Mathematics & Mathematics Education Seminar

Date: 6 October 2023
Time: 1430 – 1530
Venue: MME Journal Room

An Institute of NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

Learning to solve challenging percentage-change problems: A cross-cultural study from a cognitive load perspective.

Seminar Abstract:
In an experiment, secondary students from Australia and Malaysia (n D 130) were randomly assigned to one of three approaches (equation, unitary, unitary-pictorial) to learn how to solve challenging percentage-change problems. In line with the differential types of cognitive load associated with the three approaches, the unitary-approach group outperformed both the unitary group and the equation group across Australia and Malaysia. In support of cross-cultural findings, the Malaysian students outperformed the Australian students for the equation approach (i.e., algebra approach) but not the unitary approach nor the unitary-pictorial approach. The Australian students, in contrast, learned better with the unitary-pictorial approach. This study, overall, reveals the "gap" between the Asian and Western countries in the use of problem solving approaches across different cultural settings.

Biography:

Dr Bing H. Ngu works as an academic in mathematics education at the University of New England, Australia. She has over 15 years of mathematics and science teaching experience in secondary schools in Australia as well as abroad. Her current research is mainly shaped by her previous mathematics teaching experience. Specifically, based on cognitive load theory, learning by analogy theory and learning by comparison, she has conducted experimental studies with secondary students to enhance mathematics learning (e.g., linear equations). She has also conducted cross-cultural mathematics education research with secondary students between Asian countries and Australia from a cognitive load perspective. Her research has made a strong impact on pedagogical approaches, informing the development of various pre-service mathematics teacher education units that she currently teaches at the University of New England.