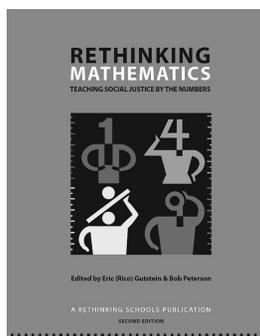


Moving Toward Equitable, Accessible, and Relevant Mathematics for All

A Book Review of *Rethinking Mathematics: Teaching Social Justice by the Numbers*

Lauren Provost (University of New Hampshire)



HERE IS WIDESPREAD concern regarding the persistent achievement gap in mathematics within the United States (Planty et al., 2009). Mathematics has been typically taught as an abstract, isolated world of knowledge, divorced from students' perspectives of the real world. Some argue that closing the achievement gap can be addressed by attending to the disconnect between traditional school mathematics and the everyday experiences and lives of students (Bartell, 2011; Ladson-Billings, 1997). The second edition of *Rethinking Mathematics: Teaching Social Justice by the Numbers* by Eric Gutstein and Bob Peterson (2013) builds substantially on the first edition in addressing this disconnect by connecting mathematics with students' culture, community, and real-world experiences. "Real-world scenarios can encompass domestic or international issues that allow students to talk about instances of racism and inequality, as experienced in their daily lives" (p. 126). The authors argue that students who can connect everyday experiences and school mathematics empower students to use mathematics as a useful tool to make the world more equal and just, ultimately increasing student engagement in the subject.

The second edition (Gutstein & Peterson, 2013) is different from the first in its content and length, lengthier due to the diversity of educational levels and areas of expertise as well as a myriad of new resources described throughout the book in short, accessible, activity boxes. The book is divided into four general areas. Part I encompasses *Teaching Math across the Curriculum* and discusses the positive results that occur when teachers create a social justice curriculum of problems that encourage participation from all students, which encourages different entry points into the problem-solving process. The authors discussed curriculum and activities that require student collaboration due to the demand for a

variety of skills and knowledge. Part II involves *Infusing Social Justice into Math Classes*. This part gives many practical examples that teachers can easily use in their own classrooms. The authors provide illustrations of problem solving that arise naturally from students' own everyday experiences and interests. Part III, *Infusing Social Justice Math into Other Curricular Areas*, includes examples that highlight areas outside of mathematics within STEM education and beyond, yet still have a substantial mathematics component. The book ends with additional resources for rethinking mathematics from a social justice lens. Resources include websites, curriculum, pedagogy, and children's books, among many other resources that ignite student interest and put students in the position to empower themselves with mathematics as a tool.

Several themes unite the three sections of the book (Gutstein & Peterson, 2013), and the authors create compelling arguments that students can use mathematics as a tool for empowering themselves to make judgments and to potentially change the world around them. One of the main themes involves connecting mathematical problems directly to a student's own life. An additional theme, viewing mathematics as constructed knowledge that can be questioned, encompasses the idea that students can see mathematics as knowledge that can be challenged with students as

LAUREN ELIZABETH PROVOST is a lecturer in the Department of Education at the University of New Hampshire. She is the founder and director of the New Hampshire STEM Collaborative, providing innovate STEM resources, grant-writing support, and professional development in the New England area. Her research and professional interests include STEM education and policy, quantitative methodology, community service, and volunteerism.

the authority. With a third theme, the authors emphasize that authentic problems keep students engaged in learning mathematics, which will ultimately influence their success.

Turner and Font Strawhun, the authors of chapter 16, describe a compelling example that illustrates student empowerment, another book theme, as the result of applying mathematical skills and knowledge within a school curriculum that has social justice underpinnings. Based in a New York middle school, students participated in a six-week unit developed by a university researcher and teacher in which they were exposed to key mathematical topics such as percent increase and decrease; two- and three-dimensional thinking; and area, volume, and linear measurement. The project began with students expressing real, relevant concerns about safety within their overcrowded school as well as other practical concerns, such as feeling confined and crowded within their own classrooms daily. Thus, the project was created, directly based on student interest. Students used their results to argue in public forums against the overcrowding of schools they were personally experiencing. Other topics in the book include real-life problems with students “writing letters to social studies textbook publishers based on their mathematical analysis of slaveholding presidents and textbooks’ failure to address the issue” (Gutstein & Peterson, 2013, p. 4) and students using math to argue for a decrease in the use of PA announcements, argue against inequality, consider sweatshop accounting, design wheelchair ramps, and many more activities.

The resources offered (Gutstein & Peterson) are strengthened by the authors’ areas of expertise, with Gutstein having substantial experience in both mathematics education and school policy in urban, multicultural contexts. Gutstein has contributed substantially to the area of social justice in mathematics education including with key works such as his 2003 “Teaching and Learning Mathematics for Social Justice in an Urban, Latino School,” for which he conducts a two-year study implementing social justice pedagogy to improve the equity in his own middle school classroom. Peterson, the founding editor of Rethinking Schools, brings his extensive experience in teaching fifth grade at a bilingual Spanish/English school in Milwaukee, Wisconsin, as well as his experience as the president of the Milwaukee Teachers’ Education Association.

The pedagogical approaches Gutstein and Peterson (2013) describe are not without challenges and controversies. Although readers are left with the understanding that there is a vital need for preparing future teachers in social justice education, such preparation is presently at odds with the current preparation of teachers in our nation, considering teachers are not typically prepared to understand mathematical applications in social justice in conjunction with pedagogical content knowledge in mathematics (Cox, 2013). Teacher education programs must play a role, although building a social justice education is a lifelong process

(Cochran-Smith, 2004), and changing teacher values is a challenge (Bishop, Clarke, Corrigan, & Gunston, 2006). Addressing this lack of preparation may be an overly challenging task at this time, given the current climate in education and the challenges teachers currently face in the age of accountability. Nevertheless, the authors provide a compelling argument to continue to address these challenges.

Despite the challenges facing educators in both preparing and supporting teachers in social justice mathematics education, the authors provide compelling arguments and examples, leaving the reader convinced that *all* students would engage and succeed if given personally relevant learning experiences as described in the book. Students currently find little relevance in typical textbook problems and classroom mathematics. Culturally relevant instruction and teaching for social justice as Gutstein and Peterson (2013) describe can motivate marginalized students to learn mathematics (National Council of Teachers of Mathematics, 2000; Leonard, Brooks, Barnes-Johnson, & Berry III, 2010). Gutstein and Peterson provide learning experiences that are personally relevant to students and argue that students with such learning experiences will then make informed judgments in the larger society in which they live and even act as change agents.

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