

Recension / Book Review

Jo Boaler. (2008). *What's Math Got to Do With It? Helping Children Learn to Love Their Least Favorite Subject – And Why It's Important for America*. New York: Viking. ISBN-10: 0670019526; 13: 978-0670019526

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In this book, Boaler presents disquieting statistics about the lack of achievement and interest in mathematics in the United States. She then uses her own research in mathematics education to create sound arguments and offer practical suggestions to address this problem. She addresses many current issues in mathematics education, including standardized testing, gender issues, and streaming. Although Boaler relies heavily on research studies, she writes in a manner accessible to parents and teachers.

THE AUTHOR

Boaler has been a secondary mathematics teacher and national mathematics assessment designer in England, and a researcher and professor in England (King's College, University of Sussex) and the U.S.A. (Stanford University). She has won several awards for her teaching, research, and publications, and at the time of publication, was the Marie Curie Professor of Mathematics Education at the University of Sussex. She has conducted research that relates to all the main topics in the book, and cites these examples throughout. With her extensive experience, Boaler is a leading authority on the subjects discussed in this book.

Although Boaler advocates for teaching in a *mathematical way* (i.e., a way that allows students to explore mathematics) rather than advocating for a certain style of teaching, she shows her preference for reform mathematics practices throughout the book. Reform mathematics practices focus on student discussions and explorations, situated learning, and the development of an understanding of the meaning of math-

ematical concepts. This approach is an alternative to the repetitive practice of mathematical methods that tends to be associated with traditionalist teaching practices.

THE AUDIENCE

Boaler makes clear the target audience of parents of school-aged children both by statements made throughout the book and by the inclusion of parent-specific resources. The practical tips and tools she provides enable parents to instigate positive change in their children's mathematics education. Boaler uses an appropriate tone and style of language to meet her readers' needs, interests, and backgrounds. She does not presume that readers have backgrounds in mathematics education, or that they are familiar with academic literature. Boaler provides sufficient background information for the reader to understand the topics and research findings, without patronizing.

This book is also useful for practicing teachers because it provides an overview of relevant mathematics education research in a practical, classroom-applicable manner. Boaler familiarizes practicing teachers—who typically do not have the time or interest to stay informed about mathematics education research—with current research and its practical implications. Additionally, the multidimensional mathematics problems included may inspire teachers to explore questions that incite rich mathematical discussions with their students.

HIGHLIGHTS

Boaler has organized her book in a logical, sequential fashion, addressing fully the arguments posited in the introduction as the book unfolds. Chapter 1, entitled "What Is Math? And Why Do We *All* Need It?" (emphasis in original), shows how school mathematics that most people experience has little relation to *real* mathematics done by mathematicians. By exposing the chasm between these types of mathematics, Boaler shows what tends to be missing from school mathematics: a sense of exploration, collaborative work, and the use of multiple representations.

In Chapter 2, Boaler explores problems with mathematics teaching practices in America. By providing examples of questions and student responses from assessments, as well as achievement statistics and stu-

dent interview data, Boaler convincingly argues that the mathematics that many students in America are experiencing is tedious, non-thought-provoking, and damaging to critical thinking skills.

Boaler next addresses these problems by providing her vision for a better future in mathematics education. Chapter 3 relies heavily on longitudinal case studies that Boaler and her colleagues have conducted in American and British schools. She focuses on the positive outcomes in student attitudes, achievement, and understanding in mathematics that are achieved in schools that use meaningful project-based work rather than traditional practices. This chapter in particular reinforces her position as an advocate for reform mathematics practices.

In the next three chapters, Boaler discusses standardized testing, streaming, and gender issues in mathematics education. Her advocacy for reform practices is again highlighted, as she argues that reform learning environments can lead to rich assessment for learning, student collaboration, and gender equity in attitudes and achievement in mathematics. Boaler acknowledges opponents' arguments and the challenges of implementing reform mathematics teaching, and addresses these problems by offering counter-evidence and suggestions for change.

The remainder of the book features specific tips for parents to interest their children in mathematics at home and to prompt change in their children's school mathematics programs. Boaler makes a sound attempt to engage parents, and subsequently their children, in mathematics by providing a variety of rich mathematics problems and activities. Photos of everyday and mathematics-specific objects that can be used to explore mathematics strengthen this section.

CHALLENGES

Boaler includes suggestions of seemingly non-threatening questions for parents to ask about mathematics education programs; however, some teachers may see these questions as an affront to their professional expertise and judgment. Furthermore, if parents are not comfortable with mathematics, they may not feel sufficiently confident to approach their children's teachers. Although I applaud Boaler's efforts to get parents involved in instigating change in mathematics education, I am unconvinced that most parents would feel comfortable undertaking some sug-

gested tasks, such as starting a school mathematics club. Perhaps if parents and teachers worked together to initiate creative, collaborative projects, the ownership would be shared and the tension between home and school would be lifted for students.

OVERALL IMPRESSION

This book is an excellent resource for parents and teachers, as well as anyone else interested in mathematics education. It fulfills a previously unmet niche because it presents well-researched, thoughtful arguments about mathematics education in America in an easy-to-read format that engages readers. Boaler's arguments are convincing, as they are backed by diverse sources of evidence. This book has the potential to instigate change in mathematics education practice, and it is a sound example of making research accessible, relevant, and practical for the general public.