

Editorial

You are reading the inaugural issue of the journal *Didattica della matematica. Dalla ricerca alle pratiche d'aula*, a title that we could translate as *Mathematics Education. From research to classroom practices*. The journal is edited by the *Centro competenze Didattica della Matematica (DdM)* with the support of *Servizio risorse didattiche, eventi e comunicazione (REC)* of the *Dipartimento formazione e apprendimento della Scuola universitaria professionale della Svizzera italiana*. The journal, promoted and supported by the *Dipartimento dell'educazione, della cultura e dello sport*, picks up the heritage of the *Bollettino dei docenti di Matematica*,¹ with the intent of developing and spreading reflections, research's results and significant classroom practices in the context of mathematics' education. Studies in Mathematics Education were established as a discipline in the international research context in the last 50 years, providing profound theoretical and practical suggestions of reflection at disciplinary, social and cultural levels. Thanks to the concepts and findings in Mathematics Education we can interpret effectively what happens in a classroom when mathematic tasks are being carried out, with more critical and objective eyes. Those who learns the tools of Mathematics Education can better grasp analogies and differences with other classroom situations and act with competence, awareness and creativity in their own teaching.

The journal proposes the main guidelines in this field, at the level of both research and practices, with the purpose of boosting a profitable exchange between the academic world and the school. We believe in fact that research in Mathematics Education should be nurtured by what happens in the classroom, and should eventually return to it, in a continuous exchange between research and teaching and learning practice. For this reason, DdM journal, published in Italian language, is made of three strongly interconnected sections: the first one is devoted to discussions and research studies; the second one hosts teaching and learning experiences; the last one offers book reviews of mathematics or mathematics education. Some contributions will be about the regional context in which we are operating, Canton Ticino, while others will open to national and international experiences, in order to promote comparisons and sharing. The richness of the international scientific committee ensures the quality of the articles.

The first contribution of this issue is an in-depth reflection on the terminology used in one of the most studied theories in Mathematics Education, the theory of objectification, put in relation with the use of the same terms in other philosophic and sociological areas. In particular, it discusses the meaning of the terms “knowing”, “understanding” and “working”, showing their complexity and the different meanings with which they are sometimes used in research and in its communication. In the same section, “problem solving” and “argumentation”, two fundamental competences that Mathematic Education should help to develop, are also discussed. Reflecting on an experimentation led in Italy on INVALSI (national) tests, the paper discusses how the focus on “problem solving” and argumentative processes in the classroom is not only a formative opportunity for the students but also an important tool for the teachers to better understand their students' possible difficulties.

1. In order to ensure continuity, the on-line archive of the *Bollettino dei docenti di matematica* is accessible from the DdM journal's website. Issues from 43 to 73 are free for download in PDF format.

This contribution is strongly connected to the last paper in the first section in which answers given to an interesting item in the *Prova standardizzata di matematica* given to all fifth-grade students of Canton Ticino is analysed. The paper emphasizes how several students' wrong answers are related to difficulties in understanding the item's text, in particular in relation to linguistic interpretation, which is good to be considered from an educational point of view for the diagnosis of specific difficulties and for suggesting "intervention zones".

In the teaching and learning experiences section, the first paper describes the intentional use of several tools: a pantograph, a dynamic geometry software and an interactive whiteboard, for introducing seventh-grade students to the idea of axial symmetry as one-to-one correspondence between points in the plane, moving beyond the simpler concept of transformation of geometric figures.

It is followed by an interesting interdisciplinary project for sixth-grade students, based on devising and creating mathematical games. The project was designed and experimented with the intent of consolidating mathematic competences already acquired and of developing and refining some transversal competences, such as cooperation.

Again, interdisciplinarity is in the next contribution, focused on the "Doremat" workshops, devoted to discover the mathematic that lies within music, and to play and listen to the "music of mathematics". Two subjects, only apparently apart from each another, come together with the purpose of motivating the students and making them aware that one can read music with mathematical eyes.

The last contribution proposes some theoretical references related to educational robotics, and discusses the reasons for its introduction at school. On one hand, robots may be proposed in order to get young people interested in technologies and computer thinking; on the other hand, they can act as a support to develop disciplinary or transversal competences. The paper also presents an experimentation realized in a primary school: the "BeeBot" robot.

Book reviews useful for deepening several aspects of mathematics and of its didactic follow in the last section.

In this first editorial we would like to seize the opportunity to thank all those who contributed to the realization of this project. In particular, the *Dipartimento formazione e apprendimento* of SUPSI and the *Dipartimento dell'educazione, della cultura e dello sport* who wanted and supported this journal, and all those people that in the previous years opened the road of Mathematics Education in Canton Ticino with the *Bollettino dei docenti di matematica*, along with those that contributed in several ways to the realization of this journal: members of the scientific committee, of the editorial committee and all researchers, teachers and their students, whose contributions and propositions will be fuel and enrich this project.

Our wish is to create a cultural and professional opportunity for learning and exchanging ideas and experiences, something that could be of help both to research and to the schools. In fact we believe that moments of comparison, dialogue, exchange and sharing of experiences and reflections are indispensable for good research and good teaching processes. United by the common goal of making Mathematics understood, used, appreciated and even loved.

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