

TSG 09: Teaching and learning of algebra

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Call for papers and contributions for TSG 09: Teaching and learning of algebra

Topic Study Group 09 aims to bring together researchers, developers and teachers who investigate and develop theoretical accounts of the teaching and learning of algebra. The group also welcomes empirically grounded contributions that focus on the learning and teaching of algebra in diverse classrooms settings, and on the evolution of algebraic reasoning from elementary through university schooling.

The organizing team is calling for papers for TSG 09. We invite papers which address one or more of the following issues in the teaching and learning of algebra.

1. Issues related to early algebra, like what is its nature; children's capabilities in thinking algebraically and dealing with symbols; early algebra's contribution to children's later understanding of middle/ secondary school algebra; challenges involved in doing "early algebra" in the classroom: what works, what does not.
2. Issues related to the use of ITC in algebra classrooms, like affordances and challenges of using ITC for teaching and learning of algebra; effective use of ITC; similarities and differences in the nature of paper-and-pencil based algebra and ITC based algebra; its contribution to our understanding of students' thinking about algebra and development of algebraic thinking among students, including understanding of symbols and their manipulation.
3. Issues related to proof and proving, like students' understanding of proof in algebra; difficulties which students face in the process of proving; how do ideas of proof and proving develop among students; cognitive processes which help in the process; role of representations and understanding of goal/ task; role of language and communication; classroom environments and tasks which help in developing these ideas, role of ITC.
4. Issues related to problem solving, like how to inculcate problem solving skills; students' difficulties with solving problems; thinking processes which lead to successful/ unsuccessful problem solving; role of representations, symbols and symbolic manipulation, role of ITC.
5. Issues related to the process of generalization, like student's use of representations and gestures to explore and express patterns; difficulties which students face in the process of generalizing; student's understanding of generalizations expressed either verbally or symbolically; the use of generic examples versus successions of particular cases in generalization processes; generalization and abstraction.
6. Issues related to ways in which semiotics helps us understand the processes of communicating and signifying in the teaching and learning of algebra in which the elaboration and use of new sign systems are involved, students' developing ideas about algebraic symbols, meaning making of new symbols.

7. Issues related to designing of algebra curriculum, like approaches to introducing algebra; students' understanding of algebra in the context of a particular curriculum; cross-country comparison; features of curricular material which supports students' algebraic thinking.

How to contribute to the TSG?

1. Indicate name(s) of the author(s) and their location(town and country, school or establishment) and contact details
2. Write a paper of about 8 pages (14 pt, single spaced, Times New Roman) including references. The paper should describe the context of the study, methodology used, and description of analysis of data and discuss the major findings.
3. Submit by email to the Co-Chairs of TSG 09, luis.puig@uv.es and rakhi.banerjee@gmail.com by November 1, 2011.

Further information will be posted at the Congress web page and at <http://www.uv.es/puigl/tsg09icme12.html>