

How the Brain Learns Mathematics

By David A. Sousa

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To reach all your math students, use your brain—and theirs, too!

This updated bestseller takes readers to the next level with new brain-friendly strategies backed by the latest research and even more ways to seamlessly incorporate what you learn about your students' developing minds into your math classroom. Discover the cognitive mechanisms for learning math, explore factors that contribute to learning difficulties, and follow a four-step teaching model that relates classroom experience to real-world applications. Features include:

- New strategies for motivating adolescents
- Integration of the arts into mathematics instruction
- New information on how technology affects attention and memory
- Expanded sections on number sense and ELL instruction
- More than 160 new references

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Editorial Review

Review

*"Teaching mathematics without having read **How the Brain Learns Mathematics** is like trying to master tennis without a coach. Sousa's book is a tour de force: It builds a solid bridge from cognitive neuroscience to daily classroom practice. Every teacher of mathematics will benefit from this well-researched, well-organized, thoughtful, and practical approach to making math instruction align with how brains learn."*

(Spencer Kagan., Publisher/Professional Developer 2014-08-14)

"David Sousa's How the Brain Learns Mathematics, Second Edition is a wonderfully readable presentation of how neuroscience and cognitive psychology can inform the teaching of mathematics in elementary and secondary schools. Sousa engages his readers intellectually with recent research on the brain and mathematics learning, and avoids pat answers where the evidence is suggestive rather than conclusive. The book should be a valuable text for teachers who want a deeper insight into thinking processes behind the learning and teaching of math."

(Robert E. Slavin, Director)

"David Sousa has done it again! He has produced a highly-relevant, exceptionally practically, research focused book that will build better mathematics brains in classrooms and schools."

(John T. Almarode, Assistant Professor of Education)

"Sousa nailed it with these powerful insights on mathematics instruction. Teachers simply have to understand how students learn in order to provide top-notch instruction, and the specific teaching suggestions herein are invaluable! I love the three tier structure, emphasizing differences in teaching Pre-K and K, Pre-adolescent brains, and adolescent brains, and the emphasis on number sense at all levels is essential in the classroom today. Math teachers will apply these critical lessons immediately in their classes, and I'd urge every mathematics teacher and every elementary teacher to get this book!"

(William N. Bender, Author and Educational Consultant)

From a review in NCTM's *Mathematics Teaching in the Middle School*:

"Classroom teachers, administrators, and math coaches will appreciate the research-based explanations for why mathematics instruction that focuses on meaning making, connections, and processes is so important."

(Mary Alice Carlson)

"Few other books discuss the scientific way the brain is mathematically wired while maintaining relevance

to those interested in K–grade 12 education. Readers can expect to gain a deeper understanding of why students learn certain concepts easily and struggle with others and why the battle for successful student learning in mathematics is ever-changing. This book is not merely a collection of lesson plans and activities; it is also a deeper investigation into the science of mathematical learning and inspires readers to continue their own learning into the fascinating world of education.” (Nikki Armstrong, Mathematics Teacher)

About the Author

David A. Sousa, EdD, an international consultant in educational neuroscience, has written 16 books for educators and parents on ways of using brain research to improve teaching and learning. He has conducted workshops for more than two hundred thousand educators in hundreds of school districts on brain research and science education at the pre-K to Grade 12 and university levels. He has presented at national conventions of educational organizations and to regional and local school districts across the United States, Canada, Europe, Australia, New Zealand, and Asia.

Dr. Sousa has a bachelor of science degree in chemistry from Bridgewater (Massachusetts) State University, a master of arts degree in teaching science from Harvard University, and a doctorate from Rutgers University. His teaching experience covers all levels. He has taught high school science and has served as a K–12 director of science, a supervisor of instruction, and a district superintendent in New Jersey schools. He has been an adjunct professor of education at Seton Hall University and at Rutgers University. A past president of the National Staff Development Council (now called Learning Forward), Dr. Sousa has edited science books and published numerous articles in leading educational journals on staff development, science education, and brain research. He has received awards from professional associations, school districts, and Bridgewater State University (Distinguished Alumni Award), and several honorary doctorates for his commitment and contributions to research, staff development, and science education. He has been interviewed on the NBC Today show and on National Public Radio about his work with schools using brain research. He makes his home in south Florida.

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