

Improving Programming Skills and Mathematical Problem Solving in STEM Education

Date: 06 December 2024 (Fri)

Time: 15:00-16:30

Venue: E4-G053, Anthony Lau Building

Language: English

Registration: Online Registration (<https://go.um.edu.mo/j2pxvpx6> or )

Enquiries: Mr. Alex CHEN (Email: fed_event@um.edu.mo / Tel: 8822-4575)

Speaker:

Prof. Oi-Lam NG is an Associate Professor at the Department of Curriculum and Instruction at The Chinese University of Hong Kong. She began her career as a high-school mathematics teacher in Vancouver, Canada, and completed her a PhD in Mathematics Education at Simon Fraser University, Canada. Prof. Ng's research interests address the new ways of doing, communicating, and representing school mathematics as afforded by technology innovations, including exploring technology-enhanced teaching and learning in mathematics classrooms, constructionist learning and computational thinking education, and multimodality in mathematics discourse. Particularly, she is interested in advancing a Papert-inspired conception of "Learning as Making," and the new opportunities it entails for engaging learners in constructionist practices with emergent technologies. Her research has been published in top-tier journals in mathematics education, STEM education and educational technology. She serves in the Editorial Board of several journals, including *Educational Studies in Mathematics*, *Journal of Mathematical Behavior*, and *Journal of Educational Computing Research*.

Abstract:

In this seminar, she will explore the critical role of computational thinking (CT) in mathematics education and its implications for teaching practice. The discussion will unfold across four key points: defining CT, understanding its applications beyond traditional paper-and-pencil methods, integrating CT with mathematics instruction, and innovating teaching practices to facilitate this integration. She will highlight how CT serves as a boundary object that bridges

mathematics and computer programming, drawing on my previously developed conception of “Learning as Making”. It offers a big-picture view of how the use of computers can fundamentally enrich mathematical thinking, teaching, and learning, with a particular emphasis on problem-solving and STEM integration. This seminar aims to offer a sustainable approach for researchers and educators to innovate their practices to effectively integrate CT into mathematics education.