



# **What's Math Got to Do with It?: Helping Children Learn to Love Their Least Favorite Subject--and Why It's Important for America**

*Jo Boaler*

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A recent assessment of mathematics performance around the world ranked the United States twenty-eighth out of forty countries in the study. When the level of spending was taken into account, we sank to the very bottom of the list. According to Jo Boaler, who was a professor of mathematics education at Stanford University for nine years, statistics like these are becoming all too common—we have reached the point of crisis, and a new course of action is crucial. In this straightforward and inspiring book, Boaler outlines the nature of the problem by following the progress of students in middle and high schools over a number of years, to find out which teaching methods are exciting students and getting results. Based on her research, she presents concrete solutions that will help reverse the trend, including classroom approaches, essential strategies for students, advice for parents on how to help children enjoy mathematics, and ways to work with teachers in schools.

The United States is continuing to fall rapidly behind the rest of the developed world when it comes to math education, and the future of our economy depends on the quality of teaching that our children receive today. In *What's Math Got to Do with It?*, Jo Boaler offers us a new way forward, making this book indispensable for all parents and educators, as well as anyone interested in the mathematical and scientific future of our society.

## What's Math Got to Do with It?: Helping Children Learn to Love Their Least Favorite Subject--and Why It's Important for America Details

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# **From Reader Review What's Math Got to Do with It?: Helping Children Learn to Love Their Least Favorite Subject--and Why It's Important for America for online ebook**

## **Valerie says**

This is exactly the book I needed to read right now. I always want to encourage flexible thinking, pattern recognition and problem solving, but I hold myself back because of worry about standardized testing. I worry that my classroom will be seen as noisy and non-productive, because I encourage my students to ask questions, and collaborate. I felt very ineffective last year, because I hovered between what I felt was interesting and what I felt I 'should' be doing. This book not only validated my feelings about how to reach more students, but it gave me many practical avenues for doing those things that I feel are important in a bigger, better way. I am going to suggest that my math teachers book club read it. Don't laugh, there are at least 2 members.

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## **Kate says**

I decided that it's high time I got control of my math anxiety, and, rather than picking up a fractions drill book from the children's section, I got this. I want to understand WHY I can't do math.

And now I do. I do not have a learning disability in math. My teachers have had teaching disabilities. Math is a subject that is not taught well (from sources other than this book, I learned that it hasn't been taught well for a long time. Students taking advanced math classes have steadily dropped throughout the 20th century and into the 21st century).

I was from the "New Math" generation. New Math was developed by mathematicians who didn't know squat about child development. They attempted to teach complex formalized math concepts (set theory, whatever that is) to six year olds. They produced a massive generation of innumerate, math phobic baby boomers.

I learned from this book that word problems (the teaching mode from 1975 through the eighties) didn't work because the contexts presented were unrealistic and irrelevant. After that we had "fuzzy math" for a brief time, where you sort of kind of guess what the answer is and the teacher says, "close enough." In reaction to that, the math wars started. "Math wars" comprises a pretty vitriolic fight between people who think kids learn math best through drills and rote learning and those who think that it is important to teach the kids why math works the way it does. The author says she doesn't take sides in this debate, but it's pretty clear where she stands. Kids need to understand why math works the way it does. She demonstrates how teaching kids how can work and can get kids excited about math.

I found myself wondering about my own attitudes and understandings of math as I read. Math isn't what I thought it was. (Rote, useless memorization and drills.) That's a good thing.

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## **Paul says**

This is an excellent book about problems with math instruction in public education and what can be done about it. As a fifth grade math teacher I know all too well how many students come into my classes with dread. I'm very happy to say that by the end of the year most of them will say math was their favorite class. There were several times while reading this when I thought, "You are preaching to the choir Jo!" Too many poor quality tests, too much emphasis on drills, and not enough thinking and talking about problem-solving are widespread issues. I am looking forward to reading more of the resources she lists in the appendices.

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### **Hester says**

I should have known I would have problems with this book when I saw the subtitle "Helping children learn to love their least favorite subject." While math is America's most hated subject, it is also its most loved. Boaler writes as if every child in the US hates math, which is just not true. She has some good points and interesting research, but she consistently paints an incomplete picture.

She repeatedly states that current instruction methods are inadequate and describes superior ones, suggesting they be implemented. What she does not mention is that her ideas require master teachers and can rarely be used successfully by the less experienced. For example, she says that math tracking should be abolished and students should be in mixed-ability classrooms. The teachers, however, need to use techniques; they need to assign problems that are accessible to the struggling and challenging to the advanced. She never reflects on the difficulty of this!

She also suggests that teachers should move to project-based teaching, having students work on challenging problems in groups. She never mentions how easy it would be for a beginning teacher to lose all control over the classroom. Let me say from experience(my first semester of teaching) that asking beginning teachers to teach this way without backup is a recipe for disaster. Combine this with her sloppiness in quoting Barbie(she said "Math is hard," not "Math Class is hard") and I have some serious doubts about the book as a whole.

On the other hand, some of her research on obscure language in word problems and on the need for girls to understand formulas rather than just apply them is convincing.

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### **Rebecca says**

I am scared of math, barely got through calculus I don't know how, and now can barely remember how to do probably 5th grade math. But this book really opened my eyes to what math can and should be. It actually made me want to try to learn math again. It talks about the ways schools and parents can teach and present math in fun, interesting, applicable ways that could change the dismal math scores of American kids. Not that math should be about scores, but it shows how poorly America is teaching math compared to most other countries. It actually got me excited about math, a bit.

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### **Moses Hetfield says**

I took a class with Jo Boaler last year and she inspired me to pursue a career in math education. I decided to check out her book for more inspiration and was not disappointed. Boaler makes a convincing argument in

favor of reforming math education to allow for more creative and collaborative discovery-based learning. She provides important insights into how we can combat inequities in math education and develop assessments that are designed specifically and carefully for the purpose of improving student learning outcomes. She also gives tips for teachers and parents to help them instill a love of math in their students/children. Boaler's writing is thoughtful, persuasive, and well-researched. Her work critiques the way math is often taught in schools in a productive manner that provides clear, actionable alternatives, including ways for teachers and parents to work towards systemic change or work within the system to improve outcomes.

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### **Jeff says**

GO READ THIS BOOK! What's Math Got to Do with It is the best articulation of where American math education should be headed in the 21st century that I have ever read. Boaler's book aimed towards parents and teachers is instantly accessible, with a clear rationale for why children need to be engaged in interesting complex problem solving in math throughout their educational experience as opposed to regular practice of standard algorithms. She backs up her work with her own and others' research making a compelling case for making changes that emphasize understanding, reasoning, and communication in math classes as opposed to memorization and procedural application. With chapters, on standardized testing, ability grouping, girls and math, and practical advice for how parents and teachers can provide rich mathematical experiences for every child, Boaler covers a wide ground that consistently reinforces her message about what math really is (i.e. the study of patterns) and how students should experience math to understand it (i.e. working through rich problems).

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### **Sylvia says**

This book makes a lot of points that I respect and agree with--math should involve project-based problem-solving, students should be encouraged to work in groups and talk through math problems, etc--but sometimes Boaler is overly confrontational and negative, without offering a lot of strategies for teachers to follow.

As another reviewer says, the title explicitly states that every kid in America hates math, which isn't true. She repeatedly refers to students having been "traumatized" by their math educations, which just seems overly aggressive to me. Many math classrooms DO involve project-based learning, creativity, and interesting questions--even the ones which also involve tons of drill and kill. Honestly, I went to very standard public schools, and had many good and not-so-good math teachers, and I can only remember one class in my life that was primarily conducted in the utterly silent, entirely worksheet-based way she characterizes as standard.

Regardless of this oversimplification, the book is worth reading. It makes some great curriculum points, highlights some interesting research, and presents several case studies of students that I really enjoyed. Reading it gives you plenty of motivation to work more flexible math curricula into your classroom: but you may have to look elsewhere to figure out exactly what that entails.

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## **Annette says**

What's Math Go To Do With It? and The Elephant in the Classroom by Jo Boaler are different versions of the same book. The first focuses on American classrooms, while the second takes a United Kingdom approach. While it's interesting to compare the different examples and approaches, they're basically the same book.[return][return]Boaler does an excellent job exploring the importance of math for today's digital citizens while discussing the need for changes in teaching practices.[return][return]If you're seeking a book that will generate discussion about changes that need to take place in to the math curriculum. This is a great resource to begin reflecting on current practices and exploring new directions.

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## **Marissa Morrison says**

In this excellent book, the author describes how math as practiced by mathematicians differs from math learned in school (more project oriented, often done in groups, relies less on specific types of calculation and more on general reasoning). When math in school is taught in an environment that replicates how mathematicians actually work, kids have fun, understand the importance of the work they're doing, and learn more.

Boaler slams the useless high-stakes tests created for No Child Left Behind and promotes the "assessment for learning" model instead. Assessment for learning has three components--letting kids know what they are expected to learn, communicating with them about where they currently are in that learning process, and giving clear advice to lead them to success.

Relying on comparisons of how kids learn in various countries, Boaler explains how separating them into different classes by ability hurts everyone. This system lowers the ambitions of the slow and average kids and places advanced learners in an environment where teaching happens faster, students ask few questions, and teachers rely on a narrow range of teaching methods.

A key difference between students who succeed at math and those that don't is that the fast learners know how to degroup and regroup numbers, so that they end up doing simpler problems. For instance, when faced with the problem "What is 11 times 15?" a struggling math student may write out the whole multiplication problem. A more successful student will reason that that is 10 times 15 with another fifteen added on. In order to foster this kind of reasoning, Boaler suggests that classes work on these types of problems together aloud, without pencil and paper, so that all students come to see the different ways of figuring out the answer.

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## **Megan says**

I did not expect to enjoy this book so much. It's about math, after all, and math was never my favorite subject. I ordered the book from the library thinking it would have a few exercises to help me teach my second-grader math at home, since math in American schools is notoriously crappy and I wasn't sure which curriculum I should support, etc. Well, I got much more than I bargained for. This book has not only given me a lot of ideas about how to incorporate mathematical thinking into our home, but has also caused me to

revisit my core assumptions about math. I was fascinated by every chapter in this book. Boaler is a mathematics education prof in Sussex and studies the way children learn math. She argues that the way math is taught in America (and England) undermines the fundamental creativity and flexibility of the subject while discouraging students from ever wanting to pursue professions that employ it. She discusses the difference between the way boys and girls learn according to neuroscience and how that should influence our teaching. It was fascinating and so helpful. I recommend it to anyone interesting in pedagogy at all and to anyone who wants their children to have a better experience in math than they did. In the end of the book she gives ideas on how to help your child develop "math sense" and also includes very helpful appendices and bibliographies.

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### **Jane says**

Boaler covers well the crucial information parents need to help schools focus on best practices in mathematics instruction. However, the book is somewhat repetitive and not enough of a how-to for her intended audience: parents! I felt the content order was right for educators but not for parents. Further, I kept thinking of other current titles that are far more readable (such as *Outliers*, *Drive*, etc.) that people from all walks of life are finding enjoyable. I've done considerable research on how students learn mathematics and have worked with schools for years to help them implement the kinds of reforms she addresses. Reforming math education in this country is such a crucial issue that, given the content of this book, I found myself thinking, "Oh if only someone had helped her take this from good to the most gripping, accessible text possible..."

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### **Megan Blood says**

Who stays up until 11pm reading a book about how to teach math? Oh yeah--me. Seriously--this was a fantastic book. As one of the very, very many who struggled with math (my 5 on the AP Calc test is still one of my greatest achievements), this really rang true. It's much more than just a 'try this method' book; she goes into so many different facets of schooling and how they affect how students learn math. My favorite chapter dealt with gender differences. Did you know that men and women process math in completely different sections of their brains? DID YOU?!

I read this to help me know how to teach my kids math. But even if I wasn't planning on homeschooling, I would still want to know this information. If you have a child struggling with math, READ THIS. If you want your child to be good at math, READ THIS. If you want to have really interesting dinnertime discussions with your math-and-science-brained husband, READ THIS.

You can all thank me later.

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### **Karen Ng says**

I'm always interested in reading books about learning, especially about how students learn math and writing. The author is a professor at Stanford and Sussex, who conducted extensive researches in both United States and Europe (France, England..), trying to find out why math is the most hated subject in school, why most students are failing it, and why the US is behind the other countries in producing above average math

students.

She studied groups of students from middle school to high school, and concluded that the math teacher is a very important factor in making math interesting, as well as producing math achievers, peer tutoring and group learning helps both the advance and the average student, out of the box thinking should be encouraged, as long as the right answer is reached.

She has very constructive and logic recommendations for both parents and teachers, to encourage the love of math. I highly recommend this book for all math teachers and parents.

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## **Monica says**

Didn't much like the title and was worried by introduction with the typical "everyone needs math in today's world" cheer, but this book is about so much more than that. She conducted studies in all types of classrooms, all types of school in America and England. Discussed were gender issues, cooperative learning and assessments. I was inspired most by the assessment talk - as she recounted the effects on students from grading them against one another instead of against themselves. She talked a great deal about getting students involved in setting or understanding objectives and giving them measurements of their progress along the way - the importance of indicating where they stand now vs where they started, which areas need improvement according to the set objectives, and how they can take control of their own learning by responding to those assessments.

I haven't yet read or studied educational gender issues to know whether I agree with all of her comments regarding gender - I tend to think trending by gender is an oversimplification with any issue, since many other issues play into learning. She gets into this when she disagrees with some that the answer is to teach boys one way and girls another, but she places emphasis on the issue and recommends these learning differences should be considered.

Overall, the book was written with plenty of bias, but also with plenty of data - the conclusions were based on her direct experiences while conducting these studies. Her thought process was clear and rationale seemed solid to me. The details are interesting and worth the read.

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