



## **TSG 8 Teaching and learning of arithmetic and number systems (focus on primary education)**

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The purpose of this TSG is to gather congress participants who are interested in research and development in the teaching and the learning of number systems and arithmetic through activities in and out of school. The mathematical domains include whole numbers, integers, ratio and proportion, and rational numbers as well as representations and problem solving using numbers related to each of these domains.

We invite submissions of research-based proposals for contributions to TSG 8 that could fall into (but are not bounded to) the following issues:

- Developing a deep understanding of arithmetic and number systems.
- Developing number sense in children as a foundation for learning arithmetic and flexibility with numbers and operations.
- Assessing conceptual or perceptual knowledge in learning arithmetic and number systems.
- Curriculum development and implementation (for instance, approaches to introducing numbers and comparative analysis of different curricula in one country or across countries).
- Instructional models and strategies for teaching arithmetic and number systems.
- Developing mathematics proficiency in teaching arithmetic and number systems.
- Using tools, such as technology, manipulatives, and children's literature, in teaching and learning number systems and arithmetic.

- Professional development and teacher education related to teaching arithmetic and number systems.
- Cultural tools and practices for the learning and teaching of arithmetic and number systems.

Three theoretical presentations on teaching and learning arithmetic and number systems will provide the basis for discussion in each of the three 120-minute slots. These will be followed by presentations of empirical research that provides support, challenges or extends the theoretical frameworks. TSG participants are expected to stay with their group throughout the three sessions.

### Organization of the time slots

The 360 minutes of TSG 8 will be organized in three time slots. The program for each time slot consists of theoretical perspectives presented by invited speakers and empirical studies about the topics indicated in the time slots.

#### Invited speakers for theoretical perspectives:

1. Lieven Verschaffel (Belgium)
2. Berinderjeet Kaur (Singapore)
3. Carolyn Maher (USA)
4. Noraini Idris (Malaysia)
5. Pi-Jen Lin (Taiwan)
6. Terezinha Nunes (UK)
7. Shuhua An (USA)
8. Beatriz Vargas Dorneles (Brazil)
9. Elisabeth Rathgeb-Schnierer (Germany)

Table 1: Three time slots and presentation

|                              |   |   |   |
|------------------------------|---|---|---|
| Time slot<br>12:00-<br>14:00 | Theoretical perspectives followed by presentation of research papers                  |   |   |
| Slot 1<br>(July<br>26th)     | T1 (learning)<br>Lieven Verschaffel<br>Terezinha Nunes<br>Elizabeth Rathgeb-Schnierer | T2 (learning)   | T3 (learning)                                 |
| Slot 2<br>(July<br>27th)     | T4 (teaching)<br>Carolyn Maher<br>Beatriz Vargas Dorneles                             | T5 (teaching)   | T6 (assessment)<br>Shuhua An<br>Noraini Idris |
| Slot 3<br>(July<br>29th)     | T7 (assessment)   | T8 (teacher education)<br>Berinderjeet Kaur<br>Pi-Jen Lin | T9 (teacher education)                        |