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So That All May Learn:

An Essay Review of *Academic Language in Diverse Classrooms*

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Gottlieb, Margo & Gisela Ernst-Slavit (Eds.) (2013) *Academic Language in Diverse Classrooms: Promoting Content and Language Learning (Mathematics, Grades 3-5)*. Newbury Park, CA: Corwin.

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Today's accountability demands can be challenging for teachers in any subject; however, many educators, especially

elementary school teachers, manifest low self-efficacy when it comes to teaching

mathematics (Swackhamer, Koellner, Basile, & Kimbrough, 2009; Utley, Moseley, & Bryant, 2005). The discomfort that these teachers appear to experience may derive from shortcomings in preparedness that could have been addressed in college or graduate school. A study by Ugbe, Bessong, and Agah (2010), for example, found that one-third of teachers surveyed reported having had little or no pre-service mathematics training. The roots of the problem may run deeper, as many teachers also report having found mathematics difficult during their own primary and/or secondary education (Brown, McNamara, Hanley, & Jones, 1999). Yet whatever the cause, it is clear that easing teachers' anxiety over mathematics and improving their skills in teaching this subject could bolster their ability to enhance students' success.

For this reason, teachers, districts, and students alike stand to benefit from *Academic Language in Diverse Classrooms: Promoting Content and Language Learning (Mathematics, Grades 3-5)*, edited by Margo Gottlieb and Gisela Ernst-Slavit. This work is part of a series that targets the needs of English language learners (ELLs) and their teachers in meeting the new Common Core State Standards (CCSS) (see National Governors' Association for Best Practices, 2012a) in English language arts and mathematics. Each of these fields is treated to separate titles that focus on grades K-2, 3-5, and 6-8. As series editors, Gottlieb and Ernst-Slavit have overseen the production of all six volumes, as well as a seventh work,

an overview entitled *Academic Language in Diverse Classrooms: Definitions and Contexts* (2014). Both Gottlieb and Ernst-Slavit are well-known authors in the field of teaching English to speakers of other languages. They are among the contributing authors to TESOL's *PreK-12 English Language Proficiency Standards* (TESOL, 2011), and both are co-authors of an earlier work on the implementation of these standards in classroom instruction (Gottlieb, Katz, & Ernst-Slavit, 2009). The text reviewed here, moreover, taps into aspects of Gottlieb's book *Assessing English Language Learners: Bridges from Language Proficiency to Academic Achievement* (2006), in which she emphasizes the distinction between, on the one hand, academic achievement (or content-based instruction/assessment) and, on the other, academic language proficiency for ELLs.

In the earlier work, Gottlieb argued that content-based instruction is essential for acquiring subject matter knowledge, whereas academic language is critical for mastering the English used in classroom situations; hence, both are crucial to improving the academic performance for ELLs. The current series, *Academic Language in Diverse Classrooms: Promoting Content and Language Learning*, continues this trajectory by focusing both on academic language and on the promotion of content and language learning. The work under review shares its introductory chapter, authored by Gottlieb and Ernst-Slavit, with its companion volumes; in it the editors

provide teachers at all grade levels with an overview of the meaning of academic language and of its relationship to the Common Core State Standards in the content area of mathematics. Thereafter—i.e., beginning with Chapter 2—each chapter focuses on a single grade level and curricular element: grade 3/time; grade 4/fractions; grade 5/algebra. All of these chapters maintain the focus on the use of academic language as the foundation for success in each mathematical content area.

Each chapter begins with a description of the distinctive proficiency level and risk factors of the target student population with respect to the math topic under study. Each also provides, at the outset, a teaching vignette that introduces some of the challenges that a teacher might encounter while working with a group of diverse ELLs during instruction on the given topic. Also noteworthy is the use of sidebars throughout the book, under the recurring heading “Consider this....” For example, the following sidebar appears in the chapter on *time*: “Consider this... Elapsed time requires students to count forward from the starting time to the ending time rather than subtract, which is often what students are inclined to try” (p. 44). Such supplements to the main line of discursive text enable teachers to expand their thinking, anticipate student errors, and reflect on what they are reading in each section.

In general, the authors’ insights and suggestions—such as that abstract and quantitative reasoning can be enhanced

through the use of manipulatives, or that teachers should let students share their reasoning with their classmates both in English and in their home languages—serve as a rich resource for teachers facing the challenge of providing mathematics education to ELLs. In addition to the main text, vignettes, and sidebars, however, the chapters are also enriched with charts and appendices that teachers can use as templates in planning instruction. These templates focus on learning themes, academic language, instructional supports, differential content/language objectives, and instructional activities. Some contain questions, such as: “How can students’ language and culture be tapped to enrich the unit?” (p. 23). Questions like this one help teachers to make their lesson planning process more reflective while reinforcing the idea that ELLs bring with them a rich mosaic of information and cultural knowledge that teachers can call upon to enhance the curriculum in ways that validate the students’ heritage cultures. Additional templates depicting “potential challenges for ELLs in the mathematics classroom” (p. 7) describe areas that may present difficulties and include suggestions for possible solutions. These supplemental materials challenge the reader to consider the CCSS and to reflect on how these standards can be used to promote the development of academic language in each content area.

Chapter 1: “Academic Language: A Foundation for Academic Success in Mathematics”

Zwiers describes academic language as “the set of words, grammar, and organizational strategies used to describe complex ideas, higher-order thinking processes and abstract concepts” (2008, p. 20). Language of this kind can be challenging for ELLs because it includes sophisticated terminology and grammatical constructions that can interfere with reading comprehension and with verbal participation (Snow, 2010). Focusing first on the discourse or conversational level, shifting to the sentence level and finally honing in on the word phrase level, authors Gottlieb and Ernst-Slavit describe in this chapter the challenge of integrating academic language within the conceptual underpinnings of mathematics and aligning both to the CCSS when working with this student population. Potential challenges for ELLs in the mathematics classroom are identified and examined. The eight Standards for Mathematical Practice in the CCSS (National Governors’ Association for Best Practices, 2012b) are introduced and aligned with practices that teachers of ELLs can incorporate within their classrooms in order to promote the development of academic language. This introductory chapter also discusses the impact of metacognitive, metalinguistic, and sociocultural factors on language acquisition and describes why these factors make it important for teachers to consider their students’ linguistic and cultural backgrounds—in addition to their educational backgrounds—when planning mathematics instruction. As part of this process, moreover, the authors repeatedly

urge teachers to plan for language as well as content targets and to ensure that assessments are built into instruction both within and across lessons.

Chapter 2: “Grade 3: What Time Is It?”

In Chapter 2, contributing author Judith B. O’Loughlin relates the story of a third grade teacher who was teamed with a teacher of English as a second language (ESL) to work with a group of diverse ELLs on a unit on time. Three of the students had special needs, two were in the beginning stages of English acquisition, and three were considered to be intermediate English learners. The teachers grouped the students based on their needs and differentiated their math and language instruction accordingly. The beginners were provided with flash cards and directed to match time designations written as words to the same time designations written as numbers (e.g., *half past nine = 9:30*). The second group practiced their temporal concepts and expressions while learning to use conditional language, for which prompts were provided in the form of sentence stems (e.g., *If the ____ begins at ____ and is finished by ____, then we know that ____ time has passed*). The students with special needs worked directly with the teachers on using sequential expressions (*first, then, finally, etc.*) to analyze the information provided in a train schedule or timetable.

The chapter is divided into eleven sections: *Classroom context, Content and language*

standards, Academic language throughout the unit, Content and language targets, Linguistic and cultural resources, Instructional supports, Differentiated objectives, Instructional activities, Planning assessment within and across the unit, Reflection on the unit, and Expanding the context. The third grade classroom environment is described in detail, as are the students' language and academic skills. The content and language standards for this particular grade are explained, as well as the academic language to be used throughout the unit. In keeping with the recommendations presented in the introductory chapter, targets are set for students in terms of both content and language acquisition.

Throughout the chapter, moreover, O'Loughlin includes charts and templates that orient the material to such benchmarks as mathematics reading goals, the TESOL English language Proficiency Standards in mathematics, the standard of mathematics (in the Speaking domain of language acquisition) introduced by World Class Instructional Design and Assessment (WIDA), and California's CCSS Standards for Speaking and Listening (pp. 46-47). These charts make it possible for teachers to replicate the strategies detailed in the chapter.

The chapter also parallels the introduction in breaking down the academic language to be used in the unit into its many parts, such as the discourse level (e.g., story problems), sentence level, and phrase level. Examples

relevant to each level are included to help teachers understand the importance of the distinctions and to guide teachers in their own daily mathematics instruction.

In addition, the author provides a number of creative devices to help teachers apply the material provided to their work with third grade ELL students. One such device is a template that describes the relevant range of academic language demands, divided by discourse and sentence level, but joined by a column of academic words that might prove confusing to ELLs. Differentiated content and language objectives are introduced for the types of students profiled (viz., beginners, intermediates, and those with special needs), and each contains distinctive components calculated to meet each group's unique needs. The instructional components contain dialogue between teacher and students, analyses of sample student work, and resources that include web sites that teachers can use for their preparation or in the classroom. Especially useful is the chart depicting the conversion of the lesson's rubrics into child-friendly language (p. 73), which teachers can easily replicate and post in their classrooms. Also incorporated in this chapter is a reflection section, in which the teachers share the successes and challenges of teaching content and language as a team. This section can inspire practitioners to contemplate the material provided in the chapter and to consider new ways in which to teach their own diverse ELL populations.

Chapter 3: “Grade 4: Who Needs Fractions?”

Chapter 3, written by the editors together with David Slavit, follows the same format as Chapter 2. Once again, we are introduced to a teacher, her students, and the challenges faced in her classroom. In this case, however, the focus is on fourth grade, and the topic is fractions.

The students’ language and learning characteristics are profiled, and they emerge as even more diverse than those of the group presented in the previous chapter. This class contains students with English proficiency levels from 1 to 4 (TESOL, 2011; WIDA, 2011b), two students who recently exited from language support (former ELLs), and three who are proficient English speakers from linguistically diverse backgrounds. Content and language targets for these students are clearly specified in a chart depicting Spanish and English cognates that might be encountered in a unit on fractions. Realia, which have been found to be effective in supporting second language learning (Fojkar, Skela, & Kovac, 2013; Janzen, 2008; Thekes, 2011), are used to make meaning clear. An example is the use of a mathematical word wall, which encourages interactive peer-to-peer discussion. A further example of the use of real life materials is the incorporation of a brownie recipe to illustrate fraction concepts. This activity has the added bonus of strengthening the link between home and school.

This chapter is replete with templates describing the CCSS for mathematics as well as explanations for the five categories of TESOL’s English language proficiency standards, which are:

- 1) communicating for instructional, social and intercultural purposes in the classroom
- 2) communicating for academic purposes in language arts
- 3) communicating for academic purposes in mathematics
- 4) communicating for academic purposes in science
- 5) communicating for academic purposes in social studies (TESOL, 2011).

These standards are presented using the four language domains of listening, speaking, reading, and writing. For example, the authors highlight the language domain of *speaking* to describe how classroom tasks are differentiated by English proficiency level. Other templates present math problems in which academic language plays a palpable role, and words, phrases, and grammatical structures that can prove troublesome for ELLs are highlighted. Furthermore, this chapter links mathematics to the CCSS for English language arts and for literacy in history/social studies, science and technical subjects (SL.4.1). These content standards are interwoven with mathematical problem solving tasks, enabling students to strengthen their oral language proficiency while unearthing mathematical solutions in these subject areas.

Also helpful in this chapter is the manner in which the authors break math content down into foundational concepts (i.e., what students should know) and skills (i.e., what students should be able to do). This approach makes it easier to show how content objectives can be differentiated when instructing diverse groups of student. While rehearsing the concepts within the mathematics CCSS, for example, the authors isolate the skills that ELLs need in order to comprehend the broad topics of equivalent fractions and common denominator/numerators. Content objectives are included, along with alternate examples for students who struggle with the associated concepts and/or skills. Consequently, the sections on differentiated content and language objectives pave the way for practitioners to break down the language and content of the standards for their own students, and examples of instructional strategies are also provided.

Eventually, the chapter returns to the profiled classroom, where the teacher at one point observes that the conversation among the ELLs is deteriorating due to their inability to express their thoughts coherently. She steps in and articulates the intent of the student talk, thus demonstrating how paraphrase can support discourse. In doing so she highlights a way in which even novice teachers can use modeling to scaffold language skills for ELLs.

The chapter ends with a discussion of assessment, which is related back to the unit's initial objectives. Assessment

templates pair conceptual knowledge with performance skills across the four language domains of listening, speaking, reading, and writing. The concluding reflection piece, moreover, provides the reader with a means to assess oral academic language skills, as well as for students to assess their own learning. Finally, at the end of this and every chapter, references and resources are provided that practitioners can mine for further materials suitable for creative inclusion in their own instructional units.

Chapter 4: “Grade 5: Algebra Describes the World”

In Chapter 4, authors Jennifer M. Bay-Williams, Rose M. Glasser, and Tricia A. Bronger strive to make learning meaningful for students as they relate it to the real world experience of a fifth grade classroom. The setting is a newcomers' academy in which all of the students are multilingual. Relatively recent arrivals, none of the students profiled in this chapter has yet reached an English proficiency level higher than 2.0 as measured by ACCESS for ELLs (WIDA, 2011a), the state's designated assessment tool. Although many of these students are literate in their own languages, and have had previous formal education, they encounter challenges that arise not only from the language of instruction (English) but also because the methods taught in the United States for solving certain math problems differ significantly from those used in other countries. This chapter addresses some of these challenges while demonstrating ways in which U.S. teachers

can help ELLs find a firm footing in the classroom.

The theme of the sample unit, *Two of Everything*, is based on a Chinese folktale, thus making it culturally relevant to many of the students in the profiled class. The story sets up a pattern of *in the pot* and *out of the pot*, which eventually evolves into the algebraic terms of input and output.

Integrated within the chapter's storyline are the mathematical standards from the CCSS, as well as the CCSS in English language arts, which are displayed in two of the many templates that appear throughout the unit.

The chart entitled English Language Development, Standard 1 (p. 131) highlights the connections between the CCSS, contexts for language use, and cognitive functions.

Moreover, the authors differentiate the speaking component of this standard by levels (1-5), with examples of speaking expectations provided for each level.

As in the other chapters, there is a section on academic language, in which key expressions associated with the topic are broken down and analyzed at the discourse level, sentence level, and word level. The sidebar feature for this chapter differentiates various meanings of the equal symbol ($=$), and the authors highlight the progression by which students initially view this symbol as pointing toward an anticipated answer and later evolve a more sophisticated understanding of its role as signifying the equality of the quantities on either side of the equation.

Examples of ways in which math instruction and language arts can intersect in order to make math work more comprehensible for ELLs appear throughout the chapter. One template juxtaposes rules used in English against others seen in math examples. For instance, a *rule* in English might be to *raise your hand when you wish to talk in class*, while an example of a *rule* in mathematics might be that *a number that is written without any sign in front of it is understood to be a positive number*. This fusion of math and language is put into practice as students create stories about mathematical patterns and ask their peers to translate them into mathematical examples. In this regard, the use of realia and concrete experiences assists students to move from the *hands on*, concrete stage to more abstract thinking, and, by working in groups with similar English proficiency and home language, the students are able to receive support not only from the teacher, but also from their peers—for example to clarify concepts using their home language.

Conclusion

The teachers profiled in each chapter/story encourage their students to use language and higher order thinking skills to create new and different ways to write problems and/or arrive at solutions. Throughout the vignettes, indeed, they model useful classroom strategies for achieving these objectives. Moreover, by teasing out differentiated language objectives for each topic according to English proficiency level, the contributors and editors have created a

particularly significant resource for their target audience. Using this work, teachers can learn to distill the demands of the CCSS and state standards into meaningful units that are not only aligned to the standards but also matched to students' emerging English language skills.

The lessons for each math topic incorporate language objectives, focus on academic language, and include assessment plans and materials that ensure validity—an important point for teachers of ELLs, since validity is often violated when ELLs take math tests that emphasize comprehension of word problems. Throughout the vignettes, moreover, the teachers also model reflective practice, in which they consider whether student difficulties result from math concepts or from linguistic demands. Ultimately, in fact, what the work's stories, model lessons, suggestions, and resources demonstrate is that by increasing and fine-tuning language support, as well as by providing additional opportunities for writing and speaking, all students, including beginning ELLs, can be nurtured to understand mathematical concepts and to find solutions to grade level problems.

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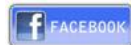
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