
Preface

Academic language seems to be at the center of any discussion on schooling these days. The major question at hand is, How can we enhance its use in our diverse classrooms so that all students have access and opportunities for success? This volume is the second in a series of three books devoted to the language of mathematics in primary classrooms. It represents the voices of teachers as well as their students and is primarily geared to fellow teachers—sometimes working single-handedly, often with a partner or as a member of a professional learning community—who are faced with the changing student population throughout our nation.

While we pay much attention to the value of linguistic and cultural diversity in these exemplary classrooms, the issues that these teachers and school leaders face are universal:

- What is the academic language associated with student standards?
- What is the academic language found in instructional materials?
- How can academic language be exemplified in standards-referenced unit targets and lesson objectives?
- How can multiple texts and voices contribute to the teaching and learning of academic language?
- What is the evidence that teachers have incorporated academic language into their instruction and that students have integrated academic language into their learning?

We begin our journey into the world of mathematics education in Chapter 1, where series editors Margo Gottlieb and Gisela Ernst-Slavit illustrate the complexities of academic language. Here it becomes apparent that not only are there distinct dimensions of academic language, but language is also influenced by metalinguistic, metacognitive, and sociocultural awareness. Taking it one step farther, Gottlieb and Ernst-Slavit examine the language of mathematics and highlight the role of academic

language in the eight Standards for Mathematical Practice of the Common Core State Standards. In the last section of the chapter, we are introduced to the Curricular Framework, which provides the organizing tool for standards-referenced instruction and assessment throughout the series. By centering on the integration of content and academic language across curricular planning, implementation, and reflection, the Framework provides the backdrop for promoting content and language learning.

As an extension of the first chapter, we present a chart of the major mathematics domains from the Common Core State Standards with examples of academic language associated with those concepts, grades 3 through 5. As each of the other chapters is an in-depth case study of a grade-level classroom and topic, we thought it would be useful to provide a full spectrum of mathematics topics in the upper elementary grades. In addition, throughout the case studies there are call outs (*Consider this . . .*) that extend the research, pose questions for further reflection, or expand a particular concept.

Chapter 2, by Judith O’Loughlin, describes the partnership between a content teacher and an ESL-endorsed teacher as they plan together a unit on time for their third grade students. Via the use of different texts—including a ferry schedule, children’s books on time, different kinds of schedules, and the selected textbook, the teachers show how academic literacy is not only the domain of language arts. This chapter also discusses how the ESL teacher differentiates instruction for her group of eight English language learners (ELLs), three of whom have special needs.

The next chapter, by Gisela Ernst-Slavit, Margo Gottlieb, and David Slavit, depicts Amanda and her fourth grade students as they embark on a fractions unit. While fractions are pervasive in everyday life, many students experience difficulties in working with fractions. In addition to learning the algorithm manipulation of fractions, students need to grasp the underpinning concepts. Amanda, a language and content specialist, is aware of the challenging topic and thus plans and enacts a unit with the help of her fourth grade team. Building on the students’ personal interests, life trajectories, and backgrounds, she guides her very diverse class to become skilled mathematicians as they apply their recently acquired knowledge to everyday activities.

The last chapter, by Jennifer Bay-Williams, Rose Glasser, and Tricia Bronger, provides a snapshot of Heidi’s mathematics classroom at an ESL Newcomer Academy in Kentucky. The students in Heidi’s fifth grade classroom speak a dozen different languages and are at the earlier levels of English language proficiency. The unit on algebraic thinking takes place at the end of the school year and emphasizes two big ideas in the fifth grade: (1) analyzing patterns and relationships, and (2) writing and interpreting numerical expressions. Heidi’s well-thought-out unit relies heavily on children’s literature, is built on her students’ assets, and utilizes her

students' ability to solve problems mentally. Overall, Heidi's enactment clearly illustrates the benefits of differentiating instruction for ELLs.

In the last two decades, we have witnessed greater teacher cooperation and collaboration; in no place is this teamwork more visible than between content and language specialists. The following pages bear witness to this phenomenon, and it is supported by research that shows how a curricular framework can be a powerful tool for stimulating teachers to work in teams. As a result, students, in particular ELLs, are stimulated to systematically learn academic language, develop metacognitive awareness, and socialize into mainstream classrooms (Tang, 1994). Educators, including school leaders and administrators, have come to realize that only with a unified vision, mutual goals, and shared responsibility for the students under their care will there be advances in teaching and learning.

REFERENCE

- Tang, G. M. (1994). Teacher collaboration in integrating language and content. *TESL Canada Journal/Revue TESL du Canada*, 11(2), 100–116.

Along with the foundational book for the entire series, *Academic Language in Diverse Classrooms: Definitions and Contexts* by Margo Gottlieb and Gisela Ernst-Slavit (2014), each of the three volumes for mathematics and language arts represents a grade-level cluster. Here are the contributors and their content topics for the K–8 mathematics series.

The K–8 Mathematics Series

<i>Volume</i>	<i>Contributor</i>	<i>Grade Level</i>	<i>Content Topic</i>
1	Catherine Carrison Erika Muir	K	Whole Numbers and Number Sense
	Sylvia Celedón-Pattichis Sandra I. Musanti	Grade 1	Base-10 Thinking
	Michael Silverstone Debbie Zacarian	Grade 2	Basic Operations—Odd and Even Numbers
2	Judith B. O’Laughlin	Grade 3	Time
	Gisela Ernst-Slavit Margo Gottlieb David Slavit	Grade 4	Fractions
	Jennifer M. Bay-Williams Rose M. Glasser Tricia A. Bronger	Grade 5	Algebraic Thinking—Analyzing Patterns Across Representations
3	Amanda Villagómez Kerri J. Wenger	Grade 6	Geometric Solids
	Zandra de Araujo	Grade 7	Ratios and Proportions
	Gladis Kersaint	Grade 8	Geometry—Similarity and Congruence