

Editorial

This sixteenth issue of the *Didattica della matematica. Dalla ricerca alle pratiche d'aula* journal is a special issue, as its contributions focus on a specific theme. This is the second time that the editorial and scientific committee has made such a choice: the first occasion came in 2021, when the ninth issue of the journal was dedicated to the theme of the relationship between mathematics and the Italian language, a union between two disciplines usually considered to be at the opposite ends of the spectrum. This time the journal has chosen to explore a relationship that is not so distant from the one addressed in the previous special issue, but focuses rather on the connection between the teaching and learning of mathematics and storytelling, viewed from different perspectives.

Storytelling, in all its forms (oral, written and visual), is the oldest form of communication, through which knowledge was passed on and evolved. Its relevance in education is increasing, for both humanities and science disciplines, for various reasons, such as accessibility, through the possibility of making connections between abstract information and concrete situations, and affective attachment, created by the possibility of identifying with the characters. Storytelling thus fosters students' involvement on both the imaginative and emotional levels. In the teaching and learning of mathematics, the introduction of problems through storytelling aims to promote a synergy between logical thinking and narrative thinking, which can help students resolve a problematic situation. However, it is important to emphasize that for this synergy to be effectively activated, the narrative and logical dimensions of the problem-story must be well integrated (Zan, 2012a, 2012b).

In this issue we present different facets of the use of storytelling as a methodological context in which the process of teaching and learning of mathematics is developed.

As usual, this issue features three articles in the *Riflessione e ricerca* section. The first contribution presents and discusses a methodological tool called *Digital Interactive Storytelling in Mathematics* (DIST-M), which is based on the integration of research insights from three areas: mathematics education, which increasingly focuses on balancing narrative thinking with logical-scientific thinking in the development of competency-based contexts; educational psychology, which recognizes learning success as the result of both social and individual processes; and online digital teaching and learning, which has taken on a dominant role in recent years. The second article traces and analyzes the artistic trajectory of Italo Calvino, highlighting his work as a writer and intellectual who, ahead of his time, successfully integrated many ideas and structures of mathematical reasoning with the storytelling typical techniques and creative procedures; the article suggests that teaching mathematics could contribute to educate citizens who are capable of facing global challenges with creativity and scientific rigor. The third article presents the selection and translation of three chapters from the book *Teaching Mathematics as Storytelling* (Zazkis & Liljedahl, 2009), in which the authors provide numerous examples of how introducing mathematical concepts through storytelling actively engages students in constructing mathematical meanings and promotes deep understanding. Examples include using stories to explain a concept, altering the context and narrative structure of a problem, and reframing a descriptive problem in narrative terms.

There are four articles in the *Esperienze didattiche* section. The first article presents some immersive experiences made possible through the use of the DIST-M teaching tool; the experiences involved

lower secondary school students¹ in developing argumentative skills and symbolic formalism in the area of number theory, particularly related to algebraic discourse and the development of relational thinking. The second article describes the authors' experience within the third edition of the "Proud of You" project, which aims to prevent school dropout in disadvantaged suburbs in the South of Italy; the project offered participating schools a *gamebook*, which served as a framework for various educational activities, some of which are recounted in the article through a narrative lens. The third article reflects on the impact and potential of an educational experiment carried out according to the DIST-M theoretical framework and protocol; in particular, the contribution highlights how the DIST-M methodology can serve as a valuable tool for formative assessment of students' competences, as well as an opportunity for teachers' and students' self-assessment. Finally, the fourth article presents an experimental teaching experience grounded on semiotic mediation theory and storytelling, carried out in a first-grade class in primary school.² The experience aimed at building the sense of natural number and the number line through the narrative structure of fairy tales, the use of play and the incorporation of artefacts, all within a vertical curriculum perspective.

The *Recensioni* section also includes collections of books and papers devoted to storytelling in mathematics teaching and learning, presented in ascending order of schooling: the first review comments on 50 illustrated books suitable for introducing mathematical concepts in preschool and primary school; the second collects fiction books for young readers, from Mickey Mouse to mysterious mathematical thrillers; the third review covers reflection booklets, short stories, and poems created in the context of the literary competition *Matematica a parole*; the fourth focuses on the DIST-M project website, which presents its theoretical foundations, the technologies used, its implementation, and the experiments conducted; the fifth review is about the *Comics&Science* series, a collection of comic strips that address scientific content at various levels; finally, the sixth review presents the book *The Meaning of Proofs: Mathematics as Storytelling* by Gabriele Lolli, in which the connections and similarities between the two areas of knowledge are explored.

We wish all readers an enjoyable experience and remain open to hosting further topics of particular interest for mathematics education in the future.

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References

Zan, R. (2012a). La dimensione narrativa di un problema: Il modello C&D per l'analisi e la (ri)formulazione del testo. Parte I. *L'insegnamento della matematica e delle scienze integrate*, 35A(2), 107–126.

Zan, R. (2012b). La dimensione narrativa di un problema: Il modello C&D per l'analisi e la (ri)formulazione del testo. Parte II. *L'insegnamento della matematica e delle scienze integrate*, 35A(5), 437–468.

Zazkis, R., & Liljedahl, P. (2009). *Teaching Mathematics as Storytelling*. Brill.

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

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