Mathematics & Mathematics Education Seminar

6 FEBRUARY 2026
FRIDAY – 2.30 to 3.30 pm

MATH JOURNAL ROOM NIE7-03-16

Mathematical Creativity as a Developmental Construct: Pedagogy, Measurement, and Agency in Contemporary Classrooms

Mathematical creativity is widely regarded as a key outcome of mathematics education, yet how it develops over time, how pedagogies can support it, and how it can be measured consistently remain insufficiently understood. In this research seminar, I present a program of empirical and theoretical work that investigates how mathematical creativity can be fostered, developed, and measured. Drawing on multi-year longitudinal data, I first demonstrate how the sustained use of student-centered pedagogies shapes developmental trajectories in students' mathematical creativity and creative agency, beyond short-term intervention effects. I then built on this work by exploring how generative-AI pedagogical agents can be designed to scaffold students' creative mathematical thinking and metacognitive engagement. Finally, I synthesize these empirical findings through two cross-cutting theoretical contributions: a reconceptualization of student-centeredness in mathematics classroom beyond Western frameworks, and a critical re-appraisal of how mathematical creativity should be measured. Together, this body of work advances a more nuanced and pedagogically grounded understanding of mathematical creativity, with implications for mathematics classroom instruction, teacher education, educational policy, and future research.

Speaker's Biography

Dr. Ying Zhang holds a PhD and an MPhil in Mathematics Education from the University of Cambridge, and an Honours Bachelor of Science in Mathematics from the University of Toronto. She is a postdoctoral researcher working with Professor Jon Star at the Harvard Graduate School of Education. Her research interests focus on mathematical pedagogy and mathematical creativity, with particular attention to how creativity in mathematics can be fostered, developed, and measured. She serves as a peer reviewer for leading journals and international conferences in mathematics education, including the *International Journal of Science and Mathematics Education* and the *International Group for the Psychology of Mathematics Education*.

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