

III. Education and Science

How California’s Math Education Reform Will Make Your Kid Stupid

by Peter J. Martinson

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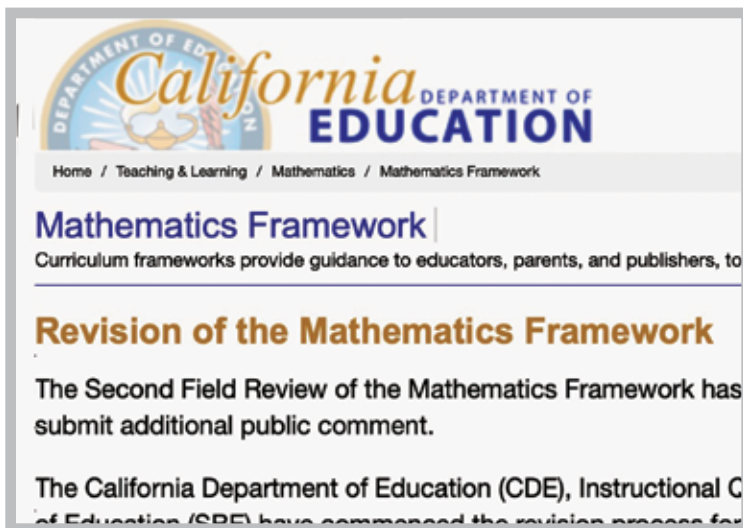
Feb. 18—Mathematics education in the United States has suffered a history of abuses, from the 1960s “New Math” debacle to the more recent “Common Core” math standards. While promising improved and more widespread math literacy among our nation’s children, each step has resulted in making math more difficult to understand, and further divorced from its genesis in human scientific discovery. Today, we are facing a new leap downwards, where math education is threatened with getting replaced by cultural re-education exercises.

The California Department of Education (CADOE) is leading the herd with a [revision](#) to its *Mathematics Framework for California Public Schools: Kindergarten Through Grade 12*, proposed in late 2020, and released in February 2021. Besides de-tracking students and dumping high school Calculus, the new *Framework* explicitly adds a new element to math reform—a focus on “White Supremacy Culture.” The stated intent of the *Framework* is to narrow the achievement gap between underprivileged children and those who are more affluent. However, the real effect will be to reduce access to mathematics education for all children.

This report will summarize the worst parts of the *Framework*, present some opposing movements in the U.S., and delve into some of the background. Though intended for startup in Spring 2022, implementation of the *Framework* has been stalled by fierce criticism. Now is the time to stop it entirely.

Taking the Math Out of Math Education

American public schools have practiced academic tracking for a long time. Tracking means that if a student shows aptitude in a certain subject, they are allowed to skip certain intermediates and take more advanced courses than their peers. Sometimes, this also works the other way: a student who experiences difficulty in a certain subject may be forced to take more remedial



CDOE

The California Department of Education’s proposed math Framework is designed to reduce access to mathematics for all students.

courses than their classmates.

The *Framework* begins by addressing this situation, and cites research which supposedly shows¹ students who are tracked into advanced mathematics classes tend to be either Asian-American or White children, while those that get held back tend to be Black or

1. Brian Conrad, Stanford Professor of Mathematics, has demonstrated that many of the sources cited within the *Framework* arrive at conclusions opposed to those asserted by the *Framework*.

Latino. The *Framework* then states that mathematics education is therefore inherently biased. In order to combat this, the *Framework* advises a pro-active approach to encourage non-White (and, implicitly, non-Asian) students to do better in math. However, instead of proposing ways to help struggling youth learn the material more effectively (as done, for example, by educator [Jaime Escalante](#), portrayed in the movie *Stand and Deliver*), the *Framework* proposes to slow down the math progress of advanced kids by encouraging discussions about social justice, and entertaining wrong, what they term “culturally informed,” answers to set questions.

The most controversial tenet of the new *Framework* is that it discourages students from being able to take Calculus during high school. It advises, among other things, that the way to get underachieving youth a better edge on math (or, rather, to “make math more equitable”) is to prevent high-achieving kids from taking more advanced classes. This means all students would take the same math classes up to 10th grade, and would first reach Algebra in 9th grade. In many middle schools across the U.S., children who show aptitude for math can qualify to take their first Algebra class in 8th grade. This can then be followed by Geometry, Algebra II, Pre-Calculus, and then Calculus in their senior year. Under the new *Framework*, students could only get to Calculus by taking an accelerated class in 11th grade, which combines a mangling of concepts from Algebra II and Precalculus.

One of the primary authors of the new *Framework*, and one of today’s leading voices in radical mathematics education reform, is Stanford Professor [Jo Boaler](#). Boaler, a British national educated in psychology at the University of Liverpool, at first appears to have pretty good ideas about teaching math—math is inherently visual, collaboration is needed to rapidly learn math, all students have the ability to learn math, etc.

But behind the curtain, Boaler is really pushing to replace math education with topics under the subject of [data science](#), such as, how to upload and download data from the internet, how to clean data, and how to read statistical graphs. In particular, she has her guns out for Calculus. For example, during a working session to develop the initial draft of the *Framework* in August 2020, [she stated](#): “The current pathways, particularly the push to Calculus, is [*sic*] deeply inequitable, and has served to keep out students of color, and girls, for generations now.”

Though the *Framework* was to be implemented by the end of 2021, an [Open Letter](#), called “Replace the

Proposed New California Math Curriculum Framework,” published July 13, 2021 by the right-leaning Independent Institute, prompted the CADOE to delay the *Framework*’s adoption until May 2022. The Open Letter, signed by over 1,200 math professionals who work in California, begins as follows:

California is on the verge of politicizing K-12 math in a potentially disastrous way. Its proposed Mathematics Curriculum *Framework* is presented as a step toward social justice and racial equity, but its effect would be the opposite—to rob all Californians, especially the poorest and most vulnerable, who always suffer most when schools fail to teach their students. As textbooks and other teaching materials approved by the State would have to follow this *Framework* and since teachers are expected to use it as a guide, its potential to steal a promising future from our children is enormous.

The proposed *Framework* would, in effect, de-mathematize math. For all the rhetoric in this *Framework* about equity, social justice, environmental care and culturally appropriate pedagogy, there is no realistic hope for a more fair, just, equal and well-stewarded society if our schools uproot long-proven, reliable and highly effective math methods and instead try to build a mathless Brave New World on a foundation of unsound ideology. A real champion of equity and justice would want all of California’s children to learn actual math—as in arithmetic, algebra, geometry, trigonometry, and calculus—not an endless river of new pedagogical fads that effectively distort and displace actual math.

In early December 2021, a group of scientists and engineers published a second petition, called Open Letter on K-12 Mathematics, which condemned the national trend of dumbing down math education in general, and targeted the California *Framework* in particular. The authors (Boaz Barak, Edith Cohen, Adrian Mims, and Jelani Nelson) make similar criticisms as the Independent Institute’s Open Letter. In addition, they point out that “[The *Framework*] may lead to a *de facto* privatization of advanced mathematics K-12 education and disproportionately harm students with fewer resources.”

In other words, because the *Framework* would not be binding, each California school district could decide

how much of the guidance to follow. Districts that typically have worse math performance could adopt the new standards (perhaps to artificially boost apparent student performance, or reduce costs associated with advanced mathematics teachers), while more affluent districts—and private schools—could retain the current curriculum. In this way, students in poorer districts would get *less* access to advanced mathematics than the rich kids. As of May 2022, this second letter had over 1,700 signers from all over the United States.

Anti-Racist Math—the Coronavirus ‘Opportunity’

When students were sent home to torture their parents with “remote learning” at the beginning of the COVID-19 lockdown, an opportunity presented itself to introduce new curricula appropriate for Zoom sessions. An organization called [TODOS: Mathematics for ALL](#) jumped at the chance and published a [position paper](#) called “The Mo(ve)ment to Prioritize Antiracist Mathematics.”

To summarize the paper: We are currently in a sociopolitical revolution characterized by protests against White police who kill Black people, and we should capitalize on this situation by reforming math. We reform math by 1. redefining what “understanding math” means, and basing it on the weakest math students, 2. removing advanced math tracks, and 3. rewriting story problems to use conditions that afflict poor neighborhoods, like poverty wages and broken families. Note, there is nothing about helping kids develop their math knowledge more effectively, but rather the intent is to get all kids to move more slowly through the material, and infuse everything with a notion that so-called “White culture” is the problem.

The sentiment is captured by a quote referenced in the Mo(ve)ment paper, which comes from the [awful book](#), *We Want To Do More than Survive: Abolitionist Teaching and the Pursuit of Educational Freedom*, by Bettina Love, published in 2019:

To take it a step further, in this moment we must *rethink what counts as valid mathematical knowledge....* If we truly believe that we are moving towards assets-based views of students, we must expand our understanding of what it means to be good at mathematics, make space for *alternative ways of knowing and doing mathematics based in the community*, and acknowl-

edge the brilliance, both in mathematics and beyond, of BIPOC [Black, indigenous, people of color] in our classrooms. We must be explicitly antiracist. [Emphasis added.]

California’s *Framework* explicitly cites TODOS, and specifically their COVID/anti-police protest paper, throughout.

The TODOS organization was originally created in collaboration with the National Council of Teachers of Mathematics (NCTM) to help Latino children do better in California math classes. While this goal is a noble one, it should be accomplished by helping children more effectively understand math, not by degrading academic expectations so weaker students can more



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Engaged students in a mathematics class. The high school math curriculum should not be a platform for addressing racism and alleged racism, or for cultural re-education experiments, but a means to help students advance their self-interest in understanding actual mathematics.

easily achieve acceptable performance. NCTM itself has a history of being at the center of terrible math reform in the United States, including the [New Math](#)” disaster that came out of the 1960s, and the math standards that continue to confuse kids in today’s [Common Core curriculum](#). Not surprisingly, the NCTM also wants to eliminate the teaching of [Calculus](#) altogether from our high schools.

Following on the heels of the COVID lockdown moves by TODOS, another organization called Education Trust-West, with funding from the Bill and Melinda Gates Foundation, published what they called a “toolkit” for grades 6-8, aimed at the 2020-21 school year, titled, “A Pathway to Equitable Math Instruction.” Instead of introducing a curriculum that teaches math better, the “Pathway” pushes the concept that “Black,

LatinX, and Multilingual” students are unable to excel in math classes because the classes are inherently racist. Therefore, the “Pathway” proposes that math classes become race battlegrounds. The implementation of “Pathway” propaganda in public math classrooms is examined in [Chapter 9](#) of California’s *Math Framework*.

The bulk of the “Pathway” is designed to get the educator to use *critical praxis*² and contemplate how to be anti-racist while teaching math. This generally means allowing non-White students who are getting a problem wrong some latitude, since, according to the axioms of the “Pathway”, they may think differently than typically higher-performing White and Asian students.

The workbook is broken into 5 “strides” or chapters. The first stride contains very little about mathematics. Instead, it draws heavily from a 2001 document called “[White Supremacy Culture](#).” This white paper describes fifteen behaviors that it claims characterize a White supremacy environment, and how to combat each of them:

- Perfectionism
- Sense of Urgency
- Defensiveness
- Quantity Over Quality
- Worship of the Written Word
- Paternalism
- Either/Or Thinking
- Power Hoarding
- Fear of Open Conflict
- Individualism
- Only One Right Way
- Progress is Bigger, More
- Objectivity
- Right to Comfort

For example, a teacher could teach $2+2=4$, and a student could challenge that, saying that in his community, $2+2=5$. If the teacher responds that 4 is the correct answer, and attempts to move past this simple fact, the student could retort that the teacher is a racist because he’s being paternalistic, hoarding power and

2. Paulo Freire, Brazilian theorist, originated the term “Critical Praxis.” His 1967 book *Pedagogy of the Oppressed* currently sits as the second most cited work in educational research journals. Freire’s major accomplishment was to translate the “critical theory” of Nazi Martin Heidegger’s Frankfurt School into educational practices for use in primary schools. Not only the term comes from Freire—the entire concept of replacing true academics with antiauthoritarian activism stems from his work. For Freire, literacy does not mean being able to read, but rather understanding that we are living under a system of authoritarian oppression which must be overthrown.

imbuing a sense of urgency by moving on, and fears the open conflict of discussing the idea with the student. The teacher could then push back and be branded a right-wing culture warrior, or just forget about the rest of the period, and instead discuss how he is racist and how he feels terrible about it.

The rest of Stride 1 is dedicated to helping teachers recognize when they are expressing any of these characteristics while teaching. There is nothing about modifying the actual curriculum to teach math better. It is all about identifying and challenging “White supremacy.”

The original author of the “White Supremacy Culture” white paper, **Tema Okun**, is not, and never was, Black or underprivileged. She is an upper-middle class White leftist³ who barely graduated back in 1974 from Oberlin College—famous for its artistic and musical academics—with a degree in physical education. She currently runs an anti-racism workshop, “[Dismantling Racism Works](#)” ([dRworks](#)), that has grown to shocking popularity around the United States.

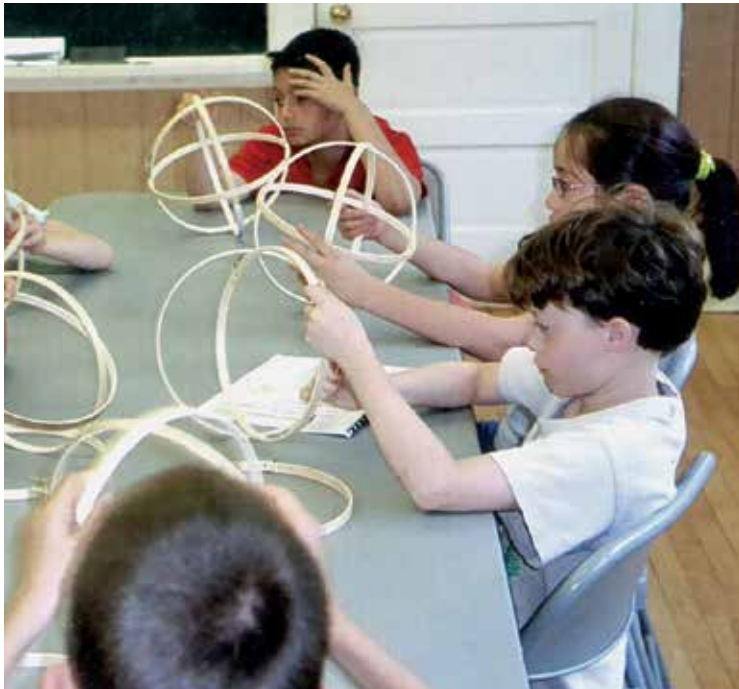
Okun’s workshops, or at least her white paper, are found in such places as [administrator trainings](#) in the New York City public school system, on the list of [recommended resources](#) for the National Education Association, and in [anti-racism trainings](#) at the Episcopal Diocese of Atlanta. Okun herself even gave a [keynote speech](#) at the huge JupyterCon 2020 data science conference.

Matthew Yglesias wrote a useful [article](#) on Okun in May 2021 called “Tema Okun’s ‘White Supremacy Culture’ Work Is Bad.” There, Yglesias argues that Okun’s white paper is less about how to end racism, and more about how to dismantle successful organizations. American public school math classes are not exactly successful organizations, but following these recipes for supposedly dismantling racism, as the California *Math Framework* and its predecessors are doing, will certainly dismantle what’s left of math education.

Replace the Reformers!

Neighborhoods that are predominantly Black and Latino do face real obstacles in math education, as shown by their rare appearance in so-called STEM

3. Though the roots are not traced explicitly here, Okun’s pedigree, and especially her teachings, come, through the Frankfurt School’s Herbert Marcuse, straight from Alexander “Helphand” Parvus and Leon Trotsky’s concept of “Permanent War/Permanent Revolution.” Paraphrased: in order to achieve a final overthrow of the oppressors, it is necessary to perpetually disrupt society’s organizations through revolt.



EIRNS/Stuart Lewis

Relating math to the physical world, young students explore constructive geometry at a Schiller Institute summer camp.

(Science, Technology, Engineering, and Mathematics) fields. But the solution is not to replace math education with not-math education. This would put these children into an even worse situation, and further erode what used to be the world's top public education system. Math curricula in American public schools must not be the platform for cultural re-education experiments.

However, this does not mean that American public mathematics curricula are doing just fine right now either. Mathematics education in the USA is in a dismal state, where students are graduating with limited-to-no real understanding of the foundations of human progress, regardless of their race or socioeconomic status. If you don't believe this, simply ask any American youth, whatever color or background, to add up three fractions with unequal denominators. Then, watch them squirm. It's not their fault they don't understand fractions! This paralysis is built into the curriculum.

To truly reform mathematics in the United States really means we must revive the American intellectual tradition, which goes back to people like [Cotton Mather](#), [Benjamin Franklin](#), and [Alexander Dallas Bache](#). To be specific, real pathways should be added for students to *re-live* the scientific discoveries of the past.

For example, the capstone for an Algebra curriculum

should be a direct study of Carl Gauss's first proof of the Fundamental Theorem of Algebra, which also introduces Gauss's discovery of the complex domain. This Algebra curriculum could begin around third or fourth grade by posing the problem of how to double the volume of a cube. Many 4th Century B.C. philosophers in Plato's Athens believed that the so-called cube root of two could only be approximated. Incidentally, this is exactly what is generally believed today, and exactly what your calculator does when you hammer the right keys.

In contrast, Plato challenged his Academy to solve the problem exactly, without approximation. Archytas of Tarentum was the first to do this, and discovered that the confluence of three crucial surfaces—cylinder, torus, and cone—provides the crucial distance which allows an exact construction of the doubled cube.

A direct study of Archytas's construction leads a student through all the rudiments of standard Pythagorean arithmetic and geometry that one might, with horror, recognize from math classes today—similar triangles, ratios, infinite series (e.g., arithmetic, geometric), basic trigonometry, powers, irrational numbers, and trigonometric/circular functions. By the time students actually reach the work of Gauss, possibly by seventh or eighth grade, it will be clear that the basis for mathematics is really physics (geometry). Neither so-called irrational numbers, nor complex numbers, are imaginary or unattainable. Rather, they exist and can be discovered by the mind of Man, though they are outside of simple expression in a given system.

When students work through real pathways like this, they will become comfortable with most of the mathematical techniques taught in math classes today as a side effect. But they also get something extra, which is currently not offered in today's American public schools—they get to experience how human beings make real discoveries, something no other known form of life can do.

The American intellectual tradition is real, and represents the soul of our republic. True citizens of the United States should be concerned that this new attack on math education is simply an early strategy of a broader Mao-like crusade against learning. If the California *Framework* isn't stopped, then it may be a tipping point for the rest of our school curricula.