Reflecting the World

A Guide to Incorporating Equity in Mathematics Teacher Education

Mathew D. Felton-Koestler
Ksenija Simic-Muller | José María Menéndez

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PART II

Overview of Lessons

Preface

We have been working with prospective and practicing teachers in a variety of contexts, including content and methods courses and professional development settings, for the past ten years. During this time, our primary concern has been preparing teachers to teach mathematics for equity, diversity, and justice. While we have addressed this goal in a variety of ways, this book is primarily concerned with the curriculum we have developed and implemented, primarily in our mathematics courses for prospective K–8 teachers. We believe, along with others whose work precedes us, among those Gutstein (2006) and Frankenstein (2009), that mathematics is a powerful and essential tool for understanding the world. We see an opportunity in the recent emphasis in the Common Core State Standards for Mathematics (CCSSM) (Common Core State Standards Initiative, 2010) on real-world mathematics contexts and mathematical modeling. We argue that, to bring forth equity in mathematics education, mathematics learning must go beyond "neutral" topics to include real-world contexts that may be deemed controversial or political. Investigating controversial social issues—such as income inequality, racial justice, or disparity in educational outcomes—helps us understand the world as it is and as it could be.

In our informal conversations with colleagues we have found that while many mathematics teacher educators are concerned with social justice and would like to see future teachers attend to these ideas in their own teaching, many of them shy away from integrating these issues into their content or methods courses, because they are unsure of how to do so and uncomfortable with how they may play out. We offer this book as a response to these concerns: as a guide for those who wish to incorporate issues related to equity and social justice into their courses for the first time, as a refresher for those who are already doing this work, and as a resource for anyone else who is interested in the fruitful relationship between teaching mathematics and social justice. In this book, we share stories of our own journeys, give some theoretical background to our work, offer practical advice for getting started, and most importantly, share the lessons, activities, and projects we have developed. We also hope this book will foster new conversations about what we see as the central goal of teacher education: preparing teachers to teach for a more just world.

This book is divided into two parts. Chapters 1–3 lay the foundation for our work, and Chapters 4–12 provide the actual lessons and materials we have used in our courses. In the first part, Chapter 1 provides some theoretical background and rationale for our work: It describes our understanding of real-world problems and argues for the importance of the use of authentic real-world mathematics problems in teaching and teacher education. This chapter also includes our stories: the contexts in which we teach, our philosophies, experiences, and journeys. Although many of our beliefs and practices are shared, our contexts and approaches differ. By sharing them, we hope to engage teacher educators and teachers with a variety of backgrounds and circumstances. Chapter 2 includes a framework for our work, including a categorization of different types of problems that we have identified in our curriculum. Chapter 3 offers an introduction to the practicalities of implementing a social justice-based mathematics curriculum especially in courses for prospective K–8 teachers. It gives practical advice for getting started with social justice contexts, and addresses some potential questions and concerns. In this chapter we also share our experiences with implementation of social justice contexts, though we offer much more detail about individual lessons in the second part.

The second part of the book contains the lessons and materials we have developed and used. We introduce this second part by providing a tabular representation of all the lessons, organized by different criteria. The lessons are divided according to strands of school mathematics, and Chapters 4–9 address each strand: whole

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