Research Brief

Principles of Antiracist Practices for Black and Latinx Students in Mathematics

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Abstract

This article aims to examine the importance of creating equitable mathematics classrooms amongst pre-service and novice teachers with a focus on antiracist practices for social justice. We describe principles for antiracist practices in mathematics, specifically focusing on Latinx and Black students, and provide illustrations of practice showing the enactment of these principles. We hope that pre-service and novice teachers use this as a guide to implement antiracist practices in their mathematics classrooms to provide equitable learning opportunities for their students.

Introduction

This article is a collaboration between a mathematics teacher and a university researcher, and a teacher educator. We examine the importance of creating equitable mathematics classrooms amongst pre-service and novice teachers with a focus on antiracist practices for social justice. We use the following essential actions presented in the TODOS antiracist statement (TODOS, 2020):, "Eliminating deficit views of mathematics learning" (p. 2); "Eradicating mathematics as a gatekeeper" (p. 3); and "Elevating the professional learning of mathematics teachers and leaders with a dual focus on mathematics and social justice" (p. 4) to describe principles for antiracist practices in mathematics, specifically focusing on Latinx and Black students. We show the enactment of these principles through some classroom illustrations. We hope that pre-service and novice teachers use this as a guide to implement antiracist practices in their mathematics classrooms to provide equitable learning opportunities for their students.

Antiracist Practices in Mathematics

The reality of the United States (U.S.) education system is that it does not provide support for all students to become successful. Due to the traditional U.S. curricula and research being predominantly based on White, upper socioeconomic status (SES) students (Lerner, 2009), minoritized and low-income students need additional support and specific preparation (Jong & Jackson, 2016). One example of this is that most classroom curricula highlight the achievements of White males throughout history and only discuss slavery when referencing Black culture (Gray et al., 2018).

Until recently, research on the educational system was not inclusive of non-White and multilingual students, yet only recognized research was conducted on upper-class White students. Historical and present contexts of racial injustice have informed the society encircling Black and Latinx students today (Gonzalez, 2009).For the first time in U.S. history, students who were a part of a marginalized group (e.g., non-White, immigrants) began to be seen across the nation as a necessity to society. Marginalized students can prosper within a system recognizing their existing expertise and experiences rather than inducing their conformity to White culture. Many Black and African American students in the United States experience discrepancies between the school curriculum and their intelligence (Kumar et al., 2018).

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With an added emphasis on the experiences of minoritized students in mathematics teaching and learning comes the responsibility to implement an antiracist pedagogy with a commitment to social justice in mathematics while addressing social and environmental issues among Latinx and Black communities. This includes implementing antiracist practices focused on social justice in order to empower students to become agentive knowers. Antiracist practices for teaching mathematics for social justice can be defined and broken into four main components: a) access to high-quality math instruction for all students, b) using marginalized community experiences to assist in re-centering the math curriculum, c) understanding students' social life, societal position, and power and oppression by utilizing math as a critical tool and d) using mathematics to completely rebuild society so that it can become more just (Gonzalez, 2009).

An important tenet of an antiracist pedagogy is that students themselves are part of the solution to injustice, beginning as youth and continuing into adulthood. In order to productively play this role, students must understand more profoundly the conditions of their lives and the sociopolitical dynamics of their world, including race, culture, and language. Therefore, one way to address this in the classroom is for teachers to pose questions to students to encourage and support them in addressing and understanding their cultural and environmental backgrounds (Gustein, 2003). As mentioned in the 2020 TODOS antiracist statement, "We can no longer believe that a focus on curriculum, instruction, and assessment alone will be enough to prepare our children for survival in the world. We need antiracist conversations for ourselves and for our children" (TODOS, 2020).

Another important consideration for an antiracist pedagogy in mathematics is the importance of language for mathematical reasoning and problem-solving in multilingual and racial minoritized classrooms (Leonard et al., 2009). Mathematical language is a significant part of understanding mathematics (de Oliveira, 2012). Not only do students need to be able to utilize mathematical terms in daily math conversations, but they also need to be able to construct multiple meanings and use language to explain their reasoning. This is essential when creating an inclusive classroom for all students because participation in math conversations is critical (Leonard et al., 2009). This is also a matter of social justice for all and aligns with the essential action "eradicating mathematics as a gatekeeper" of the TODOS antiracist statement (TODOS, 2020, p. 3).

In order for teachers to begin to incorporate antiracist practices for social justice in mathematics, they need to be able to share their personal and social exchanges (i.e., experiences, perspectives, and ideas) while also being able and willing to change them. It is essential for teachers to become allies of the Black and Latinx communities they serve, including their cultures and environmental experiences. In doing so, pre-service and novice teachers need to constantly reflect on their actions and teaching practices. Teachers need to adapt to the pedagogical practice that students are fluid individuals capable of reflection and self-correction (Adair, 2008). They also need to be prepared to work with students from multiple backgrounds and experiences, including minoritized students in order to make vital connections between teaching mathematics content and social justice (Jong & Jackson, 2016). These are the kinds of experiences that all teachers need in order to be prepared to work with students who represent multiple identities. Schools need to provide these experiences for their in-service teachers if these opportunities were not provided to them during their pre-service years. All of these considerations about implementing antiracist practices for

social justice in teaching mathematics align with the essential action presented in the TODOS antiracist statement, "Elevating the professional learning of mathematics teachers and leaders with a dual focus on mathematics and social justice" (TODOS, 2020, p. 4).

Principles of Antiracist Pedagogy in Mathematics

This section provides three principles of antiracist pedagogy that should guide mathematics instruction. We went through a process of examining Destini's practices and what guiding principles aligned with essential actions and back and forth in writing the principles and what illustrations for the principles we could identify. This was an iterative process that both of us went through as a practice of building, refining, and improving the principles and considering the opportunities that best supported those principles along with identifying these opportunities and then revising the principles to best conceptualize them. We believe that teachers can develop antiracist inclinations or awareness of racism as an ongoing problem for racially minoritized students, dispositions that interrogate the subtle coverup of racism, and intentions to weaken racism in its many forms in their teaching (Bonilla-Silva, 2003). Though these antiracist inclinations may not always manifest in antiracist practice, they are one step forward in changing practices in the classroom (Annamma et al., 2017; Bonilla-Silva, 2003), and are especially important for mathematics teachers. We hope that the principles presented here assist with the endeavor of "Engaging the sociopolitical turn of mathematics education" (TODOS, 2020, essential action 3) as a foundation of antiracist pedagogy. We expect teachers to build antiracist mathematics classrooms as an expectation to solidify our intentions and apply their antiracist inclinations to build a more just experience for racially minoritized students.
I don't like this sentence for some reason, seems too wordy.

1. Implement asset-based perspectives that draw on Black and Latinx students' affordances and lived experiences

By becoming cognizant of their students' cultural and social backgrounds and of their own position in social life, teachers often become inclined to act on this knowledge for the prosperity of students (Sleeter, 1997). Applying antiracist practices in the mathematics classroom involves teachers and students becoming increasingly knowledgeable of their social realities and of one another's respective backgrounds, cultures, and understandings. When considering various ways to teach through an antiracist lens, it is crucial to assist students in validating their language, cultures, and histories. Doing so will help students develop more positive social and cultural identities (Gustein, 2003).

This knowledge is vital so teachers are aware that students come to the mathematics classroom with experiences from their home lives that can and should be used in instruction. The first principle we propose is developing asset-based perspectives that draw on students' affordances and lived experiences and the mathematical knowledge that is developed through these experiences. This principle also connects to the TODOS's essential action of "eliminating deficit views of mathematics learning" (TODOS, 2020, p. 2).

2. Make Mathematics Accessible to All Learners

Teachers need to develop knowledge about how to make content accessible to all learners. Here the word accessible takes a different connotation than in recent literature on modifications and simplifications, typically a strategy to reach students who are in the process of learning English (de Oliveira, 2012). Instead,

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we take a different view of accessibility: Making mathematics content accessible to all learners means providing them access to the ways in which knowledge is constructed in mathematics by not simplifying the texts or tasks, but by developing teachers' understanding of antiracist pedagogies in the mathematics classroom. Access also means focusing on understanding concepts and reasoning rather than finding "the right answer."

Accessibility also entails building relationships and interactions when creating equitable, positive learning environments (Chow, 2020). Adolescents' attitudes and motivation decrease as they transition into middle school. Teachers need to be able to understand, become in tune with, and build on students' mathematical thinking. In order to motivate students and build respectful, supportive, and caring teacher-student relationships, two things need to happen: 1) teachers need to know and understand their students and their students' lives well. This can be done by explicitly paying attention to students' culture(s), race, and environments; and 2) showing students that they are cared for and not just telling them repeatedly because if a child does not feel like they are cared for then they will not believe it. In order for caring mathematics instruction and caring relationships to be built, the following components need to be practiced: teach so that students have all of their learning needs met and valued, set and communicate high expectations, implement ways for students to consistently engage in mathematics, and create a warm and welcoming environment (Jamsen & Bartell, 2013).

3. Find multiple ways for Black and Latinx students to demonstrate their knowledge and understanding

One of the key tenets of antiracist education is ensuring increased participation and engagement by racially minoritized students. Finding multiple ways for students to demonstrate their knowledge and understanding is a critical component of increasing their participation and engagement in mathematics. Black and Latinx students are able to increase their engagement when the learning opportunities and instructions are more communal (Gray et al., 2020).

Implementing collaboration and increasing community through using project-based learning may also provide multiple opportunities for students to learn from each other. When engaging in project-based learning, students are able to further investigate phenomena in the social world, while also making connections between mathematics and real-world applications (Gustein, 2003). It is essential for students to be able to relate to math concepts using their lived experiences. This is when relationality becomes important in math instruction. Relationality can be defined as connecting community issues, project collaborators, community stakeholders, instructors/mentors, and structural inequalities in their environments (Gray et al., 2020).

Enactment of Principles in a Middle School Classroom

As a current mathematics urban educator, Destini is continuously seeking various strategies, opportunities, and practices that will assist in building a sense of belonging within her classroom for all students while teaching math for social justice and understanding students' cultural and linguistic backgrounds. Here are some illustrations using her voice.

Destini considers (identifies) herself as a Black woman who teaches sixth-grade mathematics at a large urban school district in "State." She tries to implement antiracist practices in her classroom over time to better address the needs of her diverse student population, which includes many Black and Latinx students. She has several students who have been classified as English language learners by the school division.

The authors have also realized that the less understood a child feels because of their teacher, the less likely they are to trust the teacher. As an effect, this will shut down the possibility of developing a positive relationship between the teacher and student. Teachers need to take an interest in students' lives and show that they care and are open to building trust with each student. There needs to be an effective and positive change amongst teachers and their perceptions of each student. This starts with eliminating teacher's biases toward certain groups (e,g., Black, Latinx students). Prior literature regarding the development of learning environments, specifically mathematics classrooms, makes me reflect on how I need to continue to check my own cultural biases and take time to understand and respect other cultural norms. Revising this manuscript was part of that process! We also need to realize how important it is to have a professional development session on eliminating cultural biases when reflecting on teaching practices and their own images of minority students' identities.

Destini has consistently tried to provide students whose first language is not English with opportunities to share with other students in the class how to say certain vocabulary words in their home language. It goes a long way in providing them with a safe and equitable space for their culture and voice. I want all of my students to know that their voice, language, culture, and community are influential components in their education. Black students often merge their cultural identity and mathematics identity in order to become successful in math (Gray et al. 2018). Therefore, teachers should take into consideration ways to implement meaningful mathematics teaching strategies (Kumar et al., 2018). Taken together, the biases, race, and level of trust from the teacher, important factors in teaching and learning, may play a significant role when developing teacher-student relationships and analyzing motivational beliefs in math classrooms. This is part of how Destini uses Principle 1 in her teaching - **Implement asset-based perspectives that draw on Black and Latinx students' affordances and lived experiences**.

In order to make connections between mathematics and the real world, Destini often tries to build upon experiences shared by students, also connected to Principle 1. For example, her Black and Latinx students often talk about the reoccurrences of certain events taking place in their communities. She provides them with an opportunity to use math operation keywords (i.e., increase, decrease, multiplies, triples, etc.) when describing the rates at which specific circumstances take place during our open discussions. Not only is she allowing students to share information about their communities, but she is also giving them the opportunity to use math phrases to describe their experiences while referencing the resources provided within the classroom. These are illustrations of how Destini implements Principle 2 - **Make Mathematics Accessible to All Learners - in her practice**.

Another instance occurred during a lesson about decimals, percentages, and fractions. She asked them, "What percentage is half?" and some students responded by saying fifty percent. She then showed them again what fifty percent looks like written on the whiteboard and had students work with me to convert a

percent to a decimal and then a percent to a fraction. Once they understood that fifty percent of the time they are using math terminology in daily conversations, they began to see the connection between math in the classroom and math in real life. An additional opportunity that allowed for high-quality math instruction and real-world connections was during a math project on the topic of sales tax and discounts. This activity allowed students to create a list of items that they wanted to purchase at a store of their choice with a budget of $200. Students were told that they needed to incorporate "marked down 15%." "20% off," and "sales tax of $5.25" when sharing their projects out loud with the class. This activity not only promoted the use of mathematical language but also promoted real-world application while connecting math and students' interests to the math instruction.

Additionally, students were able to utilize, view, and present the topic of tax and discounts using a variety of language choices throughout the lesson and activity. Another strategy that Destini has practiced implementing during mathematics lessons is providing math terminology in English and Spanish. In doing so, she has provided ways to intersect one's biological primary knowledge (home language) and biological secondary language (math language) within the math classroom (see Choi et al., 2014). Note that most of the multilingual learners that Destini is working with at the moment are native Spanish speakers. She would have the instructions and keywords written in English and provide the key phrases or terms in Spanish. Destini's purpose for doing so is to eliminate various levels of frustration between the math content and the language barriers. This would also assist with providing Black and Latinx students with equitable opportunities to draw from and build on prior knowledge as learning takes place. These are demonstrations of how Destini has implemented Principle 3 - **Find multiple ways for Black and Latinx students to demonstrate their knowledge and understanding** - in the classroom.

Conclusion

The principles presented in this article articulate ways to build antiracist mathematics classrooms and apply antiracist pedagogy to build a more equitable and socially just experience for minoritized students. We have drawn from the following essential actions from the 2020 TODOS antiracist statement (TODOS, 2020): "Eliminating deficit views of mathematics learning" (p. 2); "Eradicating mathematics as a gatekeeper" (p. 3); and "Elevating the professional learning of mathematics teachers and leaders with a dual focus on mathematics and social justice" (p. 4). These actions are important considerations and were used to connect to the principles of antiracist pedagogy described in this article.

Professional learning opportunities for pre-service and novice teachers will help support them with understanding the complex relationship between antiracist pedagogy and the importance of continuing to fight for equity and social justice within schools and serve as advocates for teaching marginalized socio-cultural groups, elevating the various backgrounds and experiences of Latinx and Black students. Antiracist pedagogy is an ongoing process that teachers must continue developing, expanding, and reflecting on over time. However, it is not something that a teacher achieves on their own once and for all but should be an expectation for all teachers.

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