

# Preface

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Both new and experienced teachers often show a heightened sense of concern when they prepare to teach science and mathematics lessons. They know that some of the more reluctant learners may or may not have been identified as having learning problems. But with or without learning disabilities, educators know that one size (educational approach) doesn't fit all. Like more than a few teachers, some reluctant learners simply do not like science or math — and others think they cannot be successful in these subjects. It seems poor attitude and poor achievement can amplify each other.

Many of the students who would prefer to avoid science and math do not sufficiently connect with the content or with their more enthusiastic classmates. In addition, underachieving students often don't understand the skills and concepts of science and mathematics. And are clueless as to why others might enjoy these subjects. *Bringing Science and Mathematics to Life for All Learners* builds on the social nature of learning to provide useful suggestions for reaching both reluctant and more eager learners. This book quickly moves from the theoretical to actual practice. It includes many examples of procedures and activities that are built on the assumption that the most successful instruction focuses on students' interests and makes good use of collaborative and differentiated activities.

The approaches suggested here reflect the belief that no one should be sidelined with basic skill training that keeps them away from creative

and collaborative engagement — factors that are central to scientific inquiry and mathematical problem solving. By opening some unique doors to actively learning science and math, it is hoped that teachers can provide lessons that help every student collaboratively construct knowledge.

There is general agreement that getting even the youngest students involved in learning science and math is a key to future success. There is also agreement that instruction in these subjects is made more difficult when teachers are not personally well acquainted with the subjects they are teaching. The good news is that most teachers are familiar with group work and find it a relatively easy way for them to approach subjects that they view as difficult. Experienced teachers also know that involving students in active, participatory, and connected learning is a proven way to help students enjoy even those subjects that some of them may have previously avoided.

Since developing positive attitudes towards science and math goes hand-in-hand with and developing competency, *Bringing Science and Mathematics to Life for All Learners* provides interesting methods and connects them to recent pedagogical approaches that reach across the curriculum. It builds on the expanding knowledge of what works in classrooms and suggests how new approaches to teaching and learning can transform science and math instruction. Ideas and activities for standards-based learning, collaborative inquiry, and active problem solving are included. The goal is to deepen the collective conversation, challenge thinking, and provide up-to-date tools for teachers so that they can help expand the level of science and math skills in the population.