A FOUNDATION FOR CRITICAL PRAXIS TOWARDS EQUITY IN MATHEMATICS EDUCATION AND BEYOND

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Over the past year there has been increasing attention to mathematics pedagogy that dismantles racism in mathematics education (Wagner et al., 2020; TODOS, 2021). Tools to support teachers in this work have been produced and widely circulated. In particular, one document in a **series of five documents** has received much attention. This document is designed to help teachers, leaders, coaches, and administrators engage in "critical praxis"—a reflection-action cycle that examines personal and institutionalized biases as an entry point into transforming educational practices (McLaren et al., 2010).

The document I am referring to is titled *Stride 1: A Pathway to Equitable Math Instruction: Dismantling Racism in Mathematics Instruction*. This document takes five teaching standards from the California Standards for the Teaching Profession and illuminates how these teaching standards can manifest white supremacy in the mathematics classroom.

Unpacking Loaded Terms

Let's stop here for a moment. White supremacy in the mathematics classroom? Understanding this claim requires using a shared definition of white supremacy based on studies of everyday culture rather than on everyday understandings linked to violent organizations such as the KKK.

First, racism is distinguished from individuals' racial prejudices (DiAngelo, 2017). While everyone can have racial prejudice, racism is racial prejudice at the group level that is backed by institutional power. In other words, racism is a system-wide form of oppression like other -isms such as sexism, anti-Semitism, and ageism.

Similarly, white supremacy is a culture and not an individual's mindset (DiAngelo, 2017). White supremacy, it turns out, is woven into the fabric of dominant American culture. This does not mean that all white Americans agree with organizations like the KKK. It does mean that white culture is valued above other cultures, and that failure to assimilate to white culture results in groups of people being lumped together and characterized in demeaning ways that have real implications for the opportunities that will and will not be made available to them (Kendi, 2016; Kozol, 2012). The problem is not that white culture exists; the problem is that white culture is valued above other cultures. If you are wondering what white culture is, keep reading. We will get there.

Connecting to Mathematics Classrooms

Now that we have established a definition for racism and white supremacy that locates these social phenomena at a systemic and structural level rather than at the individual level, we can dig into how the *Dismantling Racism* document unpacks problematic potential for white supremacy culture to manifest in mathematics classrooms.

When you read the list below from *Dismantling Racism*, you might be surprised (and perhaps, offended) that the document describes the elements of the list as manifestations of white supremacy. In fact, many things on the list feel contradictory to what otherwise is widely accepted as "just good teaching" (Bartlett, 2021). Because the educational system is set-up to support these values and practices, I imagine that nearly everyone who reads this list recognizes dimensions of their own classrooms and values as an educator.

ENGAGING AND SUPPORTING ALL STUDENTS IN LEARNING
- The focus is on getting the "right" answer.
- Independent practice is valued over teamwork or collaboration.
- "Real-world math" is valued over math in the real world.
- Students are tracked (into courses/pathways and within the classroom).
- Participation structures reinforce dominant ways of being.

CREATING AND MAINTAINING EFFECTIVE ENVIRONMENTS FOR STUDENT LEARNING
- Teachers enculturated in the USA teach mathematics the way they learned it.
- Expectations are not met.
- Teachers should address mistakes.
- Teachers are teachers and students are learners.

UNDERSTANDING AND ORGANIZING SUBJECT MATTER FOR STUDENT LEARNING
- Math is taught in a linear fashion and skills are taught sequentially, without consideration of prerequisite knowledge.
- Superficial curriculum changes are offered to address culturally relevant pedagogy and practice.
- State standards guide learning in the classroom.
- Procedural fluency is preferred over conceptual knowledge.

PLANNING INSTRUCTION AND DESIGNING LEARNING EXPERIENCES FOR ALL STUDENTS
- "Good" math teaching is considered an antidote for mathematical inequity for Black, Latinx, and multilingual students.
- Rigor is expressed only with difficulty.
- "I do, we do, you do" is the format of the class.

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ASSESSING STUDENTS FOR LEARNING
- Students are required to "show their work."
- Grading practices are focused on lack of knowledge.
- Language acquisition is equated with mathematical proficiency.

Yet, there is something to this list. It is grounded in research both in mathematics education and in studies of white supremacy culture in organizations. In order to make sense of how the values and practices listed above are related to white supremacy and institutional racism, I had to do some digging.

But before I share what I found, I want to first give voice to common critiques of the *Dismantling Racism* document, because the things I found push back on these critiques with both logic and empirical evidence. In other words, I am going to let you hear the "they say" side of ideas before I give you the "we say" side. When I say *we*, I am aligning myself with organizations like **Achieve the Core** that have directly supported the use of the *Dismantling Racism* document in mathematics classrooms, as well as other mathematics education organizations with antiracism statements such as **NCTM**, **NCSM**, **TODOS**, **AMTE**, and more.

They Say Antiracist Education is Racism in Disguise
I will give voice to common critiques of the *Dismantling Racism* document's claim that particular widespread teaching practices can foster white supremacy in the mathematics classroom through the words of John McWhorter, a contributing writer to *The Atlantic* and linguistics professor at Columbia University. Later, I will counter these critiques.

In McWhorter's (2021) critique of the *Dismantling Racism* document, he argued that the document embodies "racism propounded as antiracism" and that it is more of a document of beliefs (what he calls scripture) than a document based in science's standards and empirical evidence. He says the document "claims to be about teaching math while founded on shielding students from the requirement to actually do it." He synthesizes the document into seven tenets which he sees as deeply problematic:
1. "a focus on getting the 'right' answer is 'perfectionism' or 'either/or thinking;'
2. the idea that teachers are teachers and students are learners is wrong;
3. to think of it as a problem that the expectations you have of students are not met is racist;
4. to teach math in a linear fashion with skills taught in sequence is racist;
5. to value 'procedural fluency'—i.e. knowing how to do the fractions, long division, etc.—over 'conceptual knowledge' is racist. For example, black kids are

brilliant to know what math is trying to do, to know 'what it's all about,' rather than to actually do the math, just as many of us read about what physics or astrophysics accomplishes without ever intending to master the math that led to the conclusions;
6. to require students to 'show their work' is racist;
7. requiring students to raise their hand before speaking 'can reinforce paternalism and powerhoarding, in addition to breaking the process of thinking, learning, and communicating.'" (McWhorter, 2021)

The tenets he presents here are *close* to but *not quite* accurate representations of what the document actually says, which makes accepting them as completely accurate an easy misstep.

The Misstep: An Uncritical Definition of Racism
The most obvious error in McWhorter's synthesis of the document is that he appears to be using an understanding of racism as something that primarily happens at the level of individuals. While individuals can be racist, individual racism is not at the heart of structural racism. On the contrary, racist policies favoring white culture (and, historically, specifically white people) spark racial prejudices and racial discrimination (Kendi, 2016).

In his tenets, McWhorter seems to be pointing to what has been called "the soft bigotry of low expectations," a phrase first coined by President George W. Bush in a speech marking the launch of the No Child Left Behind (NCLB) Act. In President Bush's use of the term and in the NCLB policy, disparities in achievement between racial groups are positioned as the result of ineffective schools or low expectations of individual teachers, thus sidestepping the underlying issue of systemic, structural racism and the role of white supremacy in US education (Rubel et al., 2019). In other words, McWhorter's tacit assumption that the problem is individuals' racial prejudice (i.e., low v. high expectations, etc.) points to a symptom of the problem rather than its cause.

We Say Antiracist Education Requires Admitting Education is Not a Meritocracy
On the contrary, the *Dismantling Racism* document does not accuse individual teachers of being racist, but instead invites them to subvert an educational system that is set up to reproduce inequities. And make no mistake, the United States' educational system is set up to produce inequities. If education was a meritocracy, then we would not be able to predict students' success by their skin color. Yet, we are able to make those predictions. Accountability data collected since NCLB has shown us this (U.S. Department of Education [U.S. DOE], 2019), and yet the accountability measures producing the data have failed their promise to repair this

problem: between 1990 and 2017, there was no measurable close in achievement differences between Black and White 8th grade students (U. S. DOE, 2019).

Taken together, this is clear evidence that meritocracy within the educational system is a facade. Denying this places the onus of the disparity in achievement scores on students and their families, either through biological arguments positing inferior intellect or through cultural arguments positing cultural deficiency, both of which are examples of problematic, damaging, and unempirical racial prejudices (Martin, 2009; Milner, 2012). The colorblind theory of race relations (i.e., we are all part of the human race; I don't see color, just people) has a similar effect as blatant racial prejudices—it avoids and denies "the causes and impact of enduring racial stratification" (Rubel, 2015, p. 114, citing Martin, 2008).

Achievement scores make it blatantly obvious that the students who are oppressed within the educational system now—students of color—are members of the same social groups that have been oppressed since the founding of the United States (DiAngelo, 2017; Kendi, 2016). The academic achievement of students of color writ large is influenced by systemic racism in ways that afford lower quality learning opportunities presented to them.

Bringing it Home to Mathematics Classrooms

This brings us to the first point in both lists, which seem to be the bedrock for what comes after: an emphasis on getting the correct answer. Highly respected scholars from the Netherlands found that student learning is hindered by short-sighted goals focused on "task propensity," referring to a tendency to view the purpose of instruction as getting through curriculum by generating correct answers rather than "investing in the underlying mathematics while accepting that fluency may come late" (Gravemeijer et al., 2016, p. 26). Task propensity is common in the United States, which is no surprise in our educational culture of assessment *of* learning rather than assessment *for* learning (Shepard, 2000; Milner, 2018). Most teachers in the United States ask themselves, *How can I teach my kids to get the answer to this problem?* Yet, a more productive question for supporting mathematics learning is *What is the mathematics they are supposed to learn, working on this problem?* (Daro, 2011, as cited in Gravemeijer et al., 2016, p. 36).

Following this line of reasoning, the *Dismantling Racism* document is *not* arguing that students of color should only engage in conceptual understanding because they aren't capable of "actually doing the math," as McWhorton (2021) implies in his tenets (1) and (5). Instead, it points to the empirically backed claim that a focus on getting the right answer results in "instructional sequences [that] end too

early and are not carried through to reach the conceptual understandings that are needed for the next instructional phase" (Gravemeijer et al., 2016, p. 36).

Because the problem is systemic and structural, dismantling racism in mathematics education requires a critical mass of stakeholders to (1) see the problem and (2) do something about it in their own contexts. A critical mass of on-the-ground stakeholders can influence those with institutional power to make changes in policy and its trickle down effects.

The *Dismantling Racism* document gives stakeholders a way to get their feet wet in "doing something about it." Decades and decades of research have shown that allowing students to construct their own understandings of mathematics supports deeper mathematics learning (for multiple theories of learning, see Lave & Wenger, 1991; Piaget, 1970; Vygotsky, 1980; Wertsch, 1998; for examples in productive struggle and rough draft talk in mathematics education, see Jansen, 2020; Warshaurer 2015a, 2015b). Thus, engaging in the critical praxis reflection-action cycle outlined in the document and shifting teaching to better align with antiracist instruction will not negatively impact any particular group of students—not white students, not already high achieving students, not gifted students, not students with disabilities of any kind. Antiracist mathematics education, as described in the *Dismantling Racism* document, is good for everyone.

Antiracist Mathematics Pedagogy

Working toward being an antiracist educator now does not make your past self a racist educator: it means that you are taking on a growth mindset and developing grit, acknowledging that some of your actions may have racist impact. You can revise those actions once you learn that their impact does not match your intentions. Almost everyone in education has been complicit in actions and cultural narratives with *racist impact* at some point or another, including NCTM. For example, prominent mathematics education reform documents such as *Principles to Actions* (NCTM, 2014) use rhetoric asserting that unproductive beliefs held by teachers, coaches, and administrators are primary obstacles to equity (Martin, 2015). NCTM acknowledged the negative impact of this wording, invited those who critiqued its documents to speak, and has since been more thoughtful about where it locates the source of disparity in mathematics education.

An emphasis on individuals as responsible for educational outcomes at scale protects and promotes white culture as the correct and best culture (Rubel et al., 2015, p. 121). To help readers grasp this idea on a more tangible level, here are some characteristics of white culture in America: perfectionism, sense of urgency, resistance to change,

quantity over quality, privileging the written word over other forms of communication, seeing only one right way, unequal distributions of authority and assumptions that those in power can make good decisions for others without their input, either/or thinking, fear of open conflict, individualism, progress is bigger/more, objectivity, and a right to comfort (Jones & Okun, 2001, **read here to learn more**).

These characteristics of white culture are not inherently bad! The problem is the exclusivity of these values as *the right way* to be.

Instead of perfectionism, what if we instead separate the person from the mistake and made a habit of speaking to things that went well before offering criticism? Instead of being defensive, what if we instead embraced opportunities for learning and thanked those whose criticality offered us new ideas. By the same token, what if we gave people credit for being able to handle more than we think they can, instead of assuming fragility? Instead of privileging written solutions, what if we instead identified alternative ways for students to share and preserve their thinking? Instead of assuming a right to comfort, what if we acknowledged discomfort as a root of learning, especially for ourselves?

The values of white culture are not "the best values;" they are simply values. And that is something the *Dismantling Racism* document is trying to help us understand in the context of mathematics teaching and learning. It offers a framework for considering alternate ways of being in order to support deeper mathematics learning for all students.

Well intentioned educators—even ones deeply committed to equity—can easily engage in the practices or hold some of the values described as problematic in the *Dismantling Racism* document. It makes sense that educators would do this because the educational system is set-up to normalize these ways of being. While intentions matter, the focus of equity work cannot neglect impact regardless of intentions.

Disrupting white supremacy in the mathematics classroom requires a strong commitment to reflect on the culture of exclusion that is part and parcel of education in America, even in classrooms with teachers deeply committed to equity (Louie, 2017). Remember, antiracist educators are working against a systemic problem that creeps into values, beliefs, practices, and routines in sometimes the most mundane ways.

Dismantling Racism outlines and briefly unpacks ways teachers can work toward antiracist teaching. I encourage each of you to visit the document and engage with it deeply, ideally with a colleague or two committed to fostering equity in

education. The document provides a monthly schedule for reflection and experimentation with your teaching. As we wrap up this school year and begin a mental, emotional, and physical reset for the next, consider making a learning goal for yourself around what it means to be an antiracist mathematics educator, even in classrooms with mostly white students.

References
* Denotes articles that are not *open access*
** Denotes book

Bartlett, J. (2021). Antiracism in math ed promotes racism and bad math. Mind Matters.

**DiAngelo, R. (2017). *What Does It Mean to Be White?: Developing White Racial Literacy-Revised Edition.* Peter Lang Incorporated, International Academic Publishers.

Gravemeijer, K., Bruin-Muurling, G., Kraemer, J. M., & van Stiphout, I. (2016). Shortcomings of mathematics education reform in The Netherlands: A paradigm case?. *Mathematical Thinking and Learning, 18*(1), 25-44.

**Jansen, A. (2020). *Rough draft math: Revising to learn.* Stenhouse Publishers.

Jones, K., Okun, T. (2001). The characteristics of white supremacy culture. Showing Up for Racial Justice.

**Kendi, I. (2016). *Stamped from the beginning: The definitive history of racist ideas in America.* Bold Type Books.

**Kozol, J. (2012). *Savage inequalities: Children in America's schools.* Crown.

**Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation.* Cambridge University Press.

*Louie, N. L. (2017). The culture of exclusion in mathematics education and its persistence in equity-oriented teaching. *Journal for Research in Mathematics Education, 48*(5), 488-519.

Martin, D. B. (2008). E(race)ing race from a national conversation on mathematics teaching and learning: The National Mathematics Advisory Panel as white institutional space. *The Montana Mathematics Enthusiast, 5*(2–3), 387–398.

Martin, D. B. (2009). Researching race in mathematics education. *Teachers College Record, 111*(2), 295–338.

Martin, D. B. (2012). Learning mathematics while Black. *The Journal of Educational Foundations, 26*(1–2), 47–66.

Martin, D. B. (2015). The collective black and Principles to Actions. *Journal of Urban Mathematics Education, 8*(1), 17–23.

*McLaren, P., Ryoo, J. J., Crawford, J., & Moreno, D. (2010). Critical praxis. *Encyclopedia of Curriculum Studies, 1,* 150-151.

Milner, H.R. (2018, February). Confronting inequity / Assessment for equity. *Educational Leadership, 75*(5), 88-89.

**Piaget, J. (1970). *Genetic epistemology.* New York, NY: Columbia University Press.

McWhorter, J. (2021). *Is it racist to expect black kids to do math for real?.* The Atlantic.

**National Council of Teachers of Mathematics (2014). *Principles to Actions: Ensuring Mathematical Success for All.* Author.

Rubel, L., & McCloskey, A. V. (2019). The "Soft bigotry of low expectations" and its role in maintaining white supremacy through mathematics education. *Occasional Paper Series, 2019*(41), 10.

Shepard, L. A. (2000). "The role of assessment in a learning culture." *Educational Researcher 29*(7), p. 4-14.

TODOS: Mathematics for All. (2021). *The Mo(ve)ment to Prioritize Antiracist Mathematics: Planning for This and Every School Year.* Author.

U.S. Department of Education (2019). *Status and trends in the education of racial and ethnic groups 2018.* Author.

**Vygotsky, L. S. (1980). *Mind in society: The development of higher psychological processes.* Harvard University Press.

*Wagner, D., Bakker, A., Meaney, T., Mesa, V., Prediger, S., & Van Dooren, W. (2020). What can we do against racism in mathematics education research?. *Educational Studies in Mathematics, 104*(3), 299-311.

*Warshauer, H. K. (2015a). Productive struggle in middle school mathematics classrooms. *Journal of Mathematics Teacher Education, 18*(4), 375-400.

*Warshauer, H. K. (2015b). Strategies to support productive struggle. *Mathematics Teaching in the Middle School, 20*(7), 390-393.

**Wertsch, J. V. (1998). *Mind as action.* New York, NY: Oxford University Press.

CORE CONNECTIONS, COURSE 1 CHECKPOINT PROBLEMS

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As the 2020–21 school year draws to a close, you may be looking for ways to help your students strengthen or maintain fluency with basic skills. We have converted several CC1 Checkpoints to Desmos activities. These single-screen activities are designed to allow students to practice problems on their own until they become comfortable with the skill. Each activity focuses on one skill and approaches it in multiple ways with increasing level of difficulty. The activities include feedback and/or a help button that presents students with information designed to remind them what they have learned in class. These are not designed to be completed as a class assignment nor graded, they are meant for students to use at their own pace as often as needed.

Use the student links at right to experience the skill builder as a student. You may want to provide your students with a similar list of class codes of your own so they can access the activities as needed. Links to the activities you can assign to your classes are in the Supplemental Resources eBook Teacher tab under **Guidance - Additional Resources**.

This collection is a work in progress, and we value your feedback on them. After you have tried them, please use this **google form** to let us know what you think. If you have specific questions or suggestions, write to **GailAnderson@cpm.org**.

Student Links:

Fraction Addition and Subtraction

Rounding Decimals

Points on Coordinate Plane

Comparing Numbers

Addition and Subtraction of Decimals

Equivalent Ratios

Multiplication with an Area Model

LCM and GCF

Graphing Inequalities