# Topic Study Group 3.17: E-Teaching and Learning/Blended Teaching and Learning

Strand A

## Team details*

### Co-Chairs

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## Overview

In TSG 3.17 we build on current and emerging research in distance education modalities mediated by digital technologies, namely, electronically ("e") teaching and learning, and blended (face-to-face and virtual) teaching and learning. The work in this TSG is characterized by the implementation, research, and development in the use of digital teaching and learning platforms, usage of this technology to scaffold mathematics instruction and tutoring, novel interfaces for communicating and analyzing student thinking, and specialized mathematics teacher education platforms. We will push the boundaries of what is known through a deeper examination and discussion of recent research and

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development in teaching and learning through these modalities, with a focus on primary, secondary, and higher mathematics education. We invite contributions (practical or research-based) that address (but are not limited to) some of the following sub-themes:

1. Emerging work on the usage of digital technologies integrated in “e” or blended instruction.
2. Incorporation of social media in “e” or blended instruction.
3. The role of technology in “flipped classrooms”.
4. Developing the role of the faculty/moderator/tutor in “e” or blended mathematics education.
5. Exploration of the emergence and sustainability of communities of practice in online environments of collaboration and co-construction of resources.
6. Utilization and designing tasks, resources or environments in e-learning or blended learning modalities.
7. Enabling or orchestrating productive mathematical conversations or collaboration in an “e” or blended setting.
8. Instrumenting e-learning or blended learning in the professional development of mathematics pre-service and in-service teachers, or mathematics education researchers.
9. Evaluating the effectiveness of mathematics e-learning and blended learning.
10. Research methodologies and paradigms for studying “e” and blended mathematics education.

# Areas of interest

The TSG 3.17 will not only focus on the use of the digital technologies for mathematics education at a distance, but it may also emphasize on the impact of digital technologies at a distance on mathematical discovery, problem solving, heuristics, reasoning, property validation, means of communication, the use of semiotic representation systems (internal vs. on-screen representation of mathematical objects), proof, discourse, collaboration, learning experience, etc. In addition, the TSG will investigate developments or trends such as the design underpinning the use of systems; the differences in learning accomplishment when reference is made to «online or electronic and digital mathematics» instead of to digital and face-to-face mathematics; and the usage of tools of automated reasoning (for example, within formal systems using dynamic geometry software); to name only a few key concepts from the research literature. Finally, educational environments are rapidly changing because of the COVID-19 pandemic, evidencing the need for synchronous and asynchronous technological learning. Therefore, TSG 3.17 may be a forum for reporting and reflecting on research experiences in “e” or blended formats implemented by mathematics teachers during the pandemic.

At ICME 15 in July 2024, there will be many opportunities during the face-to-face TSG 3.17 sessions for sharing and discussing the work reported in Papers and Posters submitted. It may also be the case that expert invitees, based on previously accepted thematic papers, will lead discussions or sessions, for instance, specifying how the design of “e” or blended technologically mediated courses results from a research point of view, or how social media can be incorporated into them.

# 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.