

Preface

Over a decade ago, we offered our book, *Impact of Identity in K–8 Mathematics: Rethinking Equity-Based Practices*, to invite critical reflection on mathematics teaching and learning that influences students’ mathematical identities. This expanded edition represents an extension of the ideas in the first edition to the high school context. Thus, we offer a new focus on the *Impact of Identity in K–12 Mathematics* to encourage critical dialogue and reflection about making mathematics education more meaningful, liberatory, and just. As it was then and is now, our goal is not to generate discourse *about* teachers. Instead, it is to engage in conversations *with* teachers, raising issues that we have seen in our individual and collective classroom experiences as teachers and researchers and that many teachers will recognize from their own experiences.

We have chosen to focus on teacher reflection and practice in the context of mathematics learning and identity development. That is, we have chosen to focus on understanding how teachers help students become empowered mathematics learners and how students come to see themselves in relation to mathematics learning, both inside and outside the classroom. Teaching is complex professional work that requires ongoing reflection on curriculum and content, as well as self-reflection—reflection about children and families, reflection about the role of mathematics in the lives of children and families, and even reflection about routine, everyday practice. Our commitment to teacher reflection is grounded in our desire to help teachers understand, appreciate, and draw on the backgrounds of students as strengths to further their mathematical development—especially those students who have not had equitable access or opportunity to learn mathematics.

In the first edition of this book, we noted the increasingly political environment of education reform and the impact on mathematics teaching and learning. Over the last ten years, this has not waned. The work of teachers is still subject to scrutiny, and we continue to hear laments about the dismal state of U.S. mathematics education. The move toward the Common Core State Standards has not resulted in significant advances in achievement or equity. COVID-19 has further exposed inequities in our educational system and has brought to light the difficult working conditions of many teachers. During the pandemic, teachers, like other essential workers, put politics aside and courageously continued to do their jobs teaching children while trying to protect themselves and their families. Unfortunately, politics did not press pause, making working conditions for teachers challenging. Many teachers have left the profession. In this new edition, we examine the possibility that the politics of reform, often rooted in incrementalism and linked to larger political projects, lean more toward preserving the status quo instead of resulting in the kind of transformative change that prioritizes liberation and justice for those who continue to be oppressed. We call on teachers to question these reforms and ask themselves whether reforms support or diminish the work of teachers and the humanity of their students.

Significantly, in this expanded edition, we build on these realizations about reform to extend our focus on equity. We realize that working toward equity in mathematics education and elsewhere is necessary but not sufficient to move beyond the status quo. In the last ten years, social events across the globe, but especially in the United States

(e.g., police killings of unarmed Black people; increasing anti-immigrant rhetoric and violence; forced separations of families seeking asylum; missing and murders of Indigenous women; anti-Asian hate crimes; #MeToo movement; increases in domestic violence; rollbacks in civil rights by overturning Supreme Court decisions protecting voting rights and people's bodies; banning books related to race, gender identity, and sexuality; and political insurrections with an attack on the U.S. Capitol building), remind us that all our equity-focused efforts take place within the oppressive systems and political projects of white supremacy, antiblackness, and xenophobia. Equity unfolds in the system as it is and not the systems we desire. Equity alone does not result in liberation, freedom, or justice. Within these systems and projects, the positive mathematics identities we stress in this book are just one tool to combat these forces. We continue to call on teachers to examine their beliefs and practices and to work with parents, caregivers, and communities to support our children as whole human beings.

In the expanded edition of this book, we acknowledge the dual role that mathematics has played as a gatekeeper and gateway to various opportunities in society, and we recognize that mathematics has often been used to make judgments about intelligence. We call on teachers to reflect on these uses of mathematics and develop an asset-based approach that recognizes the ordinary brilliance, creativity, and curiosity children bring to learning spaces. Further, because students do not come to school without the influences of their homes, communities, and cultures, we ask teachers to reflect on how the multiple identities that students are developing can influence their mathematics learning. Yet, we do not confine the conversation on mathematics learning to students. We ask teachers to reflect on their own learning experiences and how those experiences have shaped their senses of themselves as doers of mathematics, how their views of themselves as mathematics learners affect their classroom practice, and how they navigate the unjust education systems in which they work.

This expanded edition consists of twelve chapters divided into three parts. It is designed to help teachers move beyond an awareness of the need to reflect on their teaching to a commitment to take action and transform their teaching through equity-based practices. An epilogue offers final reflections that go beyond equity toward a more humanizing and liberatory mathematics education. A list of discussion questions appears at the end of each chapter to promote further dialogue and self-reflection. Readers can also use the access code on the title page to find specific reflection tools and activities at the More4U website (www.nctm.org/more4u) from the National Council of Teachers of Mathematics (NCTM).

Part 1 focuses on mathematics learning and identity. It is expanded to include two new chapters designed to cultivate critical reflection about the political projects and oppressive structures that adversely affect mathematics identity. Chapter 1 expands upon important themes related to the purposes of learning mathematics, equity, and shifts needed to attend to learning and identity. Chapter 2 discusses the connection between mathematics learning and student identity. This chapter discusses why teachers must attend to this linkage to empower young mathematical minds. Chapter 3 shifts that identity focus to teachers, calling for reflection on the impact of one's own mathematics learning identity on instructional beliefs and classroom practice. Chapter 4 critically examines the political contexts of standards and standard-based practices, asking us to consider the fundamental question: Are these standards and standards-based practices worthy of my students? Chapter 5 explores ways to disrupt deficit-based thinking and structures that prevent joyful mathematics learning.

Part 2 describes five equity-based instructional practices designed to strengthen mathematics learning and positive mathematics identity:

- Going deep with mathematics
- Leveraging multiple mathematical competencies
- Affirming mathematics learners' identities
- Challenging spaces of marginality
- Drawing on multiple resources of knowledge

The chapters in this part use classroom vignettes to bring these practices to life. In this expanded edition, we include instructional examples and student stories situated in high school mathematics. We also include a teaching analysis tool that can help facilitate individual reflection and collaborative feedback. Chapter 6 describes a middle school mathematics teacher's practice that cultivates mathematical agency and empowers students to examine racial profiling claims by using mathematical evidence. Chapter 7 focuses on ways that an elementary teacher builds on students' strengths to foster their engagement with mathematics and thus support their learning of mathematics. Chapter 8 focuses on seeing brilliance and creating access for Black girls in high school mathematics. Chapter 9 shines the spotlight on assessment. Drawing on the five equity practices, this chapter specifically discusses the role of meaningful feedback on typical classroom "tests"—feedback that can deepen students' learning and help develop their sense of themselves as mathematics learners. This chapter also describes equity-focused grading policies that affirm students' mathematical identities. In addition, the chapter highlights ways that teachers can learn to recognize various experiences and knowledge that students bring to bear on assessments and that demonstrate what they know and can do.

Part 3 focuses on the importance of engaging families, caregivers, and communities as true partners in supporting mathematics learning and positive mathematics identity development in elementary and secondary settings. We acknowledge that families are multifaceted and unique with various people in parental and caregiving roles including extended family members, foster families, grandparents, cousins, older siblings, and so on. We recognize and affirm that many cultures embrace a community-oriented and collaborative approach to caregiving with more expansive and inclusive family structures to support the well-being of children. Chapter 10 discusses routine strategies such as family newsletters and conferences, which can be enhanced to strengthen relationships with parents and caregivers and effectively communicate the teacher's mathematics vision and the student's progress. Chapter 11 moves beyond the classroom walls to highlight ways in which teachers and schools can partner with parents, caregivers, and communities to support mathematics learning and provide complementary resources to help children learn mathematics. Chapter 12 focuses on communicating with families about mathematics education in the middle school and high school years.

The epilogue offers final reflections about important ideas in the book and ways for teachers to transcend equity-based practices for liberatory and humanizing purposes that strengthen mathematics learning and positive mathematics identity development for children.

In writing this book, we have drawn on our own experiences in K–12 classrooms; our experiences as and with caregivers, teachers, and children; and our experiences as scholars and teacher educators in preservice and in-service contexts. Each of us has a

lifelong history of commitment to issues of equity and justice in mathematics education, focusing on uplifting historically marginalized students and families. Our professional experiences and practices have been devoted to empowering students with mathematics to help them realize a full range of educational and life opportunities.

Our own journeys in mathematics, including being identified by teachers for accelerated tracks in mathematics, participating in academic enrichment programs for people of color and women, experiencing undergraduate and graduate study in mathematics and education, and being mentored in the areas of mathematics and mathematics education, have also shaped the writing of this book. We have known firsthand the impact of teachers on our lives in relation to mathematics learning.

Moreover, writing this book has been shaped by our own racial and cultural identities as well as the ways that we have come to see ourselves as learners and doers of mathematics because of those identities. Racially, ethnically, and culturally, for example, we self-identify with particular social categories (African American, Latina, multilingual, multiethnic, biracial) that have been marginalized in societal and school settings, especially with respect to mathematics. These social categories are both personal and political and have evolving histories and meanings, and we acknowledge the sociopolitical and power implications of these identifications.

We acknowledge that these categories and others—for instance, “Black,” “white,” “Latinx,” “Asian,” and “Native American”—are negotiated, and each of us makes our own sense of what these terms mean and whether we choose to make them our own. We also acknowledge the shared history and experiences of group members despite different labels. For example, we use the labels “African American” and “Black” to encompass the diverse ways that group members of the African diaspora self-identify and are identified by others. We use “Latinx” rather than “Latina/o” as a gender-inclusive pan-ethnic label to express the cultural and political solidarities of people who are descendants of or natives of a Western hemisphere country south of the United States, including Mexico and the countries of Central and South America and the Caribbean (Hurtado and Gurin 2004). “Latinx” acknowledges Indigenous, African, and European ancestries that the label “Hispanic” does not. The categories “white” and “Asian” also include multiple identifications. In this book, we ask educators to recognize and critically reflect on how all these terms are used in school discourses related to mathematics.

We hope that this book, in which we bring to bear our professional and personal experiences, will be an essential resource for teachers, teacher educators, and education researchers interested in teacher development, equity, learning, and identity. We trust that it will also prove useful to parents and caregivers, as well as school administrators and instructional coaches who wish to support teachers in the teaching of mathematics. Most importantly, we hope that we have succeeded in shaping this book in such a way that it will push our collective thinking and practice to give our nation’s youth a better preparation for learning mathematics and developing positive mathematics identities that will advance their own educational, career, and life opportunities. We hope that the examples presented in this book will resonate with teachers and provide opportunities for them to reflect critically on their beliefs, practices, and systems that impact their essential work.

Acknowledgments

We are grateful for and feel very fortunate to have been given the opportunity to write this expanded edition of this book. We owe a great deal of thanks to NCTM’s

Publications Committee for supporting this expanded edition. We appreciate the opportunity to include new chapters that focus on math identity development at the high school level. We are especially grateful to Myrna Jacobs, Christine Noddin, Stephanie Levy, Scott Rodgerson, and Mary Donovan, NCTM publications team, for their patience and support for the first and expanded edition of this book. We offer special thanks to our teacher leader colleagues Marcie Baril, Andy Coons, Kristen Faust, Tracy Fischer, Desiree LeSage, Shelley Rafter, Mary Richards, Susan Sabol, Alexi Salvador, and Niral Shah for their insights, examples, and constructive critiques that helped us to think through some of the issues raised in this book. We also thank our families for their ongoing support and inspiration.

We dedicate this book to all young students, past, present, and future, who continually teach us what is necessary to help them learn and grow mathematically. And to the educators, families, caregivers, and communities who, in the face of many challenges, demonstrate their dedication, love, and support for young people.

Julia's special acknowledgments

I thank Karen Mayfield Ingram and Danny Martin for our ten-plus years of collaboration and laughter. Danny, you have been an inspiration and guiding light ever since graduate school and the functions group. Thank you for your generosity and critical insights. Karen, thank you for the opportunity to learn from and with you over these years. I've appreciated the space to dialogue, ask questions, and process emotions when navigating life. I also thank *mí amiga*, Rochelle Gutiérrez. We have known each other for a long time. Thank you for believing in me and inspiring many ideas for this book. To my parents, Ricardo and Marlinda Aguirre, thank you for your love and faith in me. I am grateful to my children, Alesandra and Joaquín, who are now young adults navigating the world. Thank you for teaching me how to be a better person, parent, and educator. I love you forever. To my wonderful husband, Jade, thank you for your love, delicious meals, and unwavering support through the years. I appreciate you loving all of me.

Karen's special acknowledgments

I am grateful to the women and men in my family for modeling what it means to believe in and support the brilliance of Black children. I appreciate and love the brilliance of my daughter, Janelle, for her valuable feedback and perspective. To my loving husband, LaRon, who supports my crazy hours and the unbalanced juggling of family and work with calm and ease, thank you, sweetheart. To my colleagues, Julia and Danny, I am grateful for your unwavering support and friendship throughout our book journey. Your commitment and boldness in advocating for our children and families gives me strength. I have learned so much from each of you and am so thankful for the opportunity I've had to work and get to know you both.

Danny's special acknowledgments

A special shout out to my eleven-year-old son, Ishaan, and my eighty-year-old mother and eighty-four-year-old father. Their lives serve as reminders of the past and the future and keep me motivated to do this work.