

CERME 12: Thematic Working Group 16

Learning Mathematics with Technology and Other Resources

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Scope and focus of the Working Group

The scope of this TWG is to address opportunities and constraints of digital technology and other resources for students' learning of mathematics; a topic that is all the more relevant in times of an immense increase of distant learning and teaching practices. In this TWG, the use of digital technology for mathematics learning will be addressed. In addition, we include the traditional non-digital resources such as textbooks, worksheets and various types of tools and manipulatives, as well as the relationships between these traditional and new types of resources. **We aim** to establish an overview of the current state of the art, with a particular focus on theoretical advances, embodiment, new roles for new tools for learners and researchers, and good practices. We also aim to suggest important trends for technology-rich mathematics education in the future, including a research agenda. TWG15 addresses a similar global topic, but focuses on teaching rather than on learning.

Call for papers and poster proposals

To foster coherence in the TWG, and academic progress on its topic, we identified the following five main themes and particularly call for papers and posters contributing to them:

- (1). **Theoretical advances on using digital technology in mathematics education.** How do theoretical frameworks and technological means interact in the field of research on mathematical learning? Which new theoretical lenses are emerging?
- (2). **Embodiment and gesture while using digital technology in mathematics education.** How to design activities that offer distinctive mathematical experiences to students? How can the use of digital technology support an embodied approach to mathematical learning?
- (3). **New roles for new tools (e.g., augmented and virtual reality, 3D printers).** What learning opportunities are offered by new technologies such as augmented and virtual reality, 3D printers, 3D pens, etc.? How to benefit from these opportunities? What kind of tasks can be designed?
- (4). **Good practices in technology-rich design, learning and assessment in mathematics education.** Which design principles and heuristics may guide the design of fruitful activities? How can technology-rich assessment support learning in classroom and in distance learning environments?
- (5). **The impact of digital technology (e.g., eye tracking, video labs, learning analytics, AI) on research methods.** What do new technology-based research methods have to offer? How can innovative technology-rich research methods affect theoretical developments and empirical findings?

Papers and poster proposals should use the CERME template, and conform to the guidelines at www.cerme12.it CERME 12 uses an electronic submission system www.conftool.pro/cerme12 The authors submit the initial version of their paper on the website (uploading it both as a .doc and a .pdf file, and providing the required information, in particular the TWG number).

Reviews and decisions

Each paper will be peer-reviewed by two persons from among those who submit papers to this TWG. Please expect to be asked to review up to two papers. The group leaders will decide about the acceptance of posters.

Important dates

- **15th July 2021:** Deadline for [Early Bird Procedure](#)
- **15th September 2021:** Deadline for submission of papers and posters.
- **4th November 2021:** Preliminary decisions on papers.
- **12^h November 2021:** Preliminary decisions on posters.
- **2nd - 6th February 2022:** CERME 12 takes place.
- See www.cerme12.it/deadlines/ for other important dates