



15th International Congress on Mathematical Education

7-14 July 2024 • ICC Sydney, Australia
Come and be counted

Topic Study Group 3.6: Reasoning, argumentation and proof in mathematics education

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Team details

Co-Chairs

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Overview

There is international recognition of the importance of reasoning and proof in students' learning of mathematics at all levels of education (early childhood, elementary/primary, secondary, tertiary). Indeed, reasoning, argumentation and proof are at the very heart of mathematical activity, playing a crucial role in learning processes. There is also international research-based evidence showing that many students face difficulties with reasoning about mathematical ideas and constructing or understanding mathematical arguments. In addition, teachers also face difficulties in this area and often lack adequate resources for helping their students to develop skills in reasoning, argumentation and proof. Although the existing body of research offers important insights into this area, there are still many remaining questions for which theoretical and empirically based responses are needed.





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Areas of interest

We invite submissions of theoretical or empirical research reports on any topic related to explanation, justification, conjecturing, reasoning, argumentation and proof in mathematics education, including mathematics interacting with other disciplines (e.g. Computer Sciences, Physics, Economics etc.). Submissions can relate to any level of education: early childhood, elementary/primary, secondary and university (including pre-service teacher education, or in-service teacher professional development).

Below is a non-exhaustive list of topics that submissions could address:

- Historical, philosophical, and epistemological aspects of reasoning, argumentation and proof in mathematics and in mathematics education.
- Theoretical and methodological approaches to examine epistemological, cognitive, and didactical issues in the teaching/learning of reasoning, argumentation and proof.
- Assessment, curricular, social, or cross-cultural issues related to the teaching/learning of reasoning, argumentation and proof.
- Classroom-based practices aiming to support learning of reasoning, argumentation and proof.
- The design and evaluation of instructional materials that foster reasoning, argumentation and proof practices across curricula and stages of schooling/education.
- The development of tools or practices that support assessment and feedback on students' development of reasoning, argumentation and proof practices.
- The role of technology in the teaching/learning of reasoning, argumentation and proof and associated issues for teaching and learning mathematics in the digital area.
- Students' or teachers' knowledge and beliefs about reasoning, argumentation and proof.
- The role of language and logic in the construction and validation of reasoning, argumentation and proof.

How to make a submission to this Topic Study Group

Submissions for Topic Study Group Papers and proposals for Posters open 28 April 2023 via the official ICME-15 website, icme15.org. The website also contains a timeline of dates for the activity of the Topic Study Groups in the lead up to the Congress.

For questions about this TSG, please contact the Co-Chairs using the email addresses provided.

