

CERME 12: Thematic Working Group 24
REPRESENTATIONS IN MATHEMATICS TEACHING AND LEARNING

Leader: Anna Baccaglini-Frank (Italy), anna.baccaglinifrank@unipi.it

Co-leaders: Carla Finesilver (UK), Michal Tabach (Israel), Kate O'Brien (USA/UK)

Scope and focus of the Working Group

Representations of mathematical concepts and objects are an integral part of doing mathematics and an important aspect of teaching and learning mathematics. Here representations refer both to traditional mathematical productions such as graphs, diagrams, symbols, texts, and models, and also more broadly to encompass pictures, gestures, sounds, stories, metaphors and more. We are concerned with the creation, interpretation, use of, relations between, and reflections on such representations in our minds, hands, bodies, on paper, on screen, and with other analog and digital tools. We are interested in the roles of representation in recording and communicating information and processes, thinking about and developing mathematical ideas, practices, understandings and expression. Representation can be theorized and interpreted in many ways, and this working group welcomes papers from a variety of different theoretical and methodological frameworks.

Call for papers and poster proposals

We invite papers addressing (but not necessarily limited to) the following questions:

- How can learners make connections between and move among the various modes, registers, or systems of mathematical representation?
- What roles does representation play in creative problem solving?
- What roles can representational forms and formats play in enabling and disabling some learners? How can they contribute to the design of more inclusive educational environments?
- How do diverse unconventional representational activities contribute to mathematical thinking? How may we study them, especially those outside of language and inscription?
- How do the representational affordances (visual, auditory, haptic, etc.) of computer technologies change the dynamics of mathematics and its learning?
- How may representations elicit new sensory experiences for mathematicians and students?
- How are representations, emotions, affect and mathematical learning related?
- How can teachers support learners' representational and meta-representational competences? What relations are there between teachers' and students' preferred representations?
- How may theories of representation be usefully combined/networked and applied to theorise and study the teaching and learning of mathematics?

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.
- **12th November 2021:** Preliminary decisions on posters.
- **2nd - 6th February 2022:** CERME 12 takes place.
- See www.cerme12.it/deadlines/ for other important dates