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## Determination and Resilience in Mathematics

(Org: **Carmen Bruni** (University of Waterloo), **Hannah Keese** (University of British Columbia) and/et **Vanessa Radzimski** (University of the Fraser Valley))

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**CINDY BLOIS**, UofT

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**JEREMY CHIU**, Langara College / Simon Fraser University  
*What inhibits resilience, and what can we do about it?*

In this roundhouse discussion, I will facilitate participants to brainstorm and share our thoughts about challenges that undergraduate students face. We will then brainstorm and share strategies of what we can do about these adversities to help students be resilient. The session is gamified to promote active learning.

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**DANIELLE COX**, Mount Saint Vincent University  
*Reflective Practices & Interpreting Student Errors*

Assignments provide learning opportunities and feedback on comprehension of material, but students do not always see them in that light. During a small study in first year calculus classes at Mount Saint Vincent University we implemented reflective practices and obtained data regarding their thoughts on whether this practice assisted them in their understanding of course material. The results of this study will be shared and discussed. We will also look at common errors seen in introductory math classes and discuss how we can interpret these errors to understand how we can best support our students in their learning. This is joint work with Dr. Karyn McLellan (MSVU).

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**LINDSAY DANIELS**, The University of British Columbia  
*Building resilience through self-affirmation and reflection exercises*

Throughout their university career, there are often non-content specific learning outcomes that students master to aid in their learning. Two such outcomes are determination and resilience, which are key skills to becoming lifelong learners. With growing class sizes, it can often be challenging to implement targeted activities to help advance these non-content specific learning objectives in student cohorts. One such tool is the inclusion of self-affirmation interventions, which have been shown to improve problem-solving and academic outcomes, and to reduce achievement gaps (Jordt et al). In this talk, we explore how self-affirmation and reflection activities can be implemented before summative assessments in both large and small classrooms.

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**BRIAN FORREST**, University of Waterloo  
*It's ok to be wrong!!! Really!*

One of the biggest obstacles for many students in learning mathematics is the fear of being "wrong". Many of our students are conditioned to believe that the sole goal in working a mathematics problem is to get "the right answer". Anything less is a failure. In this talk I will try to illustrate how I address this issue from day one in my Calculus classes and in general.

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**PETER HARRINGTON**, University of British Columbia  
*Mastery grading and its effect on student resilience and determination*

Mastery grading is an approach to grading that involves three key features: a clear list of learning objectives, assessment of mastery of those learning objectives instead of points or partial credit, and multiple attempts for students to demonstrate

mastery. In this talk I will discuss my implementation of mastery grading in a differential equations course, how mastery grading might help build student resilience, and how my students surprised me with their determination to succeed.

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**JUDY LARSEN**, UFV

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**JOANNA NIEZEN**, Simon Fraser University  
*Assignment Resubmission and Resilience*

The process of writing a proof is naturally iterative – something which tends to be hidden when proofs are presented in class. When first studying how to prove things, students must learn how to be gritty in addition to the logic they are implementing. In this talk, I will discuss how students in an introductory proofs class were graded and how resubmitting assignments affected student behaviour and attitude. Student survey results will be discussed.

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**DIANA SKRZYDLO**, University of Waterloo  
*Resilience Through Reflection*

Reflective activities allow students to see their own growth, improve, and build their metacognition, as well as give them the tools to develop resilience. In this talk I will discuss several ways I incorporate reflection in classes from second year all the way to graduate level, and the impact on student learning.

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**ASMITA SODHI**, University of Victoria  
*Ms. Frizzle Teaches Calculus*

Of many influential teachers in my life, one is undoubtedly Ms. Valerie Frizzle, the teacher in the Magic School Bus series who encourages her third-grade class to “Take chances, make mistakes, and get messy!”. This is something we hope our students do when looking for a solution to a problem: try something, maybe get stuck, and learn from the experience. However, if all they see is perfectly modelled solutions, it will be hard for students to recognize when a strategy is not working. In this talk, I’ll share ways in which I’ve tried to foster a culture of taking chances, making mistakes, and getting messy in my classroom when teaching integration techniques.