
ERME Column

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Report on CERME10

The 10th Congress of European Research in Mathematics Education (CERME10) took place in Dublin (Ireland), 1–5 February 2017 (see *EMS Newsletter* 100, p. 57). This conference has been growing steadily and, as usual, it was the largest to date, with 772 registered participants involved in 24 parallel thematic working groups (TWGs), where a total of 478 research papers and 98 posters were accepted for presentation and discussion. A major aim of ERME is to promote communication, cooperation and collaboration in research in mathematics education throughout Europe. Thus, its conference, CERME, is not merely a platform for presentation of research but also an opportunity for researchers to discuss and advance each other's work in common research domains. Ideally, researchers should leave CERME not only with information on the research that is taking place in their field but also with an improved version of their contribution to the conference proceedings, new ideas for extending their research and leads for future collaborations.

CERME Thematic Working Groups

We wish to make use of this column to present the kind of research that is taking place in the ERME community,

focusing on ways in which this research may be interesting and/or relevant for research mathematicians. Our aim is to extend the ERME community with new participants, who may benefit from hearing about research methods and findings and who may contribute to future CERMEs. In this issue, we begin with TWG14, the topic of which is University Mathematics Education (UME), arguably the most relevant TWG for readers of this column.

Introducing CERME's Thematic Working Group 14 – University Mathematics Education

Group leaders: Alejandro S. González-Martín and Irene Biza

This TWG is concerned with the teaching and learning of mathematics at university. It was the largest TWG in CERME10, contributing 41 full-length papers and 17 short papers to the conference proceedings. Its steady growth since its inception in CERME7 (2011) reflects the increasing popularity of UME research in Europe and internationally, grounded in the realisation that teaching and learning mathematics at all levels can benefit from systematic research. Research in this field touches on, among other topics, general teaching challenges and

learning difficulties at university level, such as the transition from school to university mathematics and the transition from university to the workplace. It also touches on the particulars of specific mathematical topics, such as calculus and analysis, linear algebra, proof and proving, mathematical logic and group theory. Contexts include the education of students specialising in mathematics or in other fields, such as economy, engineering, physics or biology. Of particular interest is the mathematical education of mathematics teachers, who are learning “mathematics for teaching”, which is often considered a field of applied mathematics. Activities of the TWG have led to the creation of the *International Network for Didactic Research in University Mathematics* (INDRUM), with a biannual ERME topic conference (see INDRUM 2016, <https://indrum2016.sciencesconf.org/>, and INDRUM 2018, <https://indrum2018.sciencesconf.org/>), and to the publication of a special issue in the highly regarded journal *Research in Mathematics Education*, summarising and extending some of the work presented during CERME7 and CERME8, with a focus on the use of institutional, sociocultural and discursive approaches to research in university mathematics education [1].

Though most of the participants in this TWG are from the field of mathematics education, there is a growing participation of professional mathematicians, who come to share insights, such as novel teaching practices, and to learn from the experience of others. The work presented and discussed at the conference requires some familiarity with the theories and methodologies of mathematics education (a field of the social sciences). Often, mathematicians team up with researchers in mathematics education. Collaboration between researchers from these two distinct yet related communities has been stretching the boundaries of the field. Research is being carried out on what these communities can learn from each other – both mathematically and pedagogically. Another line of research investigates mutual influences between research and teaching practices in mathematics

departments. The growing involvement of this community in the activities of the TWG is a welcome trend and is strongly encouraged.

References

- [1] Nardi, E., Biza, I., González-Martín, A. S., Gueudet, G., and Winsløw, C., Institutional, sociocultural and discursive approaches to research in university mathematics education, *Research in Mathematics Education*, 16 (2014), 91–94.



Jason Cooper is a research fellow at the University of Haifa's Faculty of Education. He is also a researcher at the Weizmann Institute's Department of Science Teaching. His research concerns various aspects of teacher knowledge, including roles of advanced mathematical knowledge in teaching, and contributions of research mathematicians to the professional development of teachers. He has been a member of the ERME Board since 2015.



Irene Biza is a lecturer in mathematics education at the School of Education and Lifelong Learning at the University of East Anglia. Her research focuses on mathematical learning at university and upper secondary levels, on pedagogical use of information technology and on mathematics teachers' beliefs and knowledge.



Alejandro S. González-Martín is a professor in the Didactics Department of the Faculty of Education at the Université de Montréal. His research focuses on the teaching and learning of mathematics at post-secondary levels, with a special interest in textbook analysis, calculus for engineers and faculty with different academic backgrounds.