

Introduction

In some ways – fundamental ways – teaching for all students is no different than teaching math well. The difference lies in the clarity, specificity, and “tightness” of instruction. While many children in low-poverty schools seem to achieve reasonably well with less-than-perfect instruction, evidence is pretty clear that children in high-poverty schools need excellent instruction from skillful teachers in the context of supportive administrative frameworks (Tapper, 2010). We will not address the question of administrative frameworks in this book, though that is an interesting question. Our goal is to focus on giving teachers tools they need to be skillful practitioners.

This book offers an approach to instruction for all students that is unique in three ways:

1. The use of inquiry to guide instruction.
2. A strong focus on continuous formative assessment to understand student thinking and to inform instructional decisions.
3. The use of a Main Lesson/Math Menu approach to lessons to address the need for both inclusion *and* differentiation.

In Chapter 1, we’ll look at the theoretical framework – the underlying approach – to teaching math for all learners. We’ll look at how learners actually learn math and what teachers can do to facilitate that learning.

Chapter 2 examines an All Learners lesson. This book is focused on the instructional context and pedagogy that form the framework of teaching so that everyone can learn math with conceptual understanding. Through the use of an inclusive Main Lesson and a differentiated Math Menu, we create a context for learning that can support success for a broad range of learners. Throughout this book we’ll reference the All Learners lesson model to situate activities and pedagogy.

One of the most important elements of creating success with mathematics is focus. A complete vision of math learning (as articulated by documents like the Common Core State Standards) is important for students to understand the breadth of math topics that will lead them to high school and beyond. But sometimes math learning in the U.S. can be “a mile wide and an inch deep” (Schmidt, McKnight & Raizen, 2005). At ALN we’ve done considerable work identifying the math concepts that will be most helpful for student success at

each grade level. We've done this by parsing the concepts that will lead to success in the next grade. These concepts are called HLCs or High Leverage Concepts.

Chapter 3 explores what HLCs are and how they might be used to support learning.

In Chapter 4, we explore the important formative assessment practices that support teacher understanding of student learning. Formative assessment is the heart of effective instruction because it asks the critical questions:

- “How does a student think about (or understand) a concept?”
- “What connections can a teacher make to further (or improve) this understanding?”

Without good formative assessment the creation of appropriate menu activities to support students is impossible.

In Chapter 5, we consider the ways in which student discourse supports, encourages, and facilitates instruction. We'll unpack a variety of talk moves that teachers can use during the Main Lesson, in small groups, and with individual students. The goal with this pedagogy is to help students find their own meaning with math concepts and be able to articulate that understanding for themselves and others.

In Chapter 6 we discuss the importance of creating a culture of belonging in the math classroom. Belonging is necessary for students to engage in learning. At ALN, we seek to widen the sphere for belonging in the math classroom. We are trying to remove the burden of “differentness”- the idea that one person belongs more than someone else and thus the someone else needs to work harder. This chapter examines the importance of belonging and shares instructional strategies that support belonging and engagement in the math classroom so all students see themselves as capable mathematicians.

Who needs this book?

Teaching Math for All Learners is aimed at teachers who want to provide effective instruction for all the children in their classes. This book can be valuable for teachers who may feel overwhelmed by the array of learners they must support. The strategies the authors in this book advocate are aimed at a single

goal – math for *everyone*. Most teachers are familiar with the notion that *most* children can reach *most* of the standards set for them. While to many this attitude seems “most realistic,” I believe it fails the American vision of what school should be – an education for *all*.

This book is not comprehensive in identifying all the techniques necessary to ensure that everyone learns, but it’s a start. Teachers will find valuable information in these pages on how to meet the needs of learners whom they might have thought not capable enough. When we talk about all learners, we really do mean *all*, and our approach is our best set of tools to meet that goal.

Almost all teachers will have students in their classes with learning challenges of one kind or another. It’s a wonderful fact that students come to school with a wide variety of knowledge and ability. This should be celebrated. The question is whether the schools are prepared to help students make use of what they bring rather than lamenting that they might be different. This book is an attempt to help teachers be prepared to support all the students in their classes to be successful with math – and the opportunities it affords.

References

Schmidt, W. H., McKnight, C. C., & Raizen, S. A. (2005). *A splintered vision: An investigation of U.S. science and mathematics education*. New York: Kluwer Academic Publishers.

Tapper, J. (2010). *Making Meaning: Successful Mathematics Teaching Practices with Students in High Poverty Schools*. ProQuest LLC. 789 East Eisenhower Parkway, P.O. Box 1346, Ann Arbor, MI 48106. Tel: 800-521-0600; Web site: <http://www.proquest.com/en-US/products/dissertations/individuals.shtml>.

Tapper, J. (2012). *Solving for why: Understanding, Assessing, and Teaching Students Who Struggle with Math, Grades K-8*. Sausalito, CA: Math Solutions.