

Editorial

«I have often stepped on bridges that unite (or should unite) scientific and literary culture by crossing a crevice that has always seemed absurd to me. There are those who wring their hands and call it an abyss but do nothing to fill it. There are also those who strive to enlarge it, as if the scientist and the man of letters belonged to two different human subspecies, mutually alloglot, destined to ignore each other and not to be interfecund. It's an unnatural, unnecessary, harmful cleft [...]».

(Primo Levi, 1985, p. 14, translation by the author)

This is how Primo Levi wrote to underline the unreasonableness of a deep-rooted separation between scientific and humanistic culture. We agree with the writer: this is really an unreasonable separation, and we want to take the side of those who are trying to do something, however small, to bridge the abyss.

Thus, the ninth issue of the journal, the first special issue, tries to provide ideas for uniting the two “worlds” evoked in the quotation, choosing two specific disciplines: mathematics and the Italian language, which have been for too long mistakenly understood as separate at both the scientific and the didactic level. Although many contributions throughout history have aimed to highlight the importance of joint work between disciplines – also at the teaching level through the recommendations in the various curricula of the different countries – this union has never been widely and universally applied. It should be pointed out, however, that there are several groups of researchers and teachers who have dealt with it in different ways and forms, always highlighting the strength and usefulness of such an encounter. It is precisely on these encounters, which have taken place both in the world of research and in the world of school, that it is important to lean to raise awareness of this important subject so that reflections and experiments do not remain sporadic but become increasingly widespread. Therefore, we decided to collect some contributions addressed to all levels of school that could be significant for both researchers and teachers, and from which the importance of synergistic didactic work between the world of mathematics and that of the Italian language could emerge.

The section *Riflessione e ricerca* is composed as usual of three articles. The first contribution presents interesting reflections emerging from a set of researches exploring the relationship between language and the development of logical abilities. The research has promoted the design and implementation of an educational device articulated in linguistic-manipulatory activities carried out in grade 4 classes of primary school.¹ Qualitative analyses are presented showing the elaboration methods implemented by children to solve the various situations proposed. The second contribution also deals with the relationship between language and logic, but refers to the level of Italian upper secondary school² and the university level. Through the analysis of some examples, the article discusses the processes of interpretation of mathematical texts in verbal language, and the potential conflict between the interpretative mechanisms inherent in the symbolic notations of mathematics and in those that are usual of languages. It is concluded that the diversity of the interpretative processes between language and languages of logic advises against proposing activities requiring logical interpretation of verbal texts outside the contexts in which this is justified. Finally, the last contribution of the section reports on a research carried out within the project *Italmatica. Comprendere la matematica*

1. The primary school in Italy lasts five years and corresponds to the grades from 1 to 5.

2. The upper secondary school in Italy lasts five years and corresponds to the grades from 9 to 13.

a scuola, tra lingua comune e linguaggio specialistico. The article focuses on portions of Italian and Swiss geometry textbooks addressed to primary and lower secondary schools³ on the theme of polygons, in which the different types of logical-argumentative textual movements (related to making “do”, making “imagine” and making “abstract”) are investigated in a strictly interdisciplinary way. In particular, qualitative and quantitative analyses of these movements are carried out, with explication of possible didactic implications.

In the section *Esperienze didattiche* there are four contributions, related to compulsory and post-compulsory education. The first contribution describes some of the experiences realized by a heterogeneous group of teachers in kindergarten, primary and lower secondary schools based on interdisciplinary didactic paths in mathematics and Italian language. These experiences cover several aspects: reading, understanding and formulating problems; the use of narratives to tell mathematics; ludolinguistics as a tool to encourage a positive approach to the error and to strengthen vocabulary and communication skills. The second contribution presents a didactic path carried out in a class of lower secondary school in Ticino with the aim of investigating the development of the students' beliefs regarding the effective elements and processes that can be implemented to achieve an optimal solution of a mathematical problem. The paper describes the itinerary and presents the results, which show a shift of attention from the mathematical result to processes such as the role of reading, the importance of understanding the text and the interpretation of the result in the real context. The third contribution presents a teaching module entitled *La Lingua Matematica*, aimed at grade 9 students and offered within classes of the *Liceo Matematico*; the module has two main objectives: to introduce questions related to mathematics and language, and to introduce the concepts of theorem and proof. The article highlights how the path has led students to confront each other, develop hypotheses and produce arguments. The last contribution, finally, deals with kindergarten school, and aims to describe an interdisciplinary itinerary between mathematics and Italian language. The article presents a laboratory path based on the creation of a “numerical passport”, thanks to which students have the opportunity to confront themselves with contextualized activities in the real world, developing their linguistic and mathematical skills in a rich and positive way.

Even the *Recensioni* have been written for being dedicated to the meeting between the two worlds. We propose 100 reviews of illustrated books that can be effectively used in continuity between kindergarten and primary school to promote teaching paths integrating mathematics and Italian language. The reviews are accompanied by didactic comments to help teachers to insert them within a learning path. There are also reviews for older readers: they offer examples of books written by authors who, although not “literati by profession”, defend the conviction of a new humanism made up of science and art, rationality and imagination, calculation and fantasy.

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Bibliography

Levi, P. (1985). *L'altrui mestiere*. Einaudi.

3. The lower secondary school in Italy lasts three years and corresponds to the grades from 6 to 8.