
Indigenization and Reconciliation in Mathematics
Autochtonisation et réconciliation en mathématiques
(Org: **Douglas Farenick** (Regina) and/et **Keith Taylor** (Dalhousie))

MELANIA ALVAREZ, UBC Department of Mathematics/PIMS
Engaging Indigenous communities through math outreach

I will talk about my experiences working with several Indigenous communities and will describe outreach programs specifically designed and implemented to support Indigenous students' mathematics education.

DARJA BARR, University of Manitoba
The Impact of Working Together

This talk will highlight some of the programs run at the University of Manitoba (Math Mania, Path2Math, The PIMS Summer Academy) that focus on supporting Indigenous students' post-secondary mathematics journey. Data on these students' success in mathematics (and other) courses and the impact on various programs throughout the university will be shared, as well as some ideas on how to get started for those who would like to begin doing Indigenous outreach.

EDWARD DOOLITTLE, First Nations University of Canada

DOUG FARENICK, University of Regina
Acts of Reconciliation – A Scientist's Experience

In this lecture I will discuss some concrete measures and personal experiences, as a mathematician and a science-faculty dean, in meaningfully addressing the TRC's Calls to Action.

BRIAN FORREST, University of Waterloo
Expanding Mathematics Educational Opportunities for Indigenous Teachers

In 2010 the Faculty of Mathematics launched the Master of Mathematics for Teachers (MMT) program. This is a fully online professional Master degree targeted at in-service teachers. In addition to providing a deeper understanding of mathematical foundations relating to core secondary school curricula, MMT students are also exposed to areas of applications of modern mathematics. The program currently has an enrolment of more than 200 teachers around the world.

As part its commitment to reconciliation the Faculty of Mathematics will offer up to 15 full scholarships for the MMT to indigenous teachers wanting to expand their subject matter knowledge base. Our hope is that through this program we can begin to help build a national cohort of leaders in mathematics education.

In this talk I will give a brief outline of the program and our vision with respect to its role in Indigenization and Reconciliation in Mathematics.

VESELIN JUNGIC, Simon Fraser University
Changing Lives or Scratching the Surface: Five Years of the SFU Academic Summer Camp for Aboriginal Students

In this presentation I will share with the CMS community my experience gained through five years, 2014 – 2018, of running the Simon Fraser University Academic Summer Camp for Aboriginal High School Students. I will talk about the goals and

objectives of this initiative and its history. Details about the camp components, including staffing, budgeting, recruiting, and scheduling will be provided. In addition, I will highlight testimonials by students, parents, and teachers.

KATHY NOLAN, University of Regina

A Reframing of Mathematics through Critical and Culturally Responsive Pedagogies

In responding to the TRC's call to develop culturally appropriate curricula and to educate new teachers in these curricula, the research described in this presentation asks the question of how school mathematics and mathematics teacher education might be reframed through critical and culturally responsive pedagogies. In doing so, it seeks to challenge that which (re)produces injustices with regard to participation in mathematics. The research begins from the premise that classroom pedagogies impact student learning in significant ways, thus making teachers' pedagogical choices a social justice issue. Research suggests, however, that, with increased forms of educational accountability, pedagogies more often seek to repress and regulate, rather than challenge and disrupt injustices. Drawing on a three-dimensional approach to social justice and the concept of participatory parity, this presentation introduces a critique of dominant school mathematics paradigms through a new (disruptive) form of culturally responsive pedagogy (CRdP). In essence, the research claims that reframing school mathematics through CRdP is a first step toward decolonizing it— toward noticeably disrupting the relations and functions of school mathematics.

GALE RUSSELL, University of Regina

Truth before Reconciliation in Mathematics and Mathematics Education: An Invitation to Action

This session considers where I am in my journey to understand and implement decolonizing practices in thinking, doing, and teaching mathematics. Through my mathematics and mathematics education academic lenses, the Truth and Reconciliation Commission of Canada: Calls to Action (2015) often seems to belong to someone else, that it is their problem, not mine – after all, mathematics, being abstract and rational, should be immune to colonialism, hegemony, and oppression. One might even ask, other than dropout rates, what else is there to reconcile from a mathematics or school mathematics perspective? Are treaty-based activities, such as the calculation and comparison of reserve and non-reserve population densities, leading to meaningful reconciliation or are they potentially destructive acts of tokenism? Land-based learning is often promoted and supported by Indigenous scholars, as well as embraced by teachers, but does only pedagogy need to be questioned and changed in the seeking of mathematics-based reconciliation? These questions have ruminated in, even dominated, my thinking for some time, until two encounters, a comment from a colleague and a title of an opinion piece in Maclean's, challenged me to scrutinize my truths before attempting reconciliation. Both encounters asked, that as Canadians, we examine what we hold to be true from a perspective beyond ourselves, and challenge the power and privilege that those truths are given. Accepting this challenge, I now ask "what mathematical and mathematics education truth(s) need to be challenged and disrupted so that reconciliation can be enacted?" This is the question grounding this session.

ARZU SARDARLI, First Nations University of Canada

Use of Indigenous elements in teaching introductory Statistics courses

Introductory level Statistics courses, "Elementary Statistics for Applications" (STAT 100) and "Introductory Statistics" (STAT 160) have been taught within a large number of programs offered by University of Regina and First Nations University of Canada. These courses cover the introductory topics of Statistics, such as The Empirical Rule, basics of probability, correlation and simple linear regression. Within the presented project, we have developed Indigenous knowledge-based examples for the following topics of Statistics, (i) Empirical Research, (ii) Correlation and Linear Regression Analysis, (iii) Probability. The project has been carried out in three phases: Phase I. Work with Elders. Phase II. Data analysis Phase III. Developing examples Within the Phase I, we interviewed two Elders. They told us about the Indigenous way of observation of environmental processes and making forecasts. The Knowledge Keepers were interviewed about the Indigenous Games. They provided materials about the Indigenous Games and demonstrated some elements of games. Within the Phase II, we analyzed the interviews and developed the list of examples, which could be used in Statistics classes. Within the Phase III, we developed examples on empirical studies, correlation and probability containing Indigenous elements. Two undergraduate students were trained and participated

in this project. The project was supported by University of Regina within the President's Teaching and Learning Scholars grant.

KEITH TAYLOR, Dalhousie University

What can the CMS do about reconciliation?

I will provide some of my own thoughts, based on experiences at two institutions, on possible ways in which the CMS can play a role in the reconciliation process in Canada.