

CERME 8

WG17: From a study of
teaching practices to
issues in teacher education

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Group Leaders

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The goals of the WG17

- The study of mathematics teaching and teacher professional development
 - theoretical and methodological frameworks that can capture the complex relationship between mathematics learning, teaching, teacher practices, and mathematics teacher education
 - the impact of different professional development initiatives or teacher education programs on teachers' professional learning and on the development of mathematics teaching and learning

Papers and Posters submitted and accepted

- 54 papers and 15 posters were submitted
- 45 papers and 11 posters were presented

WG17 is developing

- CERME 5 22 papers
 - CERME 6 36 papers 5 posters
 - CERME 7 39 papers
 - CERME 8 45 papers 11 posters
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- 22 countries participated

Thematic areas

Thematic areas	Number of Papers
Studying mathematics teaching	8
Resources for teaching: Teacher knowledge and beliefs	22 7 posters
Teacher Education and professional development	9 2 posters
Teacher collaboration	3 2 posters
Teacher reflection	3

Types of papers

Types	Number
Empirical	40
Theoretical	5
Qualitative research	36
Quantitative research	3
Both quantitative and qualitative	1

Target groups

Level	Number of papers
Secondary school practicing teachers	8
Primary school practicing teachers	10
Secondary school prospective teachers	6
Primary school prospective teachers	6
Mathematics teacher educators	2

Organisation of the group

- Divided into subgroups
- 5 minutes presentation of each paper emphasizing the main findings, the contribution of the paper to the thematic area and two challenging questions for discussion
- Reactors on two or three papers
- Discussions in smaller groups

Studying mathematics teaching : topics

- Good questions versus good questioning
- Teachers' management of students' comments
- Didactical analysis of teaching focusing on the mathematical activity
- A theoretical model for the analysis of teaching related to algebra
- Analysing teacher's instructional actions through a participatory perspective
- Tensions and Contradictions in the process of developing mathematical meaning
- Instructional activity of prospective teachers

Studying mathematics teaching: emerging issues

- Different theoretical frameworks and concepts are used to address and analyze the practice of mathematics teaching
- Initial attempts to develop and merge different theoretical approaches in order to address the complexity of mathematics teaching
- Starting to integrate examples from research in teacher education programs

Teacher collaboration: topics

- Teacher- researcher collaboration to study classroom communication
- Learning communities in teacher education and their impact on teaching
- Planning assessment practices in the context of a collaborative group of teachers

Teacher collaboration: Emerging issues

- The complex nature of data and the process of analysing them
- The different roles of people involved in collaborative research settings (researchers, teachers, papers' authors)
- Teacher educators / researchers learning in the context of collaboration

Resources for teaching: teacher knowledge and beliefs

- Some topics
 - Teachers' resources for assessing students' work
 - The role of teachers' early mathematical experiences on their beliefs and practices
 - Models for studying teacher knowledge
 - Learning of mathematics teacher educator

Resources for teaching: teacher knowledge and beliefs: emerging issues

- An attempt to address teacher beliefs through social perspectives (eg the idea of resources, patterns of participation, the effect of the context)
- Different models for TK. What can they add to the understanding of the TK?

Emerging issues (continued)

- Looking teacher knowledge from a dynamic perspective
 - Linking knowledge to the practice and developing itself in the practice
 - Develop appropriate theories, tasks and methodologies

Teacher education and PD: topics

- Curriculum and pre-service education
- The development of the practice of MTE through research
- Integrating mathematics and science in teacher education
- Different approaches for PD (eg. analysing students' work)
- Sustainability of the impact of PD

Teacher education and PD (emerging issues)

Theories are needed to analyse the impact of teachers' professional development and its sustainability

Teacher educators' responsibilities regarding their research and its impact on improving mathematics teaching and mathematics teacher education?

Becoming aware of unexpected impact of research results (e.g. on mathematics teachers educators practices)?

Teacher reflection: topics

- Promoting prospective teachers' competence in reflecting through cases of tension and uncertainty
- Role play as a way of promoting prospective teachers' reflection

Teacher reflection (emerging issues)

- Reflection seems to be directed to manage unpredictability in the classroom
- Reflection has a dual role: as a developmental tool in teacher education and as a research tool

Significant themes and suggestions identified from the participants

- **Frameworks & approaches:**
 - the tensions between acquisitionist and more participatory frameworks; productive plurality or a barrier for progress. Need for more discussion.
 - There are cultural issues involved in the choice of framework.
 - what is the value of small scale qualitative studies?

- **Knowledge, beliefs, reflection:**
 - developing a field on prospective teachers' knowledge and beliefs and on their role for instructional reflection (on and in action), planning and teaching.
 - Accepting that there are uncertainties in teaching and discussing how to make prospective teachers able to cope with that.
 - How to teach for reflective action, developing awareness in TE?
 - Knowledge in and for teaching – the difference

Critical issues (subgroup 1)

- We are working on multiple frameworks. What are the advantages and disadvantages?
- It is not clear to what extent our frameworks and results take into account the character of mathematics, especially for theoretical “imports”. How can we achieve this?
- The role of the “Context” is not always sufficiently clear. How can we become better at it?
- The deficit model of teacher is still alive in our community. Are we aware about the consequences?

Critical issues (Subgroup 2)

What could be considered as a suitable model for TK?

What could be the purpose for developing new theoretical models or for modifying/revising the existing ones?

How can teacher educators help students/teachers to develop different components of their knowledge? Are they different for prospective teachers' education and in-service teachers?

What are the ways of promoting TK? Should be the teachers aware of different theoretical models?

How can we analyse the influence (occurrence) of different types of knowledge?

How can we study the mutual relation between teachers' knowledge and practice?

What is the evidence? Which research method to use?