Thematic Working Group on the Professional Practices, Preparation and Support of Mathematics Teacher Educators, TWG27

ERME column regularly presented by Frode Rønning and Andreas Stylianides

In this issue presented by the group leaders Ronnie Karsenty, Bettina Rösken-Winter, Stefan Zehetmeier, Birte Pöhler-Friedrich, Hilda Borko and Alf Coles

CERME Thematic Working Groups

We continue the initiative of introducing the CERME Thematic Working Groups, which we began in the September 2017 issue, focusing on ways in which European research in the field of mathematics education may be interesting or relevant for people working in pure and applied mathematics. Our aim is to disseminate developments in mathematics education research discussed at CERMEs and enrich the ERME community with new participants, who may benefit from hearing about research methods and findings and contribute to future CERMEs.

Introducing CERME Thematic Working Group 27: The Professional Practices, Preparation and Support of Mathematics Teacher Educators

Introduction

The role of Mathematics Teacher Educators (MTEs) is crucial in fostering mathematics teacher learning, during both the pre-service and the in-service periods of teachers' careers. At the in-service level, research has already shown that a critical precondition for the success of any professional development (PD) model at scale is the quality of the MTEs who facilitate the PD sessions [4, 5]. The role of these PD leaders is, on the one hand, to maintain integrity to the content goals and agenda of the PD program, yet, on the other hand, to be attentive to the characteristics and needs of the specific group of teachers and the idiosyncrasies of the given context [1]. Similarly, at the pre-service level, MTEs are expected to be adaptive and flexible in providing appropriate tasks around essential mathematics ideas, aimed at developing teacher knowledge, while tailoring their instruction to the particular characteristics and needs of the prospective teachers [2]. Whether they work at the in-service or the pre-service level, MTEs may have diverse backgrounds, for example, as mathematicians, mathematics teachers and mathematics education researchers. Each such background carries its own challenges for novice MTEs, even if they are experts in their original profession.

TWG27 is dedicated to current research concerning MTEs: their roles, their practices, the forms that their professionalization processes may take, the challenges they face, and more. The group started its activities at CERME12 (2022), recognizing the increasing interest in MTE research, as reflected in conferences (e.g., Educating the Educators[1]), books (e.g., [3]), journals and Special Issues focusing on the MTE profession. The establishment of TWG27 signified the importance ascribed to this topic as a separate body of research that stands on its own, rather than a subtopic of studying teacher learning, as was the case at CERME11 and earlier. TWG27 attracts a growing number of researchers who are active in advancing this emerging field, using multiple theoretical lenses and methodologies.

Topics at the core of TWG27

The following are the central topics that this group aims to forefront, each illustrated by representative questions or issues:

- Conceptualizing the role of MTEs (e.g.: What frameworks can be employed? How can theoretical or conceptual frameworks, used for researching mathematics teachers, be adapted to research MTEs?).
- Knowledge, beliefs, skills, identities and practices of MTEs (e.g.: What kind of mathematical knowledge is needed by different kinds of MTEs? How are generic and mathematical content-specific aspects integrated within the work of MTEs?).
- Learning mechanisms that may be useful for MTEs (e.g.: reflection, role-modeling, creating coherence between MTEs' own practices and the teaching practices they mean to support).
- Becoming MTEs – the preparation and support of novice MTEs (e.g.: Which tools and resources are effective along different stages in the MTE trajectory? What characterizes the transition process experienced by professionals such as mathematicians or teachers when they also assume the role of MTEs?).
- The influence of current global issues on the role and practices of MTEs (see below).

[1] https://educating-the-educators.icse.eu

Examples of issues discussed in TWG27 during CERME13

To portray the group's work at CERME13, we bring here two examples pertaining to the last two topics listed above, showing how these were interwoven and discussed across several contributions and contexts represented by various participants.

Resources for preparing and supporting MTEs

The contributions that focused on this issue illustrated the diversity of roles subsumed under the umbrella of MTEs and the different contexts in which these professionals work: facilitators of teacher PD, coaches working with individual teachers, and teacher educators working with prospective teachers. Despite this variety, similar arguments were offered for the importance of preparing and supporting MTEs, considering that MTEs' previous background and experiences are often not enough to ensure their readiness for their new role. The presented research employed different approaches, such as a formal Facilitator Professional Development (FPD) program offered to MTEs *before* they conduct their own PD, and a program offered to MTEs *in parallel* to their work with prospective teachers. All authors reported some positive impacts of the programs and identified topics for future research.

Challenges faced by MTEs in relation to global issues

A small but growing area of research into the roles and practices of MTEs concerns what MTEs do in relation to addressing questions of global challenges such as climate change. One framing that was presented centered on the use of *Environmental Socio-Scientific Issues* (EnvSSIs), i.e., issues involving some mathematical or scientific modeling, and reflection on the model and its implications for the living world. Common patterns of actions used in MTEs' work with undergraduates were discussed, for example, suggesting a mathematical problem relating to the EnvSSIs and working on it together, or asking prospective teachers to elicit ideas about implementing EnvSSIs in the classroom. Other findings presented showed that although a group of MTEs was unanimous about the importance of raising issues of climate change with prospective teachers, there were considerable differences in terms of the extent to which these MTEs enacted such beliefs.

Looking forward

Some of the issues identified as highly important for expanding our knowledge about MTEs are (a) moving beyond small-scale, qualitative studies to more generalizable, larger-scale studies; and (b) understanding how institutional capacity for teacher learning could be built, including what institutional factors may foster or hinder the effectiveness of teacher PD at scale. These, among others, continue to be a challenge for our community. We believe that the perspectives of mathematicians can contribute in this regard, as many mathematicians are involved in the design and implementation of programs for practicing as well as prospective mathematics teachers, where they either serve as MTEs themselves, or advise those leading the programs. As such, we wish to encourage all forms of involvement of mathematicians in this emerging research field.

References

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