



15th International Congress on
Mathematical Education

7-14 July 2024 • ICC Sydney, Australia
Come and be counted

Topic Study Group 3.8: The role and the use of technology in the teaching and learning of mathematics at upper secondary and tertiary level

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Team details

Co-Chairs

Alison Clark-Wilson (University College London, United Kingdom; a.clark-wilson@ucl.ac.uk) Allen Leung (Hong Kong Baptist University, Hong Kong; aylleung@hkbu.edu.hk)

Members

Eleonora Faggiano (University of Bari Aldo Moro, Italy)

Seyum Getenet (University of Southern Queensland, Australia)

Gisela Montiel (Centre for Research and Advanced Studies (Cinvestav-IPN), México)

Karen Hollebrands (North Carolina State University, United States)

IPC Liaison

Cristina Sabena (Università degli Studi di Torino, Italy)

Overview

The ICME-15 Topic Study Group 3.8 “The role and the use of technology in the teaching and learning of mathematics at upper secondary and tertiary level” is focused on the design, implementation and evaluation of technology, to include tangible resources, as relevant to this level of education. It aims to highlight the related epistemological, theoretical, and methodological ideas and methods. TSG3.8 considers these ideas and methods in the context of existing and emerging technologies and pedagogies, which now include the consideration of real, virtual and hybrid learning spaces. It also





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addresses the implications of technology use on current and future mathematics curricula, and their related assessment policies and practices.

Areas of interest

When submitting a paper or proposal for a poster, authors should indicate which of these themes relates best to their study, to inform the organisation of the TSG3.8 sessions.

Epistemological, theoretical and methodological ideas that help shape or explain the integration of technology in mathematics teaching and learning from a range of different perspectives (cognitive, multimodal, affective, psychological, social etc.)

- The theories and frameworks that support study of the human interactions within technology-mediated learning environments.
- Which research methodologies and methods support research on technology use within teaching and learning processes.

The role of emerging devices (wearables, smartphones, graphics tablets and haptic devices) and technologies (artificially intelligent learning platforms, extended, virtual and augmented reality environments)

- How they transform the teaching and learning of mathematics, to include the evolution of school mathematics curricula and its assessment.
- How they mediate new forms of access to mathematics.

Interrelations between students' wider uses of technology and the mathematics taught at this age level

- How technology is used to mediate connections between mathematical ideas experienced within the sciences (including computing), humanities and the creative arts.
- How students' technology use within mathematics teaching and learning interrelates with their everyday experiences of technology.





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The impact of technology on current and future mathematics curricula (and related assessment) for all students at this age level

- How technology enables diverse populations of historically marginalised students to access and enjoy learning mathematics.
- How technology affects the design and implementation of assessment in mathematics, and its implications.
- How technology supports the development of mathematics curricula that take account of cross disciplinary themes and global issues relevant to the interests of this age level.

Teaching and teachers' professional learning

- The new challenges and opportunities for teachers to reflect on their practices with, and through, the use of technology.
- How to encourage and support teachers to integrate (and sustain the use of) suitable technologies in their practice.
- How relevant research results inform the design, and content of, teachers' professional learning initiatives.
- Researchers' roles within the organisation of teacher professional learning communities.
- How teachers blend different technologies, and learning spaces, in their design of students' mathematical learning experiences.
- The tensions experienced by teachers as they integrate new technologies within the constraints and opportunities in national curricula.

These themes will be addressed within the context of teaching and learning mathematics for learners at upper secondary and tertiary levels, whilst acknowledging the wider mathematical, pedagogical and technological progressions within any individual learner's experience.

How to make a submission to this Topic Study Group

Submissions for Topic Study Group Papers and proposals for Posters open 28 April 2023 via the official ICME-15 website, icme15.org. The website also contains a timeline of dates for the activity of the Topic Study Groups in the lead up to the Congress.

For questions about this TSG, please contact the Co-Chairs using the email addresses provided.

