

Second Announcement of the 13th ERME TOPIC CONFERENCE (ETC13)

on

Mathematics Education in the Digital Age (MEDA3)

07-09 September 2022 in Nitra, Slovakia

Website [MEDA3](#)

The first ERME Topic Conference for Mathematics Education in the Digital Age (MEDA1) was held in September 2018 in Copenhagen and the second, MEDA2, in September in Linz (online), Austria. They were inspired by the contributions of the Thematic Working Groups 15 and 16 in CERME10 and CERME11, which highlighted the diversity of current research and its overlaps with other TWG themes. It 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 an intensive communication and collaboration during the MEDA1 conference, and our collegial work continued towards the publication of a post-conference book in the ERME Series published at Routledge ([Clark-Wilson et al. 2021](#)).

The proceedings of the previous two conferences can be found here: [MEDA1](#) and [MEDA2](#).

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, revolving around the following three themes:

Theme 1: Mathematics teacher' practices, teacher education and professional development in the digital age

- Shared virtual/hybrid spaces and resources for teacher education and professional development
- Teachers' experiences and practices during the COVID-19 pandemic and expectations regarding perspectives for teaching after the crisis

Theme 2: Curriculum innovation, design of digital and hybrid environments and practical implementation of digital resources

- Applications of Learning Management Systems, Learning Analytics and Artificial Intelligence in the design of resources, students' activities, assessment, and research in mathematics education
- Design and implementation of resources with novel technologies as 3D print technologies, robots, AR, VR, MR and XR, in addition to the well-established DGS and CAS

- Computational thinking in mathematics education at all educational levels
- Different modalities of synchronous and asynchronous learning supported by various digital tools (e.g., digital concept maps, shared boards and spaces, etc.)

Theme 3: Assessment in mathematics education in the digital age

- New possibilities for assessment (formative, summative, etc.) in mathematics education brought by digital technology
- Formative and summative assessment in remote and hybrid conditions at all levels of education
- Assessment of learners' mathematical activity in digital environments

Cross-theme Relationships

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

Plenary and panel discussion

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

- **Jana Trgalova** (Claude Bernard University Lyon 1, France): *Design of digital resources by and for mathematics teachers*

Research on the use of digital technology in mathematics teaching and learning shows that key affordances of technology emanate from the tasks that are used with it (Thomas & Lin, 2013). Jones (2005) claims that carefully designed tasks with their appropriate enactment by teachers are necessary for an efficient use of ICT fostering students' learning. In this talk, we will therefore focus on digital resources offering technology-based mathematical tasks, adopting the perspective of their design. We will consider two cases: (1) design of digital resources *for* teachers, which leads to questioning the processes of their *appropriation* (Trgalová & Rousson, 2017), and (2) design of digital resources *by* teachers, which leads to consider teachers as designers and address their *design capacity* (Brown & Edelson, 2003).

References

Brown, M., & Edelson, D. C. (2003). *Teaching as design: Can we better understand the ways in which teachers use materials so we can better design materials to support their changes in practice?* LeTUS Report Series.

Jones, K. (2005). Research on the Use of Dynamic Geometry Soft-ware: implications for the classroom. In J. Edwards & D. Wright (Eds.), *Integrating ICT into the Mathematics Classroom* (pp. 27-29). Derby: Association of Teachers of Mathematics.

Thomas, M. O. J., & Lin, C. (2013). Designing tasks for use with digital technology. In C. Margolinas (Ed.), *Task design in mathematics education. Proceedings of ICMI Study 22* (Vol. 1, pp. 111-119). Oxford.

Trgalová, J., & Rousson, L. (2017). Model of Appropriation of a Curricular Resource: A Case of a Digital Game for the Teaching of Enumeration Skills in Kindergarten. *ZDM - Mathematics Education*, 49(5), 769-784.

- **Annalisa Cusi** (Sapienza University of Rome, Italy): *Formative assessment in Mathematics in the digital age: teacher's practices and roles*

This talk will concern the ways in which digital technologies and environments can support teachers in developing effective formative assessment (FA) processes in Mathematics. I will start by identifying the main key-areas within which FA practices could be taken forward.

Then, I will present some examples from research studies carried out at different school levels to discuss the roles that teachers could play in trying to make the most of the functionalities offered by digital technologies and environments for FA purposes. I will conclude with some reflections on the impact that the experience of lockdowns imposed during the Covid-19 emergency could have on the future evolution of teachers' assessment practices.

- **Panel Discussion: Alison Clark-Wilson** (UCL Institute of Education, London, UK), **Ivan Kalaš** (Comenius University in Bratislava, Slovakia), **Iveta Kohanová** (Norwegian University of Science and Technology, Trondheim, Norway), and **Piers Saunders** (UCL Institute of Education, London, UK): *Computational thinking and mathematics education: Debating synergies and tensions*

Computational thinking (CT) has recently received a great deal of attention both in mathematics education (ME) research and mathematics teaching practice. This is due to new curricula which emphasise computational thinking as a new 21st century skill. Consequently, CT education is being implemented differently across Europe: in some countries as a (mandatory) subject Informatics or Computing, in others as part of mathematics. In other countries, CT is integrated in different subjects. Although several research papers have been published recently on CT in/and ME, different perceptions and expectations of the potential of CT for ME continue to exist among researchers, among mathematics teacher educators, and among mathematics teachers as well.

Therefore, in this panel, four participants will share their experience and views on the potential of CT for ME, drawing on examples from different countries.

Proceedings and Publications

- Peer reviewed digital proceedings on the web page of the conference or on HAL Archive <https://hal.archives-ouvertes.fr/>)
- The IPC is exploring the opportunity of coordinating special issues for mathematics education journals. We are already in contact with some journals. We would like to build – at the MEDA-conference - groups of authors to write **together** an article. In these publications researchers who did not submit a paper or had not been a participant at MEDA3 may also be involved.

Ways of working during the conference

Accepted papers will be grouped according to the relevant themes to parallel sessions structured and chaired by a session-leader.

Paper presentations will be **15 minutes of presentation** followed by **15 minutes of discussion** associated with the session theme(s).

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

Special discussion groups

- 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 issues and questions concerning new developments in mathematics education with experts in their fields.

The deadline for submissions of papers and posters was the 22 May 2022.

Important Dates

- Proceedings available on the website: 01 September 2022
- Only papers of registered participants can be published in the Proceedings.

Registration:

Conference fee for regular participants: 175 €

Conference fee for PhD students: 100 €

See the link on the Homepage <https://www.meda.fpvai.ukf.sk/>.

If you submitted a paper or poster and it was accepted for presentation, you have until the 1 August 2022 to [register](#).

Students will be required to send a confirmation of student status to jmedova@ukf.sk. The declaration in English should be worded as follows:

I confirm that [name of the student] is a current student at [name of the Institution] and enrolled on [name of Course or Program] under the supervision of [name of a supervisor].

Signed and dated by both student and supervisor.

Venue: Place: Constantine the Philosopher University in Nitra
Tr. A. Hlinku 1, Nitra, Slovakia
Time: 7. - 9. September 2022
Intended number of active contributions: 45
Type of the conference: f-2-f conference

Travel information:

Slovakia is a Schengen state and EURO zone member. Payment by Visa or Mastercard is available in most places. In Slovakia the power plugs and sockets are of type E, the standard voltage is 230 V, and the standard frequency is 50 Hz, same as in Austria or Germany. The official language is Slovak. Be aware that lot of people educated before 1990s do not speak English and have your translator ready.

The weather in early September differs from nice and sunny with 25 °C to rainy and foggy 10 °C. You will need to check the weather forecast not more than 5 days before the travel.

When traveling to Nitra, we recommend using the airport in Bratislava (BTS) or in Vienna (VIE). The railway connection to Nitra (Nitra, Hlavna stanica) is rather problematic, but the buses are good. The best railway connection to Nitra is from railway hub Nove Zamky. In case you are bigger group, you might consider using the taxi from the airport (<https://roben.sk/en/airport-transfer/>). Also, the taxis in Nitra are quite cheap (less than 5 EUR in the city).

Vienna airport:

There is a direct bus connection from Vienna airport to Nitra (operated by <https://www.flixbus.com/>, drivers speak English) twice a day (7:40 and 19:20) and several buses to Bratislava starting from Vienna airport (3:55, 6:30, 8:30, 9:25 and then twice an hour until 18:30, then 19:20, 20:30, 21:30, 22:15, 22:50). There is no need to travel to Vienna city centre. In Bratislava, you can switch to the bus to Nitra (several buses an hour, flixbus.com is the easiest way to buy tickets) from the bus station at Mlynske Nivy (Central Bus Station Nivy). Use <https://cp.hnonline.sk/en/> to find the best connection.

On Friday there is a possible connection of two buses: Nitra-Bratislava (<https://amsbus.sk/turancar/koupitjizdenku/?x=3804>) at 13:00 – 14:15, then from Bratislava at 14:30 – 15:30 (<https://regiojet.com/>) or 15:00 – 16:00 (<http://www.slovaklines.sk/en/>). We highly recommend to buy the bus tickets in advance, using the provided links. You will be sure you will fit in the bus and also do not need to buy tickets from non-English speakers.

Bratislava airport:

If you use Bratislava airport, you must use public transport to travel to Bratislava bus station (Mlynske Nivy or Nivy) and then by bus to Nitra. There is no direct connection between Bratislava airport and the bus station Mlynske nivy (bus stop Kosicka). Use the line 96 from airport and switch to: line 50 at stop Klientске centrum; line 60 at stop Slovinska; or line 73 at stop Hranicna.

There is no direct connection on Tuesday and Wednesday from Bratislava airport to Nitra, but on Friday afternoon you may use direct bus at 15:10 and 17:35 to the Bratislava airport.

Accommodation:

As Nitra is a small city there are several possibilities to stay in walking distance from the venue. We chose the hotels which we have experience with also in last months.

The nice hotel, the closest to the venue, app. 4 minutes walking is Hotel River **** Nitra (<https://www.hotelriver.sk/>)

If you are for more value for money solutions, you can use another nearby (10 minutes) hotel

Hotel Agroinstitut *** Nitra (<https://www.agroinstitut.sk/en>)

Or if you would like a higher standard with a good restaurant we recommend (16 minutes)

Hotel Mikado**** Nitra (<https://hotelmikado.sk/home.xhtml>)

For PhD students there is a possibility to be accommodated in students' dormitory (<https://www.ukf.sk/verejnost/aktuality/foto/sd-nitra-guestrooms>) app. 5 minutes walking from the venue. The price is app. 20 EUR/night and does not include breakfast. You need the confirmation (stamped and signed) about your study to use this accommodation. In case you would like to use this opportunity, contact Janka Medova (jmedova@ukf.sk) with exact arrival and departure days.

Social events

There will be a

- a coming together on Wednesday evening
- a conference dinner on Tuesday evening
- a possibility of a – short – tour through Nitra on Tuesday before the conference dinner

Planned programme structure

| Start | Wednesday | Thursday | Friday | |
|-------|---------------------------------|-----------------------------------|---------------------------------|----------------|
| | 7.9.2022 | 8.9.2022 | 9.9.2022 | |
| 9:00 | | Plenary Panel | Plenary by Annalisa Cusi | |
| 9:30 | | | <i>Coffee break</i> | |
| 10:00 | | <i>Coffee break</i> | Working Group Parallel Sessions | |
| 10:30 | | Working Group Parallel Sessions | | |
| 11:00 | | | | |
| 11:30 | | Registration | Lunch | <i>Closing</i> |
| 12:00 | | | | |
| 12:30 | Opening | Working Group Parallel Sessions | | |
| 13:00 | Plenary by Jana Trgalova | | | |
| 13:30 | <i>Coffee break</i> | <i>Coffee break</i> | | |
| 14:00 | Working Group Parallel Sessions | Working Group Parallel Sessions | | |
| 14:30 | <i>Coffee break</i> | Special Issue Session | | |
| 15:00 | Working Group Parallel Sessions | <i>Coffee break</i> | | |
| 15:30 | Working Group Parallel Sessions | Discussion with young researchers | | |
| 16:00 | Poster viewing | <i>Conference dinner</i> | | |
| 16:30 | | | | |
| 17:00 | | | | |
| 17:30 | | | | |
| 18:00 | | | | |

Members of the International Program Committee (IPC):

Chair of the IPC: Hans-Georg Weigand (Germany)
link with TWG16 at CERME11, chair of MEDA1 and MEDA2

Co-chairs: Ana Donevska-Todorova (Germany/Macedonia)
link with TWG16 at CERME11, IPC Member at CERME12, co-chair at MEDA1 and MEDA2
Eleonora Faggiano (Italy)
link with TWG16 at CERME12, co-chair at MEDA1 and MEDA2
Paola Iannone (UK)
link with TWG21 at CERME12, plenary talk at MEDA2
Michal Tabach (Israel)
link with TWG24 at CERME12
Melih Turgut (Norway/Turkey)
link with TWG15 at CERME12

Members: Andreas Eichler (Germany) – member of the ERME board
Ghislaine Gueudet (France) – member of the ERME board
Gülay Bozkurt (Turkey) YR – link with TWG15 at CERME12
Alison Clark-Wilson (UK) – link with TWG15 at CERME12
Janka Medová (Slovakia) – link with TWG11 at CERME12
Morten Misfeldt (Denmark) – link with TWG23 at CERME12
Jana Trgalova (France) – link with TWG15 at CERME09

Members of the Local Organizing Committee (LOC):

Chair of the LOC: Janka Medová
Members: Soňa Čeretková
Gabriela Pavlovičová
Kitti Páleniková
Martin Cápaj
Lubomíra Valovičová
Veronika Bočková (YR)
Silvia Haringová (YR)