ANTI-RACIST MATHEMATICS EDUCATION WITH YOUNG LEARNERS

Becoming an Anti-Racist Early Math Teacher

Abstract

In this toolkit, early childhood educators will learn how to pursue anti-racist mathematics education with young learners. It begins with an overview of the importance of anti-racist mathematics teaching for early mathematics literacy and provides “steps” that early childhood educators can take, either individually or in community with others. Embedded in each step are resources and questions for reflection.
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What is Anti-Racist Math Teaching and Why It Is Important for Early Math Literacy?

Equitable mathematics instruction has been at the forefront of mathematics education reform for quite some time. There is no exception within early mathematics learning spaces as research has documented the salience of inequitable math learning experiences across many axes. When we consider the importance of equitable teaching in early math contexts it is important to recognize that math learning experiences of young children are racialized, that is, “structured by the relations of race that exist in the larger society” (Martin, 2009, p. 299). These racialized math learning experiences often negatively impact the math learning trajectories of children from racially minoritized groups (Martin, 2009; Aguirre et al, 2013; Goffney et al, 2018) by affecting their math attitudes (e.g., identity, self-efficacy, anxiety, utility) and achievement. These effects begin early in a child’s math learning and can have cumulative deleterious effects as they progress through school (Kerckhoff & Glennie, 1999). As such, it is imperative that mathematics educators begin to consider racialized aspects of mathematics education and take concrete steps to create mathematics learning spaces for young learners that are antiracist, that is, a “proactive destabilizing of the ways race and racism operate” within mathematics education (Shah & Coles, 2020, pg. 586).

Some may wonder why antiracism and racial justice should even be attended to in early math education spaces. But it is important to recognize that early math classrooms are situated within a system that centers whiteness and marginalizes communities of Color, thus those spaces are not immune from the impacts of racial inequality and injustice. Within early mathematics learning spaces, racial hierarchies begin to form that position Black, Latinx, and Indigenous children below white and Asian students in mathematical ability (Martin, 2009). In addition, early mathematics instruction may be void of culturally relevant content, thus relegating the lived experiences of young children of Color outside of the math classroom. Furthermore, early childhood educators are overwhelmingly white while the children they serve are predominantly from racially minoritized communities (Paschall et al., 2020) demonstrating a racial mismatch that requires early childhood educators be intentional about their teaching to meet the needs of the children they teach. Meeting those needs, particularly in mathematics, involves engaging children in mathematical activity that celebrates and leverages their multiple identities and lived experiences while preparing them to utilize that mathematics to understand and influence the world around them. As such, at this stage of children’s mathematics learning trajectories, it is imperative that early mathematics educators begin the work of dismantling racially oppressive structures that have detrimental effects of children of Color. When early mathematics teachers do not acknowledge race and
the racialized nature of mathematics education (e.g., colorblindness, racial apathy), they may inadvertently engage in teaching practices that maintain the whiteness status quo. By the same token, early mathematics teachers are uniquely positioned to engage in antiracist practices early in a child’s mathematics learning that can set the tone for their future math learning.

Oftentimes, early childhood educators desire to be antiracist in their math instruction but may question how best to do so. This toolkit is a resource to early mathematics teachers who are at a crucial stage of young learners’ development of their relationship with mathematics. This toolkit will guide early math educators towards antiracist mathematics teaching by providing “steps” and resources. However, this toolkit is not intended to be exhaustive of the ways that elementary math teachers can engage in antiracist math teaching practices, but instead serves as a possible starting point for those who seek to engage in those practices. The steps below can be completed individually or in groups with other early math teachers.

**Becoming an Antiracist Early Math Teacher**

**Be Consistently Self-Aware**

Being consistently self-aware involves starting with yourself and examining your privilege, beliefs, and practices related to race. It is a continuous process that requires introspection that may sometimes result in feelings of discomfort, but also growth. It is important to realize that this self-awareness is ongoing, diligent, and prudent. An antiracist early math teacher should begin by critically reflecting on their own mathematics learning experiences and whether they were informed by racial privilege and/or oppression. Teachers tend to teach the way that they were taught, and unfortunately, this often leads to the same dehumanizing teaching practices that they endured to be reproduced in their own teaching. As such, antiracist early math educators should also seek to explore their math learner and teacher identities and if and how they intersect. These initial steps provide an entry point for early math educators to then be introspective about their beliefs regarding children’s mathematical ability and competence and if those beliefs are deficit or asset based. In other words, early math educators should consistently be confronting any implicit biases they may have that are informed by common societal narratives (e.g., Asians are inherently good at math) and replacing them with asset-based narratives about young learners.

**Questions for reflection:**

- What is your racial identity and how is that related to your own early math learning experiences?
- What racial stereotypes are you aware of that position young children from particular racial groups as not as mathematically literate as children from other racial groups?
• What racial biases do you hold with regards to early mathematics literacy?

Resources:
• The Impact of Identity in K-8 Mathematics Education, by Julia Aguirre, Karen Mayfield-Ingram, and Danny Martin, Chapters 1, 2, and 3
• So You Want to Talk About Race, by Ijeoma Oluo

Educate Yourself About the Larger Context

It is important to learn about the ways that systemic racism manifests in the lives of young learners. The realm of mathematics education is not exempt. Knowing the mechanisms (e.g., tracking/ability grouping, distribution of resources, implicit bias), that shape their math learning experiences better positions early math educators to be a disruptors and agents of change. One area that requires closer scrutiny is the narrative about the racial achievement gap in mathematics. There is much conversation around how to close these gaps in mathematics. However, an antiracist early math teacher recognizes how these “gaps” are largely influenced by differences in opportunities to learn rich mathematics versus differences in mathematics ability. Another area that early math educators should be more aware of are tracking structures within math classrooms that classify children by perceived mathematical ability. These tracking structures begin in early math classrooms and follow children throughout their math learning trajectories. Finally, early math educators should be aware of the larger societal impacts of disparate mathematics learning experiences that begin in early childhood which include subsequent placement in lower-level math and science courses and a lower likelihood of pursuing more lucrative careers (e.g., STEM).

Questions for reflection:
• What racial disparities are you aware of with regards to mathematics education?
• What are the immediate and long-term effects of these disparities on racially minoritized children?

Resources:
• In My Opinion: Does Race Matter?, by Danny Martin
• Keeping Track: How Schools Structure Inequality, by Jeannie Oakes
• Savage Inequalities: Children in America’s Schools, by Jonathan Kozol

Know Your Students and their Communities

There is a common notion that early mathematics is void of cultural relevance as children are expected to be engaged in the development of early number sense and other seemingly culture free concepts. However, being an antiracist early math educator requires intentionally seeking opportunities to learn about the lived experiences of the children in their classrooms and the ways that they use mathematics in their daily lives. This intentionality opens up space to confront deficit beliefs about children, their families,
and communities and replaces them with asset-based framings. It also provides a plethora of sources that can be mathematized when designing early mathematics lessons. These lessons can also open up dialogue among young learners about the math lived experiences of their peers, seeing them as windows, mirrors, or sliding glass doors (Bishop, 1990) when compared to their experiences. Part of knowing your students and their communities is inquiring of them what they need from you as a math teacher. Oftentimes we do not seek input from children or their families about what mathematics instruction can look like. This is an overlooked, yet powerful resource that early math teachers can use to create more inclusive math learning spaces. Finally, knowing your students, their families, and communities you also should ascertain what problems they have that could be solved using mathematics. With young children, for example, the concept of fairness is one that can be explored using mathematics with issues that are limited to young children’s personal experiences or present in their communities.

Questions for Reflection:

- What do you know about the lived experiences of each child in your classroom?
- How can you be more intentional about learning about your students’ lived experiences within their families and communities?
- How can what you learn be mathematized and utilized in your math instruction?

Resources:
- The Impact of Identity in K-8 Mathematics Education, by Julia Aguirre, Karen Mayfield-Ingram, and Danny Martin, Chapters 7 and 8
- Reimagining the Mathematics Classroom Ch 5, by Cathery Yeh, Mark W. Ellis, Carolee Koehn Hurtado
- TEACH Math Community Walk Activity
- Community Walk YouTube video

Affirm Your Students

Early math educators should create learning experiences that affirm all young learners as mathematicians who bring valuable funds of knowledge to the learning environment. One way to do this is to highlight mathematicians of Color in their classrooms using posters, picture books, and by inviting community members of Color to talk to children about their use of mathematics in their daily lives and/or careers. Also, teach young children about the contributions that non-white groups have made to mathematics so
as not to perpetuate the idea that mathematics ideas and concepts were only influenced by white men. Furthermore, you should also have high expectations of all children and support them to develop a positive math identity. This can be done by identifying the mathematical strengths of young students of Color and helping them to recognize and celebrate those strengths in themselves and each other.

Questions for Reflection:
- How can you be more intentional about affirming your students and their mathematical ability?
- How can you foster the development of a positive math identity in your students?

Resources:
- Math Teacher Lounge Podcast: Developing an Asset Based Orientation with Lani Horn
- Mae Among the Stars by Roda Ahmed, Illustrated by Stasia Burrington
- The Doctor With An Eye For Eyes: The Story of Dr. Patricia Bath by Julia Finley Mosca, Illustrated by Daniel Rieley
- Counting on Katherine: How Katherine Johnson Saved Apollo 13, by Helaine Becker
- 6 Bilingual Math Books featuring Hispanic and Latino Characters
- 100 Picture Books that Celebrate Asians and Asian Americans
- Indigenous Numeracy Books

Examine Your Math Curriculum and Instruction
Antiracist early math educators should be mindful of the math curriculum and their instruction. Young children should be able to see themselves in the mathematics that they are engaging with. The early math curriculum, therefore, should be contextualized to include aspects of children’s lives. This requires math tasks that are less procedural and more conceptual. Conceptual understanding is best supported with contextual tasks that are framed around children’s lived experiences and linked to the math learning standards. Building conceptual understanding also provides opportunity for early math educators to create tasks that require multiple problem-solving approaches and strategies. Young children should develop the idea of mathematics inquiry as a community effort versus an individual one. In thinking about curriculum and instruction, antiracist early math educators should strive to create a classroom environment where children are allowed to take risks and make mistakes. Formative assessments should also allow for this. Olga Torres’s Rights of the Learner is an example where early math educators can establish a humanizing stance towards mathematics assessments whereby children have 4 rights in the math classrooms: 1. to be confused, 2. to claim a mistake, 3. to speak, listen, and be heard, 4. to write, do, and represent only what makes sense (Kalinec-Craig, 2017). Also, when considering teaching practices, an antiracist early math educator considers power dynamics in the classrooms and delegates
authority over mathematical ideas to the young learners instead of towards themselves. In other words, young children should be allowed to be authoritative about their mathematical ideas and be given space to express those ideas.

Questions for Reflection:

- In what ways can I include more of children's lives in the math curriculum?
- How can I redesign math tasks to ensure more focus on conceptual understanding?
- In what ways am I providing the opportunity for all children to participate in mathematical activity?
- What instructional practices encourage participation from all students, and not just a select few?

Resources:

- 3 Act Tasks Bank

Find Your People and Pursue Together

Antiracist early math educators should seek out other teachers who are also committed to pursuing antiracist math teaching. These teachers may be at your school or within your district. Also consider participating in professional organizations to engage with a broader group of early math teachers engaged in this work. When doing the often-challenging work on antiracist early math education, there is a benefit to having a support system of like-minded educators who can also hold you accountable. Support and accountability can include engaging in book clubs together where you can explore race-related topics in a community. It may also include pointing out each other's blind spots in order to help one another grow. Furthermore, it is also more likely that you would point out and address racist practices if you are not doing so alone. For instance, approaching a principal or lead teacher about a school policy that oppresses students of Color may be more effective if you have the support of other teachers or stakeholders. Finally, when working with other teachers, seek opportunities to be involved in professional development not only as consumers but also as producers of ways that you and your team incorporate antiracist early math practices in your specific contexts.

Questions for Reflection:

- Can you identify other teachers in your school or district who are engaged in antiracist math teaching? If not, how will you seek them out?
- What professional organizations, local or national, can you be a part of to help support your path towards antiracist early math teaching?
Resources:
- NCTM website
- TODOS Mathematics for All: Excellence and Equity in Mathematics
- TODOS Mathematics Annual Conference
- Teaching for Change: Building Social Justice Starting in the Classroom

Overall Reflection
As you reflect over the exercises above consider that the pursuit of anti-racist early mathematics teaching is an ongoing one. It is important to continuously reflect over your practice. The following questions can serve a guide to help in this continuous reflection process.

- What did you learn from this exercise about yourself?
- What did you learn about antiracist early math teaching? Was anything surprising?
- Of the steps described above, which would you consider easiest and/or most challenging for you to pursue and why?
- Would you add a step? If so, what would it be?
- What steps towards antiracist math teaching will you engage in this year? List the action items you plan to utilize.
References


