INTRODUCTION

Teachers often feel that the mathematics courses and standards mandated by their state restrict them or force them to compartmentalize the mathematics content, disconnecting topics from real and personally meaningful contexts. This makes it difficult to connect with students' questions of "When will I ever use this?" or "Why do I need to know this?" beyond the obligatory, "You need this for the next mathematics course." We meet many teachers who report feeling stuck in a rut, moving from one topic to the next, and losing opportunities for meaningful connections between mathematics topics as well as between mathematics and the real world by following curriculum pathways outlined by textbook chapters or course progressions that are mandated by district policy. Does this sound familiar? Has this ever been you? Unfortunately, students feel the results of this as well, often trudging through mathematics with this same sense of disconnection and tedium. These are missed opportunities for students to embrace how mathematics can be used for self- and community empowerment.

The exclusive focus on standards and progressions often makes teachers begin to feel discouraged about their actual impact on students. Furthermore, teachers' professionalism is gradually being diminished by policies that force them to feel like factory workers on an assembly line, teaching (or schooling) sets of students each year without regard to who they are and being unable to embrace students' identity, culture, interests, or experiences. The latest educational program turns into the next year's car model. In essence, teachers often question what students are actually learning in their classroom.

Unfortunately, the response is focused only on what mathematics must be learned for next year's course. While there is value in grounding the work in mathematics standards, how might standards be leveraged to help you create a more meaningful experience for students? How might the standards be leveraged to empower your students? By the time you finish reading and implementing ideas from this book, it is our hope that you will experience several benefits:

- Your students will see how mathematics applies to their lives, and they will become empowered to use it to change the issues that affect them the most.
- You will enhance your ability to facilitate discourse around difficult topics by incorporating them into your classroom.
- Important issues for you and your community will become better integrated with your teaching life each day, and in turn, you will feel a deeper sense of urgency—and a deeper sense of satisfaction—for effective teaching of mathematics and empowering students.

- Social disparities in your school, community, city, region, and state will begin to see improvement through grassroots efforts led by your own students. Your students will become more engaged in city, state, regional, and community grassroots efforts to address social disparities.

This book offers a collection of mathematics lessons—tied to core middle grades mathematics domains—and is grounded in issues of social importance to both you and your students. These lessons are bookended by lots of practical advice. In the opening chapters, we will discuss our ideas of what it means to teach mathematics for social justice and strategies to effectively do so. We will close by offering some ideas for how to create your own social justice mathematics lessons as well as some wisdom and advice from other teachers who have embarked on this journey.

WHY IS TEACHING MATHEMATICS FOR SOCIAL JUSTICE CRITICAL?

Whether we talk about it or not, our students regularly experience the impacts of social privilege, power, and activism. Each day, students in our schools and communities are faced with disparities in opportunity, inflating the so-called achievement gap. They listen to Hollywood actors, football players, public officials, bloggers, media outlets, and the list could go on. They use outlets like social media to express themselves, share their perspectives, and highlight their social positions—a modern format of young adolescents' participatory politics (Kahne et al., 2015).

In 2020, the unjust killing of George Floyd and several other high-profile police shootings highlighted the distance we have yet to traverse for racial equity. The lived experiences of many Black,[1] Indigenous, Latina/o,[2] Asian, and other people of Color highlight the impact that racial prejudice, health disparities, and other systematic problems are having. These experiences have also strengthened movements that are seeking to eliminate these injustices, like Black Lives Matter. Our students have concerns about their world, their community, and their family. Should we allow or encourage our students to just "let it go"?

We see and experience racial inequities in our schools. Black and Brown students are overrepresented in remedial classes and underrepresented in advanced placement classes (Seda & Brown, 2021; see Lesson 5.2 in *High School Mathematics Lessons to Explore, Understand, and Respond to Social Injustice*) and are disciplined at disproportionate rates. Kyndall Brown, for example, tells the story of his son, who did not get a recommendation for a calculus course placement from his

[1] Through this book and the lessons included, we have intentionally capitalized terms used for people of Color, such as Black, while leaving white written in lowercase. We follow Frances Harper (2019), one of the contributing lesson authors to this book, in her rationale: "I chose to capitalize Color but not white to challenge the ways that these standard grammar conventions reinforce systems of privilege and oppression" (p. 268).

[2] We have chosen to use the term Latina/o leaning on the leadership, expertise, and community of TODOS mathematics education scholars (TODOS Mission and Goals as of February 21, 2022).

teacher even though he fulfilled all the qualifications. Racial injustices are plaguing society and our students' lives and demand our attention.

An important aspect of our responsibility as educators is to help empower our students to be agents of change and liberation in their communities, states, nations, and world. We would like to go further than simply stating the importance of connecting mathematics teaching and learning to teachers' and students' lived experiences and interests; we argue that teaching mathematics *for* social justice (TMSJ) is critical for four reasons:

An important aspect of our responsibility as educators is to help empower our students to be agents of change and liberation in their communities, states, nations, and world.

- It builds an informed society.
- It connects mathematics with students' cultural and community histories.
- It empowers students to confront and solve real-world challenges they face.
- It helps students learn to use mathematics as a tool for social change.

TMSJ can and should extend mathematics beyond the classroom. It can and should encourage students to

- learn important mathematics,
- build positive mathematical identities, and
- develop concern for the happiness of other human beings and life forms.

TMSJ is an instrument for empowering students to become agents of change.

THIS BOOK'S AUTHORSHIP

After the successful release of *High School Mathematics Lessons to Explore, Understand, and Respond to Social Injustice* (Berry et al., 2020), mathematics educators took to social media to express an interest in developing books for other grade levels (early elementary, upper elementary, and middle school). The group contacted the authors of the earlier book and began talking about what these books might look like at the different grade levels. The group then split into subgroups to work on each book based on their interest and expertise in the level of mathematics education. Two of the original authors of the high school book joined the middle school group to begin working on the book.

Inspired by the structure of the high school book, we wanted to invite the broader mathematics education community to submit lessons that highlighted social injustices of their own community and concerns or issues raised by their own students. And in sharing the lessons they provided, we strove to retain their and their students' authentic voices. Therefore, most of the lessons in this book come from this diverse group of lesson authors. In addition, we sent the lessons out to reviewers, many of whom implemented the lessons in their middle school mathematics or preservice mathematics teacher classrooms. These reviewers gave extensive feedback on the book and the lessons; their thoughtful insight challenges you to think even further outside of your experiences, biases, and assumptions, and to consider a broader representation of student and teacher experiences.

We value the voice of each educator who contributed a lesson, and we have made all attempts to share their work and their voice with you. Outside the major required elements for the lesson submissions, we asked lesson authors to format and submit lessons based on how they had implemented them in their classrooms. We then edited lessons for clarity, mathematical rigor, and cohesion in order to highlight the voice and authenticity of work in the field. Their lessons have been tested and refined, in their own classrooms and in others. We are grateful to them and all those who helped develop this book.

As a team, we each have our own motivations and understandings of teaching mathematics for social justice. Here, each lead author briefly describes what brought them to focus their career on equity and justice issues in mathematics education.

Basil M. Conway IV

Teaching mathematics to empower students has always been a professional passion of mine, particularly as a classroom teacher for 10 years and currently as a mathematics teacher educator. My journey toward teaching mathematics for social justice began when, while completing my mathematics education graduate studies, I read a series of Bible passages that intersected with what I was learning and inspired me. Proverbs 31:8–9 resounded in my head as I learned about mathematics research related to access, equity, and empowerment: "Speak up for those who cannot speak for themselves, for the rights of all who are destitute. Speak up and judge fairly; defend the rights of the poor and needy." I began to question what I was doing from a place of power in my own mathematics classroom. How was I empowering students to be agents of change in their and others' lives? I received Jesus as my Lord, which resulted in mimicking and modeling His behavior. He repeatedly stood against the powerful, uplifting the oppressed. I have decided to focus on Jesus' love, a love so great and so selfless that He didn't just seek justice for others; rather, He sought injustice for Himself for the sake of others. As I pray for His Beloved Community seeking His kingdom on earth, I trust He will render all things complete and settled in the end with complete justice.

Lateefah Id-Deen

I am a Black woman who taught and worked with middle and high school students in urban and suburban contexts. As a student and teacher, I experienced and witnessed the inequalities that exist in the education system. I helped increase middle and high school students' critical awareness through culturally relevant pedagogies through my mathematics teaching. I support prospective teachers in discovering how teaching matters not only for students' development of mathematical knowledge but also for their sense of self. Further, my teaching style aligns with what bell hooks described as "engaged pedagogy," whereby one teaches "in a manner that respects and cares for the souls of our students." Relatedly, my research centers on the importance of helping students recognize and analyze systems of inequality in ways that empower them to take action, capturing students' perspectives on their experiences, cultivating belongingness and student–teacher relationships, and amplifying the importance of sharpening and enhancing students' mathematics identities.

Mary Candace Raygoza (She/Her/Hers)

As a middle school student, I attended a Title I school in my neighborhood and then transferred to a well-resourced high school in an affluent neighborhood. Because I got As in algebra in middle school, I was placed in geometry at my high school. The geometry teacher gave my class a test to see what we remembered from algebra, and I scored an 11%. At the time, I was devastated and felt stupid and behind. Looking back, this was a defining moment for me in my trajectory as a social justice mathematics educator because it is when I began to sense (1) how drastically different opportunities in (math) classrooms can be and (2) how procedural tests and approaches in mathematics do not capture what young people are capable of nor the mathematics that matters to explore, understand, and respond to our complex and unjust world.

When I attended college at the University of California, Berkeley (UC Berkeley), alongside taking courses about social injustices and social movements, I found myself drawn to every quantitative methods course offered by social science departments (e.g., sociology, psychology, political science). I loved how mathematics and statistics could be used to understand the world and inform our action for a more just world. I also knew I wanted to become a public school teacher-activist and embark on a lifelong journey of interrogating and challenging the many forms of privilege I experience, notably white privilege. I pursued mathematics teaching not because I loved the way mathematics was traditionally taught, but because I knew it could be more interesting and empowering, and that we could reject mathematics as a field that is objective or neutral. That's when I came across the book Rethinking Mathematics *by Gutstein and Peterson and the growing critical mass of social justice mathematics educators and was energized to think I could join in solidarity to change mathematics education.*

As a high school teacher in East Los Angeles, home of the Chicano Power Movement, I sought to learn from both historical and present-day organizing for justice and the funds of knowledge my students brought to the classroom. I engaged students in quantitative action research, supporting them to study and make change on an issue they cared about. I then pursued researching the journeys of mathematics educators striving to teach mathematics for social justice and teaching future teachers.

I am thrilled today to be learning from movements of critical mathematics educators seeking to make mathematics more humanizing, relevant, and liberatory for and with young people.

Amanda Ruiz

My mathematics journey began at UC Berkeley, where I created my own major focused on social movements. As a student activist, learning about social justice issues nourished my education and clarified my life goals. I was inspired while learning about the impact that student activists had on the Civil Rights Movement, such as the Student Nonviolent Coordinating Committee (SNCC). While finishing my undergraduate degree, I tutored mathematics through an education nonprofit whose mission aspired to make college accessible to underserved students in

Oakland, California. At that time, I came across Robert Moses's Radical Equations: Civil Rights From Mississippi to the Algebra Project. *I recognized the author as the same Bob Moses who was a leader in SNCC. Moses taught me that mathematics is inherently a social justice issue. This book helped me realize I could pursue my interest in mathematics without abandoning my commitment to social justice. In fact, I realized as a Latina woman that my mathematics pursuit and presence was in and of itself a radical statement, and just by existing in a predominately white male space, I impact a student's access to mathematics.*

Throughout my career as a mathematics educator, social justice has guided my efforts to make mathematics accessible for students from all backgrounds. Mathematics traditionally serves as a gatekeeper to academic success; the status quo of mathematics alongside social and cultural inequities makes it difficult for marginalized students to engage authentically with mathematics. I want to broaden who thinks of themselves as mathematicians and, in doing so, create a space for marginalized practitioners like myself to bridge our social/cultural identities into the milieu of mathematics. In the classroom, my objectives always include improving students' attitudes about mathematics and building their mathematical identity. Giving students the opportunity to use mathematics as a tool to understand and respond to social injustice helps them realize mathematics as more than a gatekeeper.

John W. Staley

My career as a mathematics teacher and leader has been driven by issues related to equity, social justice, and the need to help students value and use mathematics as a tool to address social justice issues in their lives. My teaching career began in 1987 at a juvenile correctional facility for young men between the ages of 12 and 18, where I realized that teaching mathematics meant more than teaching students the steps to find the "correct" answer(s) to problems. I quickly recognized that my calling to teach students extended beyond mathematics concepts and skills to lessons that they could use in this journey called life. From the beginning, my goal as an educator has been to develop my students' self-confidence and belief in their ability to try, do, and reflect on things as they lived their lives, inside and outside of the mathematics classroom. Thus, lessons and learning opportunities were designed to encourage and empower students to become thinkers and doers of mathematics, connect to students' lives and hopes for the future, help students see relevance in the mathematics they are learning, and model for students the concept and value of respect—respect for self and others.

I also realized that as a Black man from the city of Philadelphia, Pennsylvania, I had the opportunity and responsibility to be a positive role model and advocate for my students. This opportunity eventually extended to work with other educators and adults. I thank my mother and grandparents for teaching me at an early age that things might not always be fair, but I should always act and live life as if someone was watching and treat others as I would want to be treated.

Eva Thanheiser

I grew up in Germany with a Jewish immigrant single mother from Eastern Europe. As far back as I can remember, mathematics made sense to me. However, I struggled with all other subjects to the point that teachers told my mother that I might not be able to graduate from high school. Thanks to the forceful nature of my mother, who supported me in switching schools in the eighth grade, I ended up finishing high school and went on to university to study mathematics and English to become a teacher. During an exchange year in the United States, I learned about the field of mathematics education and dove right in, changing my career path from becoming a teacher in Germany to becoming a mathematics teacher educator. The focus on social justice mathematics education came later in my career but is connected to my earliest experiences as the only Jewish kid and the only kid whose mom had an accent in my early schooling. I actually don't remember knowing any other Jewish families or families with foreign parents as a young child.

As a mathematics student, I always assisted my classmates and imagined that everyone approached mathematics from a sensemaking perspective. Later in my studies, I learned that that is not the case. A big part of what drives me is to work on allowing all students to see mathematics as (a) something that makes sense, (b) something that can be used to make sense of the world, and (c) something that can be used to influence the world.

Each lead author's introduction presents a different and personal motivation and passion for TMSJ. In part, these stories describe mathematics as a tool to empower students and future citizens to become active agents of change. In today's society, using mathematics as a tool for empowerment has become paramount to ensure that truth prevails over conviction. Reflect for a moment on what caused you to pick up this book. What story defines your personal motivations for wanting to infuse social justice into your mathematics curriculum?

Extend the array of motivations, passions, and experiences of the six lead authors to the diverse contributors to this book; this book reflects a remarkable breadth of experiences and worldviews. And in this tremendous diversity, through our collaboration, we found many common concerns about our families, neighbors, community, and country. We suspect that the variety of contexts offered in this collection of lessons will offer all teachers the opportunity to draw upon themes generated from their own context that will engage students.

THE LESSON AUTHORS

Lynette Guzmán is a mathematics education scholar who focuses on interrogating limiting discourses about people and their complexity. As a millennial who grew up with the internet, Lynette spends her time thinking about the ways digital platforms lend themselves to content creation, consumption, and remixing to promote particular kinds of discourses.

Kendrick Savage began his career as a mathematics educator 15 years ago, teaching mathematics at the university, community college, and public high school levels in Mississippi. His passion is to increase student confidence and motivation in mathematics by connecting the mathematical content to students' culture, experiences, and personal interest and helping students see the power in mathematics as a mechanism to solve social injustices.

Liza (Cope) Bondurant taught students in Grades 6–12 in urban, suburban, and rural settings at private and public schools. As a female mathematics educator of 17 years, she continues to work to help each and every learner appreciate and understand mathematics.

Becky Evans has worked as an elementary teacher and district mathematics teacher leader for 10 years in Lincoln, Nebraska. Her classroom experiences revealed the importance of utilizing teaching practices that develop each student's mathematical agency. As a white, cisgender female she supports classroom teachers in creating equitable learning spaces for all students.

Perla Lahana Myers is passionate about achieving equity in education and diversifying the STEM fields, and feels that one step toward these goals is changing the reaction people have when they hear the word *mathematics* to a smile. She enjoys collaborating with colleagues, students, and community partners to create experiences in mathematics/STEAM locally and abroad.

Travis Weiland taught high school mathematics. He works to reimagine how statistics is taught in schools, interrogating and leveraging his privilege as a white, middle-class, cisgender male to create spaces for all students to have transformative experiences with statistical practices by interrogating their world through multiple ways of knowing.

Bethany Chan is a student in the UOTeach program where she is working toward her preliminary license in teaching. Additionally, she is a student-teacher at Roosevelt Middle School in Eugene, Oregon. As a second-generation immigrant, a first-generation college student, and a female Hong Kong American, she strives to make mathematics intriguing and relatable to students while encouraging Black, Indigenous, and other people of Color and females to pursue STEM in higher education.

Jennifer Dao is a Vietnamese American and the first generation in her family to attend college. She teaches eighth-grade Algebra for All in Evanston, Illinois. She enjoys sharing her passion for mathematics and art with students, helping students see how they are connected. Currently, she is on the leadership team of Nepantla Teachers Community, a mathematics teacher group focused on social justice, and is the Grade 5–8 Director for the Illinois Council of Teachers of Mathematics.

Debasmita Basu teaches quantitative reasoning and mathematics at Eugene Lang College of Liberal Arts, The New School, in New York City. Before pursuing her doctoral studies, Debasmita was a high school mathematics teacher in India for 4 years. As a cisgender woman of Color, she aims to design mathematical activities that cultivate students' critical consciousness toward various social and environmental justice issues and help them realize the power of mathematics.

Sara Rezvi taught middle and high school mathematics with students in New York City, Chicago, and Mexico for 9 years and is currently a doctoral candidate at University of Illinois at Chicago. As a queer, South Asian, culturally Muslim woman, she sees the work of mathematics as a human endeavor. She strives to center joy, student agency, creativity, and thoughtfulness in her work with students and teachers alike as the Program Director of the Math Circles of Chicago.

Julia Novosad graduated from the University of Nebraska-Lincoln in December 2021 with a degree in mathematics and mathematics education and a minor in French. She strives to teach mathematics with equal opportunity and continue to grow in her understanding of how our backgrounds and identities shape who we are as learners.

Peggy Nayar taught Emergent Bilingual learners for over 20 years and is currently a Teacher on Special Assignment Mathematics Coach. She works to examine how race and economics impact all participants in the classroom. She is dedicated to applying a mathematical lens to issues of cultural relevance and social justice.

Maggie Lee McHugh works as an innovation specialist for a project-based learning school in La Crosse, Wisconsin. In her role, she focuses on engaging students in connecting mathematics to their lived experiences. Maggie's continued dedication to authentic learning has led her to create sustainable conditions within her school in order for students to independently apply social justice principles to mathematics concepts in order to become change agents within their community.

Lee Inmon Dean began her career in research and development for an insurance company doing statistical analysis and found that the most exciting part of her job was training other analysts. This led her to teaching college mathematics back home in the Mississippi Delta, where she's been for the last 18 years. She strives to inspire her students to appreciate the cultural richness, diversity, and beauty that the Delta area has to offer.

Courtney Koestler is a proud former public school teacher and mathematics coach in elementary and middle schools and currently serves as the Director of the OHIO Center for Equity in Mathematics and Science in the Patton College of Education at Ohio University. As a white person in Appalachia, they work to understand issues centered on diversity, equity, and justice using critical literacy and critical pedagogies in early childhood and elementary education.

Kristin Komatsubara began her work as a mathematics and science teacher 15 years ago in Los Angeles. As an Asian American, cisgender woman, she is passionate about designing STEAM experiences where students feel known, connected, and celebrated as brilliant. In her role as a course instructor at the High Tech High Graduate School of Education, she works with preservice teachers to educate for social justice and deeper learning.

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Frances K. Harper taught mathematics, reading, and English for 9 years across Grades PreK–12 in diverse urban settings in Tennessee, Massachusetts, and Kanagawa, Japan. As a white, cis woman and first-generation college graduate, she strives to use her privilege to lift up the voices of students and families who have been systematically marginalized in mathematics by trying to understand mathematics education from their perspectives.

Jennifer Ruef identifies (and is identified) as a white, middle-class, cisgendered, dancing, diving mom and educator. She taught middle and high school mathematics for 20 years before earning her doctorate in mathematics education. Her research centers on social justice and equity concerns, with a focus on group and individual mathematical identities.

Candace Joswick began a career in education in an Upward Bound program and has taught middle school and high school mathematics in urban and suburban schools in culturally and linguistically diverse communities. Candace is dedicated to contributing to efforts that increase students' access to high-quality, inclusive, and equitable mathematics teaching and learning.

Nichole Campbell has taught elementary and middle school in both urban and suburban settings. She writes a culturally responsive mathematics curriculum for St. Paul Public Schools, where she is currently a district mathematics coach. She is also a consultant with Student Achievement Partners. Through this work, she is committed to raising awareness of social justice issues through mathematics and empowering students to be change agents.

Kari Kokka is a fourth-generation Japanese American cis nonqueer womxn who began her career in education as a public high school mathematics teacher in 1999. She worked as a mathematics teacher, instructional coach, and mathematics teacher-activist in New York City for 10 years prior to becoming a mathematics teacher educator at the University of Pittsburgh. She continues her mathematics teacher activism toward collective justice in various spaces, such as Creating Balance in an Unjust World Conference and Radical STEMM Educators.

Elizabeth O. Ayisi taught mathematics, physics, and computer science at private high schools and college applied calculus at a private university in Northeastern Ohio. As a first-generation Ghanaian American, she wants to provide better mathematics transitioning experience from high school to college for all students. She supports educators who strive to achieve social justice and equity to develop and expand students' positive mathematics identities toward programs that introduce STEM fields, professionals, and K–12 role models.

Odesma Dalrymple is an associate professor in industrial and systems engineering and director of the Engineering Exchange for Social Justice at the University of San Diego. Her scholarship is in the area of engineering education, with a focus on education equity, predominantly in middle-high school settings; and equitable, reciprocal exchanges with community organizations that serve and represent persons directly impacted by marginalizing practices, systems, and policies. She identifies as an Afro-Caribbean, immigrant, and mother of a first-generation American daughter.

Colleen Carman has taught middle school, high school, and university students. Colleen asks her students and herself to explore their own identities and how mathematics can play a role in their lives. Her greatest joy in teaching is seeing a student apply content to make a positive change in their school and community.

Oluwaseun Kudaisi started his career as an educator in 2017 and has worked in both public and private schools. He has taught sixth-grade math, sixth-grade science, and seventh-grade science. His passion is in helping students to achieve their goals. His life motto is, "If I can help somebody, as I pass along, Then my living shall not be in vain."

Queshonda Kudaisi, an African American woman, started her career as a mathematics educator in 2014 working in both public and private schools. Her experience includes being a middle and high school mathematics teacher, high school instructional mathematics coach, mathematics content writer, mathematics teacher educator, and mathematics education researcher. Her passion in mathematics is in integrating social justice issues into the mathematics classroom to empower students to enact a social transformation in the world.

Michelle Cody is the mother of a vibrant young Black boy (Matthew) and the daughter of educational enthusiasts (Brian and Julia). Black womyn. University of San Francisco grad. Public school sixth-grade mathematics teacher. Cisgendered. Howard University graduate. Social Justice Warrior. Creative. A proud product of the San Francisco Unified School District. She works to use numbers to tell stories of the community. She creates space for her brilliant mathematical babies to think big. As a youngin' in this work, she knows that it is both a lifestyle and a movement.

Chuck Munter taught secondary mathematics for 8 years, first in rural Missouri and then in Memphis City Schools. Currently, as a teacher educator at the University of Missouri, he is interested in using mathematics to develop more honest accounts of U.S. events past and present and to do democracy better.

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Y. Rhoda Latimer began her career as a middle school mathematics teacher 15 years ago. She is currently a PhD candidate and serves as a middle and secondary mathematics coordinator. Her research centers on culturally responsive and equitable mathematics teaching. As a Black female mathematician, she is passionate about enhancing environments where students' talents and cultural contributions are welcomed and embraced in mathematics classrooms.

Allyson Lam is a Chinese American middle school teacher, born and raised in San Francisco. She hopes to use her mathematics classroom to equip students to think critically about inequities in their community. Her students inspire her to continually work toward dismantling systems of oppression. Allyson's mathematics class consists of 50% mathematics tasks and groupwork, 40% games, and 10% chaos. The chaos is 100% necessary.

Tashana Howse has taught high school mathematics, college-level mathematics, and mathematics education courses for over 20 years. She strives to ensure that students experience mathematics in a way that will help them develop a deep understanding of the mathematics and require them to reason about and with mathematical concepts. However, in order to accomplish this, Tashana believes it is essential to build relationships and connect with students so they know they are welcomed to the learning process first.

Andrew Reardon taught students from Grades 7–12 in districts ranging from downtown Dallas, Texas, to a vocational high school in Delaware, Ohio. He works to ensure students have the necessary mathematics skills to be agents of social change and strives to complete that work alongside his students. His goal is to help students realize that a sound knowledge of mathematics is essential to effect change.

Cara Haines began her work as a mathematics educator in 2011 at a public school district in Pittsburgh, Pennsylvania. Later, while pursuing a doctorate at the University of Missouri, Cara grew invested in interrogating racism and issues of inequity in mathematics education, and sought to support prospective teachers in doing the same. Now, a postdoctoral researcher, Cara continues her inquiry into mathematics education in hopes of learning more about what it might take to improve students' experiences in schools.

Natalie Odom Pough serves as a middle school mathematics teacher and adjunct professor of mathematics education. Her research focus is on equitable mathematics teaching practices that connect students with the content in more positive ways. As a Black female mathematician, Dr. Pough works to instill a love for the subject and a drive for mathematics achievement in all of her students.

Jennifer A. Wolfe is a biracial Asian American cisgender woman, daughter of a Thai immigrant, and has been in mathematics teacher education for over 20 years. She supports prospective and in-service secondary mathematics teachers in learning to co-create identity-affirming spaces that center student voice, equity, radical love, and joy.

Robin Keturah Anderson is a former middle and high school mathematics and physics teacher in Southern California. She currently is an assistant professor of mathematics education working with preservice and in-service teachers to develop justice-oriented pedagogies to rehumanize mathematics teaching and learning.

Lisa Skultety taught middle and high school mathematics in Houston before becoming a teacher educator. As a white woman teaching predominately white future educators, she strives to support preservice teachers in understanding their privilege and move them toward interrogating classroom practices and creating equitable and just spaces for students.

Jennifer Kosiak has been teaching mathematics for over 25 years at the middle school, high school, and university levels. She currently is a professor of mathematics education at the University of Wisconsin-La Crosse, where she strives to support teacher candidates in integrating social inequities into the PreK–12 mathematics classroom. During her time as President of the Wisconsin Mathematics Council, Jennifer focused on engaging teachers across the state in empowering all students to see themselves as mathematicians.

Rebecca Hudson taught students in Grades 9–12 in a suburban public school with a diverse population of race and culture. She has a passion for showing students how mathematics can be used in the real world and how it can be applied to explain and change social differences to improve the world around us.

Melissa Troudt is a former high school teacher and assistant professor of mathematics education. As an educator of future teachers, she aims to work alongside her students to develop equity-based practices for teaching mathematics and to learn ways to use mathematics to interrogate and challenge inequities in their worlds.

Since childhood, **Rebecca Ellis** has been involved with Social Action Tikkun Olam, the Jewish concept of repairing the world. She aims to include social justice in all her teaching, curriculum design, and assessment development. As a postdoctoral student, she researched and developed free and interactive science education materials with the Connected Biology Project. She is excited to be starting a new position as a curriculum developer at The Concord Consortium, where she can continue to integrate culturally relevant pedagogies into technology-enhanced learning environments.

Joi Spencer comes from a family and community that believes in the power of education to liberate. She was introduced to the history of Black people and their freedom struggle as a young child. Teaching mathematics with an eye toward justice is a natural extension of this upbringing. Her hope is that the youth and teachers that she works with will use mathematics to understand, uproot, and change our current arrangements toward the goal of a more just society.

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Mathew D. Felton-Koestler teaches mathematics methods to future elementary and middle school teachers in the Department of Teacher Education at Ohio University. As a white man, Matt works to recognize and understand his privilege and to support future teachers in learning to use mathematics as a tool for understanding our world and, in particular, for revealing and countering social injustice.

Celina Gonzalez has worked alongside her mentors and colleagues learning and creating more equitable educational experiences. Originally from a small rural community and public schools, Celina's first mathematics class at University of San Diego with Dr. Myers opened her world to the beauty of mathematics. She questioned the disparities in quality and opportunity children have in their educational experiences. As a Chicana educator and leader, she continues to question and challenge injustices to understand and create equitable and transformative learning spaces.

Farshid Safi identifies strongly, fully, and proudly as Iranian American, connecting with both cultures/nationalities. His reality connects with being an immigrant but he is not considered a first-generation immigrant, being Muslim but he is not considered Muslim enough, and being an Emergent Bilingual learner but he is not considered as such. When you are not accepted by the majority and yet othered within and beyond communities that are themselves marginalized—historically, systemically, and systematically—there is a need to shift from awareness toward actions personally and professionally.

Melissa A. Gallagher was an elementary school teacher and mathematics coach both in the United States and abroad. She grew up overseas as a language learner, and this experience has influenced her research on supporting multilingual students in the mathematics classroom. She works to interrogate the privilege of her white, upper-middle-class upbringing and how that privilege afforded her different experiences than many multilinguals in the United States today.

Jeff Craig is committed to contemplating ethical questions in education. In his teaching, he reconciles ethical questioning against a backdrop of so-called "wicked problems" education, which prioritizes depth in education as it relates to students as members of communities and societies. Jeff is driven to engage students as both global and local thinkers who use mathematical and statistical techniques to understand their worlds and their positions within.

Tyrone Martinez-Black (ty, he, they) taught middle grades math, science, and reading as well as coached fellow educators in those subjects. Ty has lived an entire life "in between"—cultures, geographies, genders, and so on—working toward a just society that celebrates these pluralities and organizes with these fluidities in mind. Mathematics is a way of knowing and being that helps us pursue and create this future.

Emmalee Bielenberg teaches seventh-grade mathematics in Lincoln Public Schools in Nebraska. She strives to help her students develop positive mathematical identities at the intersection of their diverse cultural and religious identities. She hopes that by believing in each and every one of her students' mathematical abilities, she can empower them to believe in themselves too.

Cassie Ruettiger graduated from the University of Nebraska-Lincoln with a major in mathematics education. Her hope is for every student to feel as though they are capable of great things, both mathematically and personally.

We hope you find that the variety of contexts offered by the contributing authors in this collection of lessons will offer you lessons that you can use right away or provide the framework for developing a personalized lesson drawing upon student-generated themes, questions, or concerns that emerge in your own context—enhancing the opportunity to engage all students.

WHO IS THIS BOOK FOR?

Middle school students are broadening their worldview, and you have the opportunity to help them navigate it by collaborating with them and their communities to bring their expanded world into the mathematics classroom. This book is for middle school teachers and mathematics teacher educators who work with preservice and in-service teachers. We also believe this book can be used by mathematics coaches, center directors, and school and district leaders who want to empower their middle school students by analyzing and critiquing the world around them.

During your reading, we hope that you will grow in your understanding that mathematics may be a privileged space through which both you and your students can be empowered. Many students are not allowed the opportunity to connect mathematics with their culture and realized lives; thus your interest in TMSJ, reading of this text, and implementation in the classroom present an opportunity to shape students' lives and actions. When children learn that mathematics can be used as a tool to help them understand, explore, and investigate social situations, they are empowered to see themselves as active agents in a world of change. We hope that the lessons and the critical call for action contained in this book highlight how each and every student is capable of mathematical learning and can be empowered to use mathematics for change in their own and others' lives.

Although this book offers a number of suggestions for how to incorporate social justice mathematics lessons throughout the middle school curriculum, it is not intended as an end-all and be-all. We hope that you use the lessons as models and starters on your journey toward creating and implementing your own social justice lessons, targeting social concerns of your own students, and helping students view themselves as mathematically empowered agents of social change. Thus, we also offer suggestions for you to create your own social justice mathematics lessons for middle school students in the concluding chapter.

THE BOOK'S ORGANIZATION

This book is organized into three parts. In Parts I and III, you will find an opportunity to self-reflect and write in the book about your own identity and practice. Part I consists of Chapters 1–5, which support middle school teachers who want to implement teaching mathematics for social justice. In Chapter 1, we discuss what TMSJ means for middle school teachers. We also discuss key elements that contribute to TMSJ. In Chapter 2, we discuss how teachers can build and sustain beloved classroom communities that honor middle school students' needs. In Chapter 3, we share ways middle school teachers can foster a classroom to teach mathematics for social justice before they begin the planning process. We pose reflective questions for teachers to ask why it is important to consider content and context, and when and how teachers can plan to teach mathematics for social justice. We also provide suggestions of ways teachers can work with their interdisciplinary team to collaborate with colleagues. In Chapter 4, we look at three areas—equitable teaching practices, discourse, and assessment—and provide suggestions for you to consider as you plan for the social justice component of the lesson. In Chapter 5, we provide details about the design framework and the structure of the social justice mathematics lessons (SJMLs) in the book. It depicts a continuous cycle in which students actively investigate, understand, and reflect on challenging mathematical and social questions to empower themselves into action. This will help you understand elements of the structure that will not only help you think through the lessons as you plan to use them but also support you to develop your own SJMLs.

Part II contains SJMLs organized by mathematics content domains: the Number System (Chapter 6), Ratio and Proportional Relationships (Chapter 7), Algebra: Expressions, Equations, and Functions (Chapter 8), Statistics and Probability (Chapter 9), and Geometry (Chapter 10). An important characteristic of Part II of this book and its uniqueness to the field is the mathematical depth of the lessons. Teachers who use lessons from Part II of this text attend to the mathematical rigor required in state standards while also attending to the Social Justice Standards (Learning for Justice, 2016). We chose to organize lessons based on conceptual categories in order for teachers to easily locate lesson ideas that may be infused with mathematical course progressions from their state, district, or school.

We believe that attention to Learning for Justice's Social Justice Standards is critical in the development of middle school students; thus, a cross-reference of lessons to these Social Justice Standards may be found in Appendix E for teachers who are hoping to attend to all objectives identified in these Social Justice Standards across one academic year. In addition, each chapter in Part II is introduced with a table that highlights the lesson titles, authors, and a topic of social injustice. Teachers may use these pages to find lessons that tackle certain social injustices that are relative to their demographic, environmental, or social contexts.

Part III consists of two concluding chapters. In Chapter 11, we share reflections from the lesson plan authors and reviewers, who share their experiences with the hopes of providing inspiration and insight as you set forth to implement the

SJMLs in this book. In Chapter 12, we provide insight on creating your own and help you find your identity in teaching mathematics for social justice.

This is probably not a book to be read cover to cover, straight through. We hope that the reader gives thoughtful attention to Chapters 1–5. But next, we expect the reader to skim through the lessons of Chapters 6–10, reading those that are of most interest. Some people will be very interested to consider the thoughts and experiences from fellow teachers that are found in Chapter 11, and some will want to get into the recommendations to write their own lessons in Chapter 12. However, we imagine that both of those chapters will be read at a variety of different times—some people will want to get right to them, and others will find them most valuable after trying a few of the lessons in their classrooms.

As you consider implementing the lessons in this book, we imagine three approaches to selecting a lesson to use. First, we expect most teachers will identify lessons that align with the content standards that are assigned to the class they are teaching. Appendix E will be helpful for this approach. However, the social justice topics, as aligned to lessons at the end of Appendix E, may be of more interest to teachers who wish to respond to an important issue that is very visible in their school community. Finally, we imagine the teacher who is interested in developing students' knowledge, skills, and disposition toward social justice more generally, as opposed to topic or mathematics centered. The second chart in Appendix E aligns the lessons to the Social Justice Standards developed by Learning for Justice (2016).

We expect that the resources in this book will help you create and focus energy on authentic experiences for students while also generating mathematical analysis or modeling to probe issues of injustice relative to students' lives. These chapters may also encourage seasoned and veteran teachers using TMSJ to compare some of your guiding principles to ours, and possibly gain ideas on how to enhance the work you are currently doing. We encourage you to read each of Chapters 1–5 to become familiar with the aims of the book, recommendations for TMSJ, and the framework to understand how the lessons are organized. Next, consider selecting one or two lessons to implement that align with the content standards of the course(s) you teach and personalize them to your context if able. We hope you will come back to the book often, each new semester, to consider additional lessons. Finally, read Chapter 11 as you are ready to begin to modify the lessons provided or begin creating your own. Chapter 12 can be read at any time, and may be most insightful after implementing one or more lessons grounded in social injustices so that you can reflect on your own experiences through the wisdom of others.

We commend you for bringing your middle school students' curiosities and concerns about their lives into your mathematics classroom. We hope that the lessons in this book help you to foster student-to-student interactions that move beyond the mathematics to be learned and into actionable change in middle school students' lives and society.