Second Announcement of the Tenth ERME TOPIC CONFERENCE (ETC10) on Mathematics Education in the Digital Age (MEDA) 
16-18 September 2020 - ONLINE


The fifth ERME Topic Conference for Mathematics Education in the Digital Age (MEDA-1), held in September 2018 in Copenhagen was inspired by the contributions to the Thematic Working Groups 15 and 16 at CERME 10 in Dublin, which highlighted the diversity of current research and its overlaps with other TWG themes. MEDA-1 was an interdisciplinary, multifaceted collaboration that brought together participants who would normally attend a range of CERME Thematic Working Groups to provide the opportunity for further in-depth discussion and debate. The successful experience resulted in intensive communication and collaboration during the Conference, which continued through collegial work towards a publication of a post-conference book in the ERME Series published by Routledge.

The conference MEDA-2, hosted by the University of Linz will be a virtual conference!

Nevertheless, we will keep the spirit of MEDA-1 through interesting online presentations that will inspire discussions and collaborative work during the online-sessions.

Rationale of the Conference

The rationale for the conference is as an interdisciplinary, multifaceted collaboration that will bring together participants who would normally attend a range of CERME TWGs according to the following four themes:

Theme 1 - Mathematics teacher education and professional development in the digital age

- The specific knowledge, skills and attributes required for efficient/effective mathematics teaching with digital resources, to include digital mathematics resources, which we define as resources that afford or embed mathematical representations that teachers and learners can interact with by acting on objects in mathematical ways.
- The design and evaluation of mathematics teacher education and professional development programmes that embed the knowledge, skills and attributes to teach mathematics with digital resources.

Theme 2 - Mathematics curriculum development and task design in the digital age
• The design of resources and tasks (e.g. task features, design principles and typologies for e-textbooks);
• The evaluation and analysis of resources and tasks (e.g. determining quality criteria for curricular material, resources and methods of analysis);
• The interactions of teachers and students with digital curriculum materials (e.g. appropriation, amendment, re-design), both individually or collectively. This includes the consideration of teacher learning/professional development in their work with digital resources.

**Theme 3 - Assessment in mathematics education in the digital age**

• New possibilities of assessment (formative, summative, etc.) in mathematics education brought by digital technology
• Use of digital technology to support students to gain a better awareness of their own learning
• Assessment of learners’ mathematical activity in digital environment

**Theme 4 - Theoretical perspectives and methodologies/approaches for researching mathematics education in the digital age**

• Theories for research on technology use in mathematics education (e.g. design theories, prescriptive theories, theories linking research and practice, theories addressing the transfer of learning arrangements to other learning conditions etc.)
• The linking of theoretical and methodological approaches and the identification of conditions for productive dialogue between theorists, within mathematics education and beyond (e.g. developing collaborative research with educationalists, including teachers and educational technologists).

**Cross-theme Relationships**

Whilst we propose these four themes to support more focused work during the conference, we are acutely aware of the overlaps and relationships between all four.

**Keynote Speakers**

We will have three contributions from members of CERME Thematic working groups beyond the technology groups.

• **Paola Iannone (Loughborough University, UK): Digital Technologies and Assessment in Mathematics Education**
  
  Assessment is a big component of the students’ learning cycle, and has a big impact on the way in which students engage with mathematics. In this talk I will investigate the role that digital technologies can have to support the design and delivery of assessment of mathematics and I will refer to any type of assessment which is supported by a digital technology as computer aided assessment. I will focus on summative assessment, but I will also discuss the potential of digital technologies to provide formative feedback to
students. I will conclude by posing some questions which should be at the forefront of research on the potentiality of computer aided assessment for mathematics.

- Birgit Pepin (Eindhoven University of Technology, The Netherlands): Quality of (digital) resources for curriculum innovation

  If we define ‘curriculum’ as ‘design for learning’ (Van den Akker 2020), then ‘curriculum resources’ can be those designs for learning (e.g. mathematical tasks, lesson plans), or the tools that help us to design (and evaluate) learning (e.g. design tools). What do we know about the quality of such curriculum resources, in particular if they are digital, and how can we (re-)conceptualize the ‘quality’ of (digital) curriculum resources (DCR), in particular in times of curriculum renewal?

  Leaning in particular on research in mathematics education (e.g. Trgalova, et al. 2013; Pepin, Choppin, Ruthven & Sinclair 2017) and in curriculum thinking (e.g. Nieveen, 1999; Van den Akker 2013), in this presentation I re-conceptualize the quality of DCR in terms of a number of criteria, and illustrate them in two studies: one in French lower secondary education; and one in Dutch higher engineering education. Both contexts could be characterized as oriented towards curriculum reform.

References


- Mariam Haspekian (Université Paris Descartes, FR): The research on teaching practices with technology through the prism of the theories"

In the spirit of MEDA 2 whose objective is to interlink the TWGs of CERME on digital technologies with other TWGs, we are interested here in the link with the TWG on the theories: "Theoretical Perspectives and Approaches in Mathematics Education". Anchoring it in the theme of this conference and in what is called today the "digital age" leads to the theme 4 titled: "Theoretical Perspectives and Approaches for Research in Mathematics Education in the Digital Age".

Even focusing on the digital context only, Theme 4 embraces a fairly broad set of issues. I propose here to limit the question of Theoretical Perspectives and Approaches to research on teachers and teaching practices with digital technologies: indeed, in continuation of research on student learning, many research on teachers and classroom practices has emerged and then developed considerably over time. Among this teacher-oriented research, a growing number focus on issues specifically related to technologies. It is therefore interesting to stop now and take stock. In that purpose, one or more (non
independent) angles can be chosen: that of the questions raised by this research corpus, that of the methodologies used, that of the results obtained... The choice in this plenary is to revisit the theme of research on teaching practices in the digital age from the very perspective of the “theories”. I will examine these theories, themselves flourishing, through different axes inspired by other TWGs -theories in research on the teacher, on classroom practices, on training and professional development-, or still through the networking of theories.

Proceedings and Publications

Accepted papers and posters will be published as peer reviewed digital proceedings on the HAL Archive (https://hal.archives-ouvertes.fr/).

Following MEDA-1, invited extended papers have been published in the book “Mathematics Education in the Digital Age” by Routledge. We think about possible options for publications resulting from the MEDA-2 conference in addition to the standard conference proceedings.

Ways of working during the conference

Accepted papers will be grouped according to the relevant themes to synchronous online sessions structured and mediated by a session-leader. In addition, parallel sessions will focus on sub-themes or enable work by sub-groups.

Paper presentations will be in the CERME-style, that is 10 minutes of presentation followed by 10-15 minutes of discussion associated with the session theme(s).

Ideas will also be shared and discussed with participants’ in the other three themes to foster exchange between the four ETC groups.

For all accepted papers there will be

Live presentations (10 minutes) via ZOOM with presentation slides and a follow-up discussion.

There will also be a poster session in a virtual poster presentation room.

Special discussion groups

- There will be a special workshop or webinar for “Remote Teaching and Learning Modalities during the Pandemic Crisis” which gives the opportunity to discuss this topic.

- There will be a special discussion group for early career researchers (this is a participant who is either a PhD student or finished her/his PhD no longer than three years ago) to discuss some issues and questions concerning new developments in mathematics education with some experts in their fields.

The deadline for submissions of papers and posters is already over. However, see the paragraph “Proceedings and Publications”.
Important Dates

Confirmation of accepted papers: **18 July 2020**
Registration of participants with accepted papers or posters before **01 August 2020**
Proceedings available on the website: **01 September 2020**
Only papers of registered participants can be published in the Proceedings.

Registration:
See the link on the Homepage.

**Conference fee for regular participants: 60 €**
**Conference fee for PhD students: 40 €**
Students have to send a student confirmation to meda2020@jku.at.

If you submitted a paper or poster and it was accepted for presentation, you have to register until 01. August 2020

Planned programme structure

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<td>9.00</td>
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<td>Plenary by</td>
<td>Session 4: Working Group Parallel sessions</td>
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<tr>
<td></td>
<td></td>
<td>Mariam Haspekian</td>
<td>WG1, WG2, WG3, WG4</td>
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<td>09.45</td>
<td>Break</td>
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<td>Break</td>
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<tr>
<td>10.00</td>
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<td>Session 2: Working Group Parallel sessions</td>
<td>Plenary: Results and Summaries of the Working Group sessions</td>
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<td>WG1, WG2, WG3, WG4</td>
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<td>10.30</td>
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<td>Break</td>
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<td>11.00</td>
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<td>Break</td>
<td>Plenary: Results and Summaries of the Working Group sessions</td>
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<td>11.30</td>
<td>Presentation of some ideas of the book “Mathematics Education in the Digital Age”</td>
<td>Discussion concerning the on-going work</td>
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<td>12.30</td>
<td>Welcome, aims and objectives</td>
<td>Break</td>
<td>Plenary – Closing Session</td>
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<td>13.00</td>
<td>Opening plenary by Paola Iannone</td>
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<td>13.45</td>
<td>Break</td>
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<td>14.00</td>
<td>Session 1: Working</td>
<td>Session 3: Working</td>
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**Members of the International Program Committee (IPC):**

**Chair of the IPC:** Hans-Georg Weigand (Germany)

**Co-chairs:**
- Ana Donevska-Todorova (Germany/Macedonia)
- Alison Clark-Wilson (UK)
- Eleonora Faggiano (Italy)
- Jana Trgalova (France)

**Members:**
- Andreas Eichler (Germany) – member of the ERME board
- Ghislaine Gueudet (France) – member of the ERME board
- Paola Iannone (UK) – link with TWG 21 (CERME12)
- Birgit Pepin (Netherlands) – link with TWG 22 (CERME12)
- Mariam Haspekian (France) - link with TWG 17 (CERME12)
- Bärbel Barzel (Germany)
- Annalisa Cusi (Italy)
- Niels Grønbæk (Denmark)
- Ornella Robutti (Italy)
- Melih Turgut (Norway)
- Osama Swidan (Israel)

**Members of the Local Organizing Committee (LOC):**

**Chairs of the LOC:**
- Zsolt Lavicza (Austria)
- Robert Weinhandl (Austria)

**Members:**
- Markus Hohenwarter (Austria)
- Sara Hinterplattner (Austria)

**Venue:**

**Place:** Online
**Time:** 16 – 18 September 2020
**Intended number of active contributions:** 80