculum will appeal to the incoming undergraduate students familiar with the CEFR adopted by their elementary and secondary schools in the revised FSL curriculum from the Ontario Ministry of Education (2013-2014). By harmonizing the French language program across the undergraduate curriculum, reassessing the level of expectations at every stage of instruction,

and modernizing the teaching approach, we intend to improve student's linguistic and intercultural training and encourage life-long learning.

Sarrah Lal – *Building Capacity for Online Case-Based Education: An Approach for Improving Learner Outcomes with Virtual PBL*

As a relatively resource-intensive pedagogical approach used in undergraduate medical education, problem-based learning (PBL) serves as a precursor to clinical immersion. While this educational method has been highly impactful within medical education, its adoption remains low in non-clinical areas. Given success of the PBL approach and increasing interest in virtual education, this project will explore the potential of online PBL education for non-clinical areas. The primary focus of this work will be to assess the effectiveness of PBL for teaching topics in health innovation and entrepreneurship. Expanding the impact of this work to train learners in higher-order problem-solving skills before their application is required (e.g. during thesis or capstone projects, internships), a secondary focus will be to increase capacity for online PBL education across the university through development of an educator-focused training program.

Science

Katie Moisse – *Evaluating Science Communication Training Across the Curriculum*
Co-Investigator: Sarah Symons

Scientists have a problem: Science literacy is declining, and skepticism of science is growing. Remarkably, 45% of people only trust science when it aligns with their personal beliefs (*3M State of Science Index Survey | Explore the Data & Results*, n.d.). People want to learn about science, but many see scientists as elitist and unapproachable. Indeed, 88% of people feel scientists should make their work more accessible and relatable (Ibid.) It is clear that scientists need to do a better job of communicating their work and its importance. To do this effectively, scientists need access to evidence-based training (Brownell et al., 2013). There is also a need for individuals with science communication training to work in sectors outside of research, from advocacy and education to journalism and public policy (McKinnon et al., 2014). Unfortunately, many students are unaware of these opportunities until late in their academic careers.

To address these needs and opportunities, the School of Interdisciplinary Science has embedded science communication training into many of its undergraduate offerings. In 2018, the School began to offer level 3 and 4 courses focused specifically on science communication for students in the Honours Life Sciences Program — the largest undergraduate program in the Faculty of Science. Students taking these courses practice communicating scientific concepts and findings for different audiences and purposes, using various media. They also explore science communication research, a growing field that aims to identify barriers to science literacy and opportunities to engage underserved audiences.

In September 2019, we expanded our science communication offerings with SCICOMM 2A03: Foundations is Science Communication. This course is open to all students in level 2 or higher, regardless of faculty or program. We also expanded access to our level 3 science communication course, opening it up to non-science students. We are in the process of proposing an Undergraduate Certificate in Science Communication, as well as a Masters in Science Communication. The Masters will be an interdisciplinary program that provides theory, practical skills and meaningful work experience for a small cohort of graduate applicants from diverse backgrounds. A subset of the curriculum will be open to graduate students in Science, Technology, Engineering and Math (STEM) disciplines.

The rapid evolution of our science communication offerings necessitates a thorough, objective and interdisciplinary review to ensure training is suitably scaffolded across levels and aligns with industry standards in various sectors. We propose this Leadership in Teaching and Learning project to assess our existing science communication courses and our proposed new offerings. We will use the funds to ensure our instruction is evidence-based and meets the highest standards of inclusivity. We will ensure our learning objectives and assessments evolve across levels and help prepare our students for a range of careers. We will collect feedback from students and use it to refine and enhance the learning experience, as well as identify key components of science communication training that should be accessible to all students, regardless of their program or level of study.

Social Science

Mat Savelli – *Building a Direct Entry Cohort in Health & Society*

The Department of Health, Aging, and Society recently launched a direct-entry program that allows students to join Health & Society I immediately from secondary school, rather than the typical route of entering Social Science I and applying to enter the Department's various degree programs at Level II or above (Health & Society, Aging & Society, and the combined degree in Health, Aging, and Society). As part of this process, we will be embarking on a series of cohort-building activities in the hopes of deepening students' connection to the program and one another.

Central to our cohort building process is that, beginning in the 2020-2021 academic year, students making use of the direct-entry option to enter Health & Society I will be required to complete a different set of course and programming requirements compared to those who enter the program at Level II or above. Rather than our standard *Introduction to Health & Society* course (HLTH AGE 1AA3, typical enrollment: 250 students per term), these students will be enrolled in a special inquiry-based course that is closed to other students, *Inquiry: Introduction to Health and Society* (HLTH AGE 1ZZ3; projected enrollment: 60 students). Unlike Social Science I students, direct-entry students are also required to enroll in HLTH AGE 1CC3 (*Introduction to Mental Health and Illness*). Beyond these two separate course requirements, they will be offered exclusive programming aimed at both deepening their connection to program, enhancing their learning, and improving their sense of well-being.

The proposed project seeks to explore the impact of this substantial program change by investigating its impact on three key areas: 1) student retention, 2) student learning & academic outcomes, and 3) student perception of personal well-being. Drawing and building upon the expertise of a student research partner, the project will make use of a range of research methods, both qualitative (focus groups and interviews) and quantitative (anonymized surveys, transcript reviews), to investigate the extent to which the program change impacts these three key areas.

The results of this research will prove significant both to the Department as well as the Faculty of Social Sciences more broadly. In light of this substantial program change, this project would be integral to guiding the Department through its forthcoming IQAP process. Moreover, it will provide the Faculty with a variety of data that speak to the experience of students entering via on of the Faculty's two direct-entry programs, most notably in relation to retention and academic outcomes. Its emphasis on student well-being, meanwhile, will help to guide the Department in its future efforts to engage with students across our programs.

At the conclusion of the project, the student partner and the faculty member will submit the results of our direct-entry cohort building research for publication in *Teaching in Higher Education*. Additionally, we will prepare a report for the Faculty of Social Sciences, hold a consultation session open to all McMaster faculties, and seek to present our work at the annual MacPherson Teaching and Learning conference.