



Mathematics & Mathematics Education Seminar



21 JANUARY 2025 (TUE)
3:00 pm to 4:00 pm



MATH JOURNAL ROOM
NIE7-03-16

From Consumers to Decision-Makers: Fostering Mathematical Autonomy in the Era of genAI

The emergence of generative AI (genAI) since late 2022 has been transforming how we teach and learn mathematics. In this talk, I present my research examining how undergraduate students interact with genAI during mathematical proof construction, emphasizing the importance of fostering student mathematical autonomy.

As mathematics educators face this technological shift, we must consider how to guide students toward the judicious use of AI tools. A critical challenge is preventing overreliance on genAI while ensuring students develop robust mathematical reasoning capabilities. Understanding how students incorporate AI into their mathematical practices and maintain their role as active learners, rather than passive consumers of AI-generated content, is increasingly important.

To address these challenges, I introduce the Students' Interactive Proving Experience with AI (SIPE-AI) framework, which maps the processes through which students engage with AI during mathematical reasoning tasks. This framework, combined with a conceptualization of mathematical autonomy, highlights key moments when students take ownership of their reasoning process.

By identifying these critical moments, this work provides actionable guidance for designing mathematical tasks and teaching strategies that integrate AI meaningfully while supporting student mathematical autonomous actions. It also calls for further research into how educators can help students develop the independence and skills needed to succeed in an AI-enhanced educational environment.



Dr Jihye Hwang

Speaker's Biography

Dr. Jihye Hwang is a mathematics educator with a Ph.D. in Mathematics Education and an M.S. in Mathematics from Michigan State University. Her research focuses on equitable learning environments, multilingual students' experiences, and the integration of generative AI in mathematics education. She has teaching experience across undergraduate and graduate levels and has published in leading journals such as *ZDM – Mathematics Education*.