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**Educational Resources in Mathematics**  
**Ressources éducatives en mathématiques**

(Org: **Kseniya Garaschuk** (University of the Fraser Valley), **Andrew Hare** (Saint Mary's University) and/et **Petra Menz** (Simon Fraser University))

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**SEAN CHORNEY**, Simon Fraser University

*Orchestrating Desmos: Rethinking thinking about digital technology*

Desmos is an online web-based calculator that has calculating, graphing and geometric functionalities. It has become popular and, in many jurisdictions, it has replaced handheld graphing calculators. This however is not simply a substitution of tools, the functionality and resources within Desmos goes far beyond any previous graphing tool. The resulting pedagogy, management and technico-mathematical development is not at all obvious or simple. In this talk, I draw on Ruthven's structuring features framework to highlight how digital technology prompts a fundamental restructuring and rethinking of mathematical practice and learning.

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**LEAH EDELSTEIN-KESHET**, University of British Columbia

*Developing an Open calculus book for Life Sciences*

There are many kinds of calculus books available on the market, but few that highlight the important connections of the life-sciences to mathematics. Here I will describe efforts at developing such material over many years, while teaching first-year calculus (Math 102/103) at the University of British Columbia. I will highlight the influences and motivation for developing this material, and mention some of the challenges along the way. The book is available at <http://www.math.ubc.ca/keshet/OpenBook.pdf>. (Latex files are also available licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.)

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**KSENIYA GARASCHUK**, University of the Fraser Valley

*Adoption of WebWork: a Department initiative*

This year, University of Fraser Valley's Department of Mathematics and Statistics made a switch from the publisher-provided online homework systems to an open access and open source system called WebWork. The project involved 11 course sections, 6 instructors and over 400 enrolled students. In this talk, I will describe the system and the process of its adoption in our department. I will discuss the technical and human aspects of this project, specifically our approach to adopting and customizing the system to our needs.

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**ANDREW HARE**, Saint Mary's University

*Two Textbooks in the Course: Gesture and Language*

A course of lectures in introductory abstract algebra in which the professor used two textbooks was studied. One book, usually referred to as "the book" in the lectures, was the official formal textbook of the course; the other, a more visual approach to the subject, was a supplementary text. The language and gestures of the professor were analyzed, using a microethnographic approach inspired by work in embodied communication by anthropologist Jürgen Streeck. Particular attention was paid to how the practising mathematician, expert in their craft, with voice and hands, responds to these textual materials, rewriting them.

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**RICHARD HOSHINO, BEN KLAFF & MICHAEL LAMOUREUX**, Pacific Institute of Mathematical Sciences

*Callisto: an educational resource for data analytics and computational thinking*

The ability to process information in an analytical way will be in high demand as students enter the digitally skilled future.

Because of this, mathematics educators of all levels are now feeling the pressure to incorporate more coding, computational thinking and data analytics into their curricula.

Callysto (<https://callysto.ca>) is a university-level analytics platform, capable of big data processing, data visualizations, math equations, and text formatting. This educational resource is cost-free, easy to use, and only needs a web browser to operate.

In this interactive presentation, we'll provide demonstrations of the Callysto technology (known as a Jupyter Notebook) and share stories of Callysto being used to reach undergraduate students, high school students, and high school teachers.

We look forward to explaining how Callysto enables us to "go broad" by discussing how this web-based platform can reach students of all levels, and "go narrow" by providing specific open access resources to the CMS community.

Callysto is a joint project of Cybera and the Pacific Institute for the Mathematical Sciences, funded through the CanCode initiative.

This talk will be co-presented with Ben Klaff and Michael Lamoureux from the Pacific Institute of Mathematical Sciences.

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**NICOLA MULBERRY**, Simon Fraser University  
*Experiences Creating and Teaching from Open Calculus Material*

We were recently given the opportunity to adopt and then adapt an existing OER textbook for the social sciences calculus course stream at Simon Fraser University. The task was to create open resources including course notes, lecture notes, and student notes as well as assignment sets with complete solutions for both differential and integral courses. Our goal is to enhance student experience by: (1) translating mathematical material for an applied audience, and (2) providing high-quality, free content. The educational material created will be showcased, and the particular challenges we encountered during the adaptation process will be highlighted. We will further discuss experiences with using the material from the viewpoint of an instructor, a teaching assistant, and the students.

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**CYNTHIA NICOL**, University of British Columbia  
*Educational Resources for Learning to Teach Mathematics*

In this session I focus on resources that support parents, teacher candidates, teachers, and community members in learning to teach mathematics so that students can experience its power and beauty. Resources considered include learning mathematics through investigating student's mathematical reasoning, exploring the M in STEM, and resources for motivating critical mathematics education that include attention to teaching mathematics for social justice and cultural responsiveness.

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**MIKE PRUNER**, North Vancouver School District  
*Resources in a High School Mathematics Classroom*

I will share the resources that I use regularly to support teaching and learning in a grades 8-12 mathematics classroom. Some of these resources involve computer based applications to support learning and to create online communities of learning. Other resources are more low tech, but still quite innovative as they help students to take risks, collaborate, and engage in mathematical tasks.

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**ELAINE SIMMT**, University of Alberta  
*An abundance of resources*

As a mathematics education professor I routinely encounter the mathematics educator's quest for resources. That request has come from a variety of colleagues in many different forms: the preservice teacher looking for resources; the rural Tanzanian teacher whose classroom is under-resourced; the graduate student who needs a resource for a study; the high school teacher looking for a set of resources to teach a particular topic; the district math consultant looking for resources to offer in professional development sessions. In this session I will suggest that there is an abundance of resources—the challenge is to identify them and put them to good use.