



## **TSG 48 Pre-service mathematics education of secondary teachers**

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The topic study group on the mathematics education of prospective secondary teachers is dedicated to sharing and discussing significant new trends and development in research and practice related to the various aspects of prospective secondary mathematics teachers. It aims to provide both an overview of the current state-of-the-art and outstanding recent research reports from an international perspective.

The group will discuss research focusing on prospective secondary mathematics teachers throughout the world, i.e. similarities and differences concerning the development of mathematics content and pedagogical content knowledge of teachers, models and routes of teacher education, curricula of mathematics teacher education, nature and structure of teachers' knowledge and their achievements and perceptions of the nature of their education, the development of professional identities as prospective mathematics teachers and a variety of factors that influence these different aspects. Ways of studying the impact of these practices on teacher professional development will also be considered from both methodological and theoretical perspectives. There will be a particular focus on field experiences and their impact on prospective secondary mathematics teachers' development of the craft of teaching. The group is also hoping to collect research related to evaluating these experiences. In addition, the impact of the increasing

availability of various technological devices and resources on preparing prospective secondary mathematics teachers will be discussed.

#### Outline

TSG 48 will collect, compare and discuss research experiences with different practices related to the preparation of secondary prospective mathematics teachers around the world. It is important to discuss the similarities and differences of the routes of such education and pathways for certification or licensure examination for teachers all over the world. Moreover, a discussion of the various pathways to becoming a secondary mathematics teacher will provide insight into the practices that are best suited for different contexts.

#### **Guidelines for submission**

In addition to the structures of teacher preparation and pathways for certification, we welcome submissions of project reports and research articles addressing the following topics:

##### **Field Experiences:**

- Models, such as co-planning/co-teaching and paired placements for field experiences that best help secondary mathematics teacher candidates to develop the craft of teaching mathematics
- Mechanisms which foster bidirectional relationships between school partners and higher education institutions related to field experiences of secondary mathematics teacher candidates
- Virtual and clinical experiences that secondary mathematics teacher candidates should experience prior to student teaching
- Activities designed to help secondary mathematics teachers to become reflective practitioners during student teaching
- Different types of field experiences required for certification
- Best practices for preparing mentor teachers to work with secondary mathematics teacher candidates

##### **Technologies, Tools and Resources:**

- The characteristics of technology, pedagogy and content knowledge (TPACK), development and assessment of teachers' TPACK.
- Video cases and online interactive environments which include video cases and teacher learning;
- Three dimension virtual worlds (such as Second Life) and teacher learning
- Lesson study and teacher learning
- Mathematics tasks and teacher learning

##### **Teacher Knowledge:**

- The nature of teacher knowledge

- Theoretical and methodological frameworks for studying teacher knowledge
- The development of teacher knowledge in the context of teacher education
- The relationship between teacher knowledge and teacher practices

**Teachers Professional Identities:**

- Theoretical and methodological frameworks for studying future teachers professional identities
- Experiences contributing to the development of professional identity during pre-service education
- The impact of future teachers' experiences of learning mathematics during initial education on the development of their professional identity
- The relationship between teaching practicum and professional identity