

# **Antiracist Mathematics Education: Stories of Acknowledgment, Action, and Accountability**

**\*Coming Fall 2023**

## **SECTION 1: STUDENTS**

### **Grounded in Place: A Culturally Affirming Precalculus Curriculum** by Guadalupe I. Lozano

This chapter describes the creation of a novel, culture-centering, and asset-affirming dual-enrollment curriculum focusing on Tucson and the Southwest as place and identity. The chapter highlights the actions taken to create the curriculum and crystallize the approach, including critical research and learning; essential partnerships with school teachers and district leaders; and conversations with parents, community members, and the broader mathematics community.

### **Lurch Forward: Eliminating Caste in American Classrooms** by Cliff Freeman

This chapter presents a historical account of the Young People's Project (YPP), from its founding in 1996 to its pioneering efforts to position young people from historically disadvantaged communities as assets in creating innovative solutions in math education. The chapter provides an in-depth description of YPP's efforts to answer the question, "What and how much do young people have to do to help get Jim Crow out of education in the U.S.?" The chapter concludes with step-by-step guidance for starting a YPP in your community.

### **We Are Not Your Model Minority: Struggling, Reimagining, and Becoming Through Mother Daughter Counter Storytelling** by Emy Chen and Cathery Yeh

This chapter shares two stories: one of a 14-year-old Chinese American youth organizer and a first generation Chinese American mother scholar, the other of their journey together organizing in communities to push for visibility of Students of Color in schools. The chapter shares resources developed by the authors and offers guiding questions and prompts to support conversations that shift from invisibility or deficit-based narratives to stories of strength and solidarity within and among communities of Color.

### **Enacting Antiracist Teaching Practices Through Mathematical Modeling** by Cynthia O. Anhalt, Ricardo Cortez, Brynja Kohler, and Will Tidwell

This chapter provides a sample lesson addressing the impact of settler colonialism on Native Americans' prosperity and way of life, focusing on the diminishment of Sioux reservation lands in the latter part of the 19th century. Through mathematical modeling, the authors present scenarios in sociopolitical contexts that students can explore and analyze critically. In addition, students can develop the skills to interrogate social injustices and explore policy as informed advocates of antiracism, equity, diversity, and inclusion in interdisciplinary contexts.

### **Student and Teacher Contracts As Tools for Antiracist Teacher Practice Vignette** by Charles Wilkes

This chapter illuminates the ways in which Black learners' conceptions of smartness push back

against anti-Black rhetoric and highlights moments in which one teacher exemplifies antiracist practices in the classroom. Practices foregrounded in this chapter include listening to students' critiques, co-creating student and teacher contracts, and using these contracts as opportunities to hold students accountable. The chapter provides recommendations for implementing antiracist practices in the context of math classrooms.

## **SECTION 2: PARENTS/CAREGIVERS**

### **Latinx Families as Math Experts: Co-constructing Family Math Workshops Through A Collaborative Approach** by Geraldo Tobon, Marie Tejero Hughes, and Lleimy Mendez Ramos

The *Multiplicando el Potencial de la Familia* project described in this chapter highlights the power of working with a community organization, teachers, and parents to foster trusting relationships and support mathematics teaching and learning. Through a series of parent workshops, families shared their mathematics experiences, learned about the mathematics taught at school, and explored mathematics concepts with their children through games and community-building activities.

### **Empowering Latinx Families with Math** by Audrey Martínez-Gudapakkam, Sabrina De Los Santos, Judy Storeygard, Amariyls Patrone, Daisy Cuevas, and Paula Chingo

Using videos and social media to connect with Latinx families, the authors empowered the families to recognize their own mathematics knowledge and strengthen their relationships with teachers. One project used short videos to demonstrate how parents can engage their children in mathematics conversations during daily activities at home. A second project incorporated paraeducators' knowledge of their communities and helped them create videos of them playing math games with a child. The videos were resources for families to model at home with their child.

### **Mothers Working with Teachers in Mathematics in Ways That Matter** by Kathleen Stoehr and Marta Civil

This chapter describes collaborations among Latinx mothers, teachers, and preservice teachers to explore mathematics topics and engage in conversations about teaching and learning mathematics. Leveraging the mothers' knowledge and wisdom, preservice teachers learned to incorporate students' cultures and interests into their lesson plans. Mothers and teachers co-facilitated parent workshops to help families make connections between school and home mathematics.

## **SECTION 3: TEACHERS**

### **Cultivating Equity and Empathy in Community-Focused Elementary Math Modeling** by Erin Turner, Jennifer Suh, Holly Tate, Delia Sotelo, Mary Alice Carlson, Julia Aguirre, and Elizabeth Fulton

This chapter shares two stories highlighting community-focused mathematics lessons. Delia's lesson involves creating models of new *puestos*, providing an exemplar of how to create space for students to share their experiences, knowledge, and identities. Holly's lesson, part of a carefully unit mathematizing indigenous land loss, illustrates how to engage the community and attend to social justice issues. Together, the stories illuminate how mathematical modeling that draws on students'

identities, experiences, and funds of knowledge can help advance antiracist mathematics education.

**Learning More Mathematics by Cracking the Code: Promoting Algebraic Thinking Through Computer Programming** by Sylvia Celedón-Pattichis, Carlos A. LópezLeiva, Marios S. Pattichis, and Wenjing Shi

This chapter illustrates how to engage students in mathematics through meaningful computer programming. Students' voices speak to the need to make mathematics relevant and engaging by introducing a lived, applied, bilingual mathematics. Testimonies in the chapter demonstrate that students can and want to do mathematics, but in meaningful ways that allow them to show how they think and who they are. The chapter provides sample tasks and project details to help teachers implement an asset-based approach to teaching mathematics.

**Alternate Sources, Alternate Narratives: Creating the Mathematics Ethos That May Have Been** by Guadalupe I. Lozano and Cynthia O. Anhalt

Using EvenQuads and *Testimonios* "playing cards," students connect narratives to exploring mathematics content, habits of mind, and antiracist mathematics. EvenQuads Notable Women in Math Playing Cards feature 64 female contributors to the mathematical sciences (including author Lozano). *Testimonios: Stories of Latinx & Hispanic Mathematicians* is a book featuring 27 self-authored stories of Latinx mathematicians (including author Anhalt). The chapter shares many excellent suggestions for implementing the cards in your classroom.

**Using Mathematics to Explore School Segregation and Discipline** by Mathew Felton-Koestler

Through two engaging and detailed lessons, we learn how to use mathematics and mathematical modeling as tools for understanding the injustices of the social structures. The first exploration focuses on school segregation, using demographic data and challenging students to make comparisons. The second task asks students to estimate anticipated school expulsions and compare the estimate to the actual values based on race. The chapter also presents many additional ideas for how to use mathematics to understand systems of oppression.

## **SECTION 4: ADMINISTRATORS**

**How Might Administrators Make a Difference for Our Students' Transition Years?** by John Staley and Denise Thornton

This chapter describes the *Launch Years Mathematics Organization Leadership Network (LY MathLN)* and enumerates its benefits. In addition, the chapter describes policies and practices administrators can implement to support each student's successful completion of their final secondary and initial postsecondary mathematics/ statistics courses. The authors share a vignette that exemplifies how parents, teachers, school administrators, and counselors can work with a student to ensure a successful pathway from high school to college.

**Black Mathematics Educators Envisioning an Antiracist Workplace** by Marian Dingle and Toya Jones Frank

Through a vignette about a Black teacher's experience implementing antiracist mathematics teaching

at a new school, this chapter shares lessons learned for the benefit of teachers and administrators. The authors express the importance of Black teachers feeling respected and supported in their work. They also frame a vision of how administrators can develop supportive antiracist relationships with Black teachers.

**Radically Reinvigorating Our Ways of Being, Learning, and Decolonizing Math Instruction** by Noni Mendoza-Reis, Ma Bernadette Andres-Salgarino, Jonathan Natividad, Kasturi Basu, and Danielle Letts

This chapter guides administrators and teachers in becoming more culturally responsive and improving school climate by listening to students' voices and enlisting parents to support school efforts. In addition, the authors share modules designed to enhance teachers' and administrators' social emotional awareness and reveal students' mathematics identities.

## **SECTION 5: COMMUNITY MEMBERS**

**Mentoring as a Model** by Pamela Norris

Through this chapter community leaders learn how to foster lasting support groups among students of color and how those support groups can lead to students giving back to their communities in a variety of ways. In addition, the author shares two vignettes about students' journeys to demonstrate the benefits afforded to students and their families through the long-term community support program. Guidelines are provided to assist community leaders in developing similar programs in their towns.

**Connecting Argumentation, Systemic Violence, and Discretionary Spaces** by Robert Q. Berry, III

The author highlights the importance of teachers' awareness of how their interactions with students can cause students to flourish or give up in a mathematics classroom. An eye-opening vignette illustrates the significant role of orchestrating inclusive discourse in the mathematics classroom. The chapter emphasizes the value of understanding students' ways of conversing and sharing as an antiracist teaching move.

**Considering Language and Culture in Antiracist Mathematics** by Jamie Harrison

This chapter explores how community leaders brought together multilingual and monolingual families to learn about and share each other's cultures through story time and games in a public library. These events have the capacity to lead to stronger collaborations among community members and enhance their understanding of one another's cultural backgrounds. The author also offers recommendations for planning and implementing similar events.

**Liberatory, Antiracist Mathematics Education for Black Queer and Trans Youth** by Brandie E. Waid

This chapter explores the development of a responsive pedagogy for Black queer and trans youth. The author describes safe classroom environments for these youth and approaches that enable the students to maintain their identities and feel valued in the mathematics classroom. The author provides a historical perspective on how Black queer and trans men have been treated and the culture and communities they have created.