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# Teaching mathematics creatively

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# BOOK REVIEW

**Teaching mathematics creatively**, by Linda Pound and Trisha Lee, Abingdon, Routledge, 2011, 168 pp., £19.99, ISBN 978-0415-5759-28

> Creative teachers remember the importance of fun. (138)



Quoting Joubert (2001, 21) cited by Teresa Cremin, the editor of this series of books related to 'Learning to teach in the primary school', 'Creative teaching is an art. One cannot teach teachers didactically how to be creative; there is no fail safe recipe or routines. Some strategies may help to promote creative thinking, but teachers need to develop a full repertoire of skills which they can adapt to different situations'.

From this perspective, the authors stimulate teachers to face creative teaching of mathematics from a number of different points of view, developed in each of the 12 chapters of the book, from motivating children to talking and thinking about mathematics to exploring mathematics by means of storytelling and music. The book is basically structured into three major sections: (i) introductory chapters to positive feelings with mathematics (Chapters 1 to 4); (ii) teaching mathematics creatively (Chapters 5 to 7); (iii) specific tasks and case studies in mathematics exploration by students (Chapters 8 to 11); with a final summary of the book's overall message (Chapter 12).

What people think about mathematics generally deals with numbers and their sums. In other words, in most cases mathematics is not seen as a vital part of life, namely as the *science of patterns*. On the contrary, the baby matching two different sounds, the golfer judging distances, the snooker player calculating ball angles – they are all doing mathematics. Chapter 1 invites readers to view mathematics from a different viewpoint, stressing the relationship between mathematics and real life. In this view, the challenge for educators is to keep minds alive and stimulate creative mathematical thinking. This message introduces the reader to Chapter 2 on positive feelings, creative dispositions and mathematics. As stressed by Devlin (2000), everyday life is more related to approximation rather than precise calculus and precise and formal reasoning is not required for mathematical discovery when logical mathematical thinking is involved. Hence, raising questions is far more stimulating for children rather than simply computing (correct) answers of stereotyped problems (Chapter 3). In this view, Chapter 4 presents problems dealing with a number of amazing issues which aim at promoting children's interaction: from cubes extending in four dimensions, to alien plants growing, to Archimedes jumping in the bath, to centipedes sharing their shoes with spiders, ants, woodlice and bees. Once children have had the possibility to develop their own ideas they will become fascinated by talking and thinking about mathematics (Chapter 4).

Chapter 5 introduces the 'Teaching mathematics creatively' section (Chapters 5 to 7), starting with real maths and structured materials. As stressed by the authors, having tangible materials is important in maths since children need everyday experi-

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ences on which to base their ideas. This is true not only with objects but also, e.g., with drama and role play. Quoting the authors (59): 'a drama centred around pirates, a vet's surgery or a baby clinic, or a travel agency present a wealth of mathematical learning opportunities for older as well as younger children' (see also Egan 1988). In other words, children can understand abstract concepts in a better way when they are organised into a story. Chapter 6 provides entertaining stories like 'King and Queen of Number', a world in which numbers disappear and are replaced by sounds and physical movements, together with amazing algebra stories like 1C + 1FG > 1SM + 2 US, namely 1 Cinderella and 1 Fairy Godmother are greater than 1 Stepmother and 2 Ugly Sisters.

Generally, quoting the authors, 'if [a story] doesn't grip you, it won't engage children' (75). That is why authors conclude the 'Teaching mathematics creatively' section by dealing with giant maths (Chapter 7). Children are generally fascinated by giants and by extremes of giants vs. little people. In this chapter giants are provided as a basis for conjectural thinking, namely for 'thinking outside the box' on a number of mathematical pattern-related concepts like scale, size, proportions, dealing with, e.g., the organisation of a giant's birthday party or the preparation of a bed for the night for Gulliver.

The final section of the book (Chapters 8 to 11) mainly accounts for case studies demonstrating the applicability of mathematics in a number of different fields. The cross-curricular nature of mathematics is disentangled in Chapter 8, which encompasses the integration of mathematics with science, design, technology, history, geography but also arts, dance, music, drama. Each of the following chapters explores a different aspect of the cross-curricular nature of mathematics: mathematics and the children's playground (teaching mathematics outdoors, Chapter 9), understanding architecture by mathematics (from Pythagoras to blockplay and cardboard boxes, Chapter 10), exploring mathematics through music (from the physics of sound to rhythm and time by hand clapping, Chapter 11).

The final chapter (Chapter 12) makes a summary of the scope of the whole book, summarising good practices in teaching mathematics creatively by (i) actively encouraging pupils to question, (ii) creating a relaxing working environment, (iii) creating conditions for quiet reflection and concentration, (iv) encouraging unexpected events, (v) being willing to let pupils take the lead, and (vi) joining in with creative thinking and behaviour.

The authors of the book skillfully discuss all the aforementioned issues, using international references and proper examples. Those readers expecting just a handbook about 'teaching mathematics to children in a playful manner' will be disappointed. This book is not an ending; it's more a starting point to deal with several additional issues related to creative teaching. If this is understood by teachers approaching this book, they will learn how to help children fall in love with maths.



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