EDITORIAL
Trends in Mathematics Education

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This special issue aims at contributing to the discussion about mathematics education as it presents five papers that shed light on theoretical and practical aspects of teaching and learning mathematics. We present reports on recent trends in mathematics education that examine the evolution of the domain by considering different conceptual frameworks, educational levels and methodological perspectives.

The goal of mathematics education is to promote students' learning. Of course there is no absolute consensus about what kind of mathematics should be taught at school or about why and how students' achievement should be measured.

Nowadays, the development of the ability to solve mathematical problems is included among the basic aims of mathematical education. Problem solving is not based on the repeated use of school practices or the memorization of rules and methods. More importantly, the solving process is not known forehand, and thus children's interest to investigate an unknown to them area acts as an internal motive which activates them to acknowledge the agreements accompanying each problem and triggers their invention of solution strategies (Shiakalli & Zacharos, 2014).

Commonly in educational research the difficulty of selecting the appropriate epistemological framework in order to analyze and interpret school knowledge is noted. In the first paper of this special issue, which is entitled "*Pedagogy of research and questioning the world: teaching through research and study paths in secondary school*", Maria Rita Otero, Viviana Carolina Llanos, Veronica Parra and Patricia Sureda investigate the application of Chevallard's Anthropological Theory of the Didactic (ATD) in three different insti-

tutions. This attempt is important for mathematics education since Chevallard himself admits that more empirical work investigating the application of his perspective needs to be conducted.

Iuliana Zsoldos-Marchis is the author of the second manuscript entitled "*10-11 year old pupils' self-regulated learning and problem solving skills*". The paper presents the results of a study that examines 10-11 year old students' attitudes towards the solving process of mathematical problems and mathematics in general, their problem solving skills and self-regulated learning. Since it also compares these results with results concerning secondary school students, this study could foreground in depth studies looking at the reasons for the large descent in secondary school students' positive attitudes towards mathematics and the mathematical problem solving process.

Maria Angela Shiakalli in the third paper of this special issue entitled "*Constructing squares as a mathematical problem solving process in pre-school*", is concerned with whether 4.5-5.5 year old students are able to engage in problem solving. The problem given to the participants of the study was the construction of different size squares with specific material.

The fourth paper of the issue by Sylvaine Besnier and Laetitia Bueno-Ravel is entitled "*Usage des technologies en mathématiques à l'école maternelle : le travail documentaire des enseignants*" and concerns the use of technology for teaching mathematics in kindergarten. This paper reports on a case study concerning the integration of software about numbers as memory of quantity. The authors questioned teachers documentational work when integrating new resources in their resources system and they highlighted the link between the evolutions of teacher's resources and teacher knowledge through the analysis of their documentational genesis.

Current mathematics education approaches consider that the meaning given to mathematical notions chosen to be taught is the outcome of complex interactions which are developed within the micro-culture of the mathematics classroom (e.g. Steinbring, 2005; Zacharos & Koustourakis, 2014). The forms of interaction developed with in the classroom give specific meaning to mathematical practices.

The last paper of the issue by Gerasimos Koustourakis, Konstantinos Zacharos and Konstantina Papadimitriou entitled "*Teaching pre-school Mathematics and influences by the kindergarten school social context: A preliminary study*" analyses preschool mathematics education in Greek kindergarten classrooms. It uses the framework of Basil Bernstein's Theory of Pedagogic Discourse for the analysis of classroom interaction between kindergarten teachers and children. In addition, it uses categories developed by Paul Dowling from a Bernsteinian perspective to distinguish different modes of transmitting mathematical knowledge, andmentions Ursula Hoadley's analysis model of pedagogical practices on school mathematics teaching, with regards to how the classroom is organized.

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References

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