
Teaching Strategies for Increasing Diversity in Math
Stratégies pédagogiques pour la diversifications en mathématiques
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AMENDA CHOW, York University
Mathematically-Inspired Experiments in Math Courses

In comparison to science disciplines such as biology, chemistry and physics, undergraduate mathematics courses often do not have a laboratory component to complement their lectures. I am developing an experimental math space at York University that aims to fill this gap. Courses that use this space have their students working on mathematically-inspired experiments that re-enforce the ideas taught in lectures. Some experiments from this space will be demonstrated during the presentation. Link: <https://amchow.info.yorku.ca/experimental-math-space/>

LAUREN DEDIEU, University of Calgary
Collaborative Learning in Tertiary Mathematics Classrooms

Collaborative learning is a type of active learning where students work together in groups to complete a task or learn something new. Small-group learning can be very beneficial as it helps to boost achievement, persistence, and attitudes among undergraduate students. Collaborative learning has also been shown to boost self-esteem and improve retention rates of students in underrepresented groups. In this talk, I will discuss my experiences with incorporating collaborative learning into my first-year calculus, second-year linear algebra, and upper-division abstract algebra courses. I will describe the activities I have used, my motivation for using them, and students' reactions to them.

ED DOOLITTLE, First Nations University

SHAY FUCHS, University of Toronto Mississauga
Making Active Learning in Large Enrollment Classes Work

There is significant evidence that incorporating active learning in higher education has positive effects on student learning and achievements. Active learning can also reduce barriers faced by underrepresented student groups, leading to increased diversity in our classrooms. However, implementing active learning strategies in a large enrollment class, with multiple sections, instructors and teaching assistants, requires careful planning and preparation. In my talk I will describe how we successfully implemented active learning techniques in a large Calculus for Life Sciences course at the University of Toronto Mississauga. I will show a few concrete examples and discuss some of the challenges we faced.

KSENIYA GARASCHUK, University of the Fraser Valley
Mathematical storytelling

Every classroom is full of individuals, each a unique blend of national, ethnic, gendered, educational and generational cultures. Just about the only thing they have in common, as all people do, is that they learn best from stories. In this talk, I will describe how I engage in mathematical storywork. I will share several concrete examples of mathematical stories I have developed for my Calculus for Life Sciences courses, how I structure and practice my storytelling and what effects it has had on my students' learning.

GAVIN LAROSE, University of Michigan
Systemic Strategies for Increasing Inclusive Teaching

The implementation of teaching strategies in a large department with many students and instructors requires the development of support structures that provide resources and instructional training that are able to establish that the baseline for instruction is inclusive. The manners in which this occurs may be classroom focused, by implementing strategies that encourage and support students from groups traditionally underrepresented in mathematics; course focused, by using more inclusive assessment and curricula; and instructor focused, by building instructors' awareness, understanding, and skills to teach in a more inclusive manner. In this talk we describe the work that we are doing at the University of Michigan to build and sustain inclusive teaching through active-learning classrooms and instructor training, to change our assessment and curriculum to include more mastery assessment and a focus on diversity, and to build a community of instructors in the Department with the background and knowledge to effectively teach inclusively.

FOK-SHUEN LEUNG, University of British Columbia
The dog and the tail

In this talk, we will explore two courses I taught recently: a large introductory differential calculus course for students in the Faculty of Science, and a small terminal mathematics course for Indigenous students in the Faculty of Education. What are the features that promote accessibility and diversity in these courses? What principles do we hold, and compromises do we make, in setting them up?

REBECCA NOONAN HEALE, University of Utah
The Impact of Course Design on Students' Mathematics Pathway

Increasing diversity in mathematics will require redesigning introductory courses to activate students' passions, support students' in creating a positive mathematical identity, and launch students to success in future courses. In this talk we will discuss general design elements that push introductory courses toward accomplishing these important goals through the case study of Intermediate Algebra course at the University of Utah. The course was redesigned by introducing a problem based curriculum supported by labs and providing better support for the instructors. In this talk we will share the findings about the impact of the redesign on short- and long-term student achievement. We further discuss the student demographics in the course, and what impact was made on their future course selection and performance.

XINLI WANG, University of Toronto
EduTech Tools for Mathematics Teaching

Education technology tools have been around for decades and research has shown the effective use of them can enhance learners' experience and deepen their conceptual understandings. In this presentation, I will share four EduTech tools that I have used in my teaching. They serve different purposes: GeoGebra was introduced to my linear algebra class to improve student's engagement; Padlet is used to collect student's feedback and track their progress, which allows me to clarify their misunderstandings on a more timely manner; I also use Zoom online meetings to conduct my virtual office hours so students can save on commute in terms of time and money and still get their doubts clarified; an in-class polling tool called Mentimeter will also be discussed during the talk: this is a great tool if you want to find out students' conceptual understanding of a core concept in class. I will share examples of using these tools with the audience.

CHESTER WEATHERBY, Wilfrid Laurier University
Informed pedagogical choices: surveying the Canadian (math) landscape and altering our teaching

Recently there has been concern about access and success for underrepresented groups in Science and Math-based programs, including gender differences in these disciplines. Being aware of the diversity of the student population may influence what

courses we offer, and also how we teach them. In this talk we will discuss the results of an (online) survey of the what Canadian institutions are doing to support students, including increasing diversity and representation. Additionally, qualitative and quantitative data will be presented in analyzing how the method of teaching with partially populated notes in a first-year Calculus class has an observed affect on different gender populations.