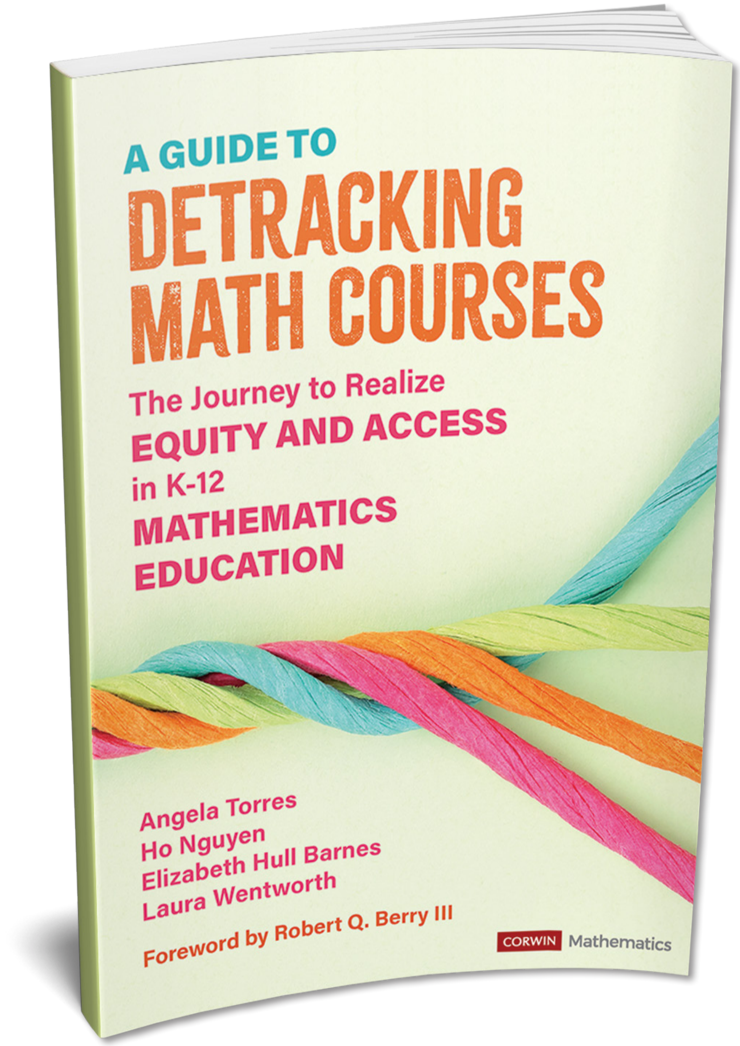

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CHAPTER 1

YOUR GUIDEBOOK TO DETRACKING MATH COURSES

Ms. N, a high school mathematics teacher with 12 years' experience, was excited as she walked into her new high school, ready to learn the ropes of a new school and get to know her new students. Ms. N, whose favorite subject to teach has always been mathematics, is also a passionate educator who believes all students have the ability to think and grow as mathematicians. Walking through the halls of the school, she was excited to see and hear lively and playful conversations among a racially diverse array of students speaking in a multitude of languages. Ms. N was excited to bring out her students' identities and abilities through mathematics, which was a central focus of her practice in every school she had taught in. She was also excited to join a math department that was collaborative and had spoken of a passion for creating classes that were rich in student discussions and collaboration, and where the team worked hard to create mathematics experiences that supported all students.

This year, she was teaching two different courses, Integrated Math 1 and Integrated Math 1 Honors, which happened to be the only two options for 9th graders at this school. Some of the schools she had worked at previously had as many as four different tracks for incoming 9th graders, ranging from a remedial-level course to a highly accelerated course, each of which used different curriculum and had different expectations of students, which Ms. N had found deeply inequitable. She had hoped that this new school would provide better access to deeper- and higher-level mathematics learning for all students.

Within the first few weeks of teaching both classes, Ms. N started to notice some interesting traits and similarities about her students. In her Integrated Math 1 Honors class, the students had very organized work, seemed confident in their mathematical abilities, were mostly procedurally fluent, were accurate in their calculations, and were able to complete their work quickly. It was clear to her that these students came from backgrounds in which these qualities were what was valued in someone who was deemed good at math.

They had been consistently told they were smart and had years of feeling success based on feedback and grades. But she also noticed that they seemed to have a fairly fixed mindset and became easily frustrated and embarrassed when making mistakes. They were fearful of asking questions and would only ask questions of her directly, not of each other. They had trouble articulating justifications or explanations for their work as well as when they didn't know something, which often left them stuck when attempting to solve more complex problems that required them to think abstractly or come up with creative problem-solving pathways.

By contrast, the students in the Integrated Math 1 class often had unconventional and brilliant ways of thinking outside the box when they were unsure. They asked good questions and could see ideas that others often did not see. Despite these strengths, they were also often fearful of risk taking and felt that in comparison to the students in the honors class, they were not the smart kids. *Without the procedural fluency and confidence that was so clearly valued in the honors kids, they felt that math was not their best subject and had a negative disposition toward it. Often, when students would walk in, Ms. N would say, "Hi, welcome!" and a common response would be, "I hate math." Ms. N would have to follow this statement with, "Well I hope we will change that. Come in so we can have fun and do some math!"*

Ms. N observed one other striking difference. In the Honors class, the students were almost all either white or Asian. In the "regular" Math 1 class, they were mostly Black and Latinx students. She couldn't help comparing the two classes and thinking that the students in both classes had strengths that students in the other class would really benefit learning from. Being new to this school and this district, she didn't know how students were sorted between the two tracks in 9th grade, but believing that all students were capable of learning high levels of math with good instruction, she knew this wasn't right. This same issue had been a challenge for her in other schools she had worked at, and she had hoped this school would be different, since the leadership seemed to take a stance in support of equitable instruction. She knew that based on the way the tracks were set up, the students who were then in 9th grade would likely stay in the same track until they graduated. This meant that the Honors students would basically be accelerated through Math 1 and Math 2 standards in their 9th-grade year. In their second year of Math 2 Honors, they would get a version of the curriculum that included all the Math 3 standards. In their third year, they would be able to take Precalculus, which meant in their senior year, they could take AP Calculus. She knew that this was a highly valued goal for some students and families in this school, given the perception that it would make students more attractive in the college admissions process.

This also meant that the students in the regular *class would matriculate through Math 1, Math 2, and Math 3 in their first 3 years. Those who wanted to could go on to take Precalculus or Statistics their senior year, but* *the high school graduation requirement did not require math in their senior year. The result of this track is that even for those who desired, they would not be able to reach for AP Calculus even when they were capable and interested. She could see this as plain as day when looking at which students were in AP Calculus—mostly the white and Asian students. They had access to this high level of mathematics because they had been tracked for it since 9th grade and probably earlier. She came to learn that her Math 1 Honors students were placed in that class because they had been in the honors track in middle school. And they were placed in the honors track in middle school because of how they performed in 5th grade. How was it fair that how a student learns and performs in mathematics in 5th grade should either open or limit their opportunities for the rest of their lives?*

But what could she do about it? How could she advocate for a system within her school and beyond that would offer equal access to all students to the highest level of mathematics—a system that valued all learners as humans capable of deep thinking, learning, and growth; a system that supported all learners in feeling smart, capable, successful, and inspired; a system that valued the ideas, cultures, and languages that students brought into the building with them that could shine through their mathematics learning; a system that fostered the skills they would need in their adult lives such as collaboration, problem solving, questioning, deep thinking, and perseverance?

The experiences and observations of Ms. N reflect challenges experienced by math educators across the United States in K–12 settings and beyond. The story also represents students' differential access to math classes and how their experiences vary based on these systems in schools. Students' experiences not only influence their access to math content knowledge and impact their *achievement* in math while in school, but they also set them up to either succeed or to struggle in their adult lives.

For this teacher dreaming of a system that served all students better—both the ones deemed exceptional and especially those who had been historically marginalized—this was an inflection point. Although Ms. N worked in a school full of teachers and leaders with good intentions, it was also a school that was not only *not benefiting* all its students, it was in fact *failing* them all in some way. All students were experiencing *tracks* that had advantages and disadvantages. Some students—though tracked to get into the highest levels of math by 12th grade—were racing through content at a fast rate but a superficial level, robbing them of the opportunity to learn to ask questions, grow from mistakes, collaborate, and think deeply about complex problems. Other students lacked access to equally rigorous grade-level coursework, lacked confidence and self-efficacy, and believed math was not a subject for them, keeping them in a track that would never give them access to higher-level math, regardless of their aspirations.

At this inflection point, Ms. N felt inspired to start a journey with her students and the teachers and leaders at her school to ultimately detrack their system. Ms. N was a dreamer, yet also a pragmatist. She knew from experience that her school didn't exist in a vacuum and that other systemic constraints would be challenges she would have to face. Not only were students tracked, really, beginning in elementary school, but these tracks also show up across the district and state systems in the form of social tracks, racialized tracks, cultural tracks, socioeconomic tracks, and privileged tracks. She knew that simply changing pathways and options of different math courses alone would not be a magic solution. She knew that realizing the dream of a system that offered high levels of mathematics instruction to ALL students would require research, advocacy, coalition building, community input, policy changes, teacher support, family support, student support, organization, patience, and resilience. But she had faith it could be done. Ms. N's experience and frustration is a common one. Her story represents that of many educators striving for equity in the math courses.

The journey to detrack math classes involves confronting some long-standing beliefs and structures in education.

The journey to detrack math classes involves confronting some long-standing beliefs and structures in education. Beliefs such as "Tracking helps students reach their potential" or "Only some students are gifted in mathematics" are pervasive throughout the minds of the educational community. These beliefs have led to entrenched and rigid structures in education that sort students into those who are perceived to be *good* at math and students who are perceived to be *not good* at math.

If you are looking to undertake a journey like this, this book is meant to help guide you, to help you learn from what others have done—where they have succeeded and where they haven't yet. To illustrate this, we use the story of San Francisco Unified School District's (SFUSD) journey. This journey has not been linear or perfect. It has been met with many curves, road bumps, and setbacks along the way, and the story isn't finished yet.

Your journey will most likely look different than that of SFUSD. Part of the complexity stems from the multiple parts of a school system—from policy development to community collaboration, from curriculum revision to professional development and coaching, from research to scheduling redesign—that need to change when working to detrack mathematics courses. Consider this book the on-ramp to a sometimes rocky road of changing policy and practices in mathematics. Our goal here is to help you.

WHAT YOU CAN EXPECT IN THIS CHAPTER

In this chapter you will

- *Understand why detracking mathematics is an important topic in the larger context of the field of education*
- *Learn some key terms we use throughout the book and how these terms play out in practice settings: classrooms, schools, and districts*
- *Understand the prevalence of these structures for tracking in educational settings, their influence on math instruction, and what outcomes they produce*
- *Get a glimpse into the chapters ahead that will help you take steps to detrack classes in your own system, from design, to implementation, to sustenance*

QUESTIONS TO CONSIDER WHILE READING THIS CHAPTER

This chapter explores a few essential questions, organized to provide an understanding of the larger context related to the practice of tracking and detracking in mathematics:

- ***Defining key terms by talking about tracking and detracking*****:** What does tracking and detracking mean? How does tracking and detracking play out in mathematics?
- ***Describing what tracking and detracking look like in action*****:** Where does tracking take place? How prevalent is detracking in U.S. schools? What makes detracking math classes so complex? What effect has tracking had on school effectiveness and student outcomes? What impact does tracking have on students' math outcomes?
- ***What your detracking journey might look like*****:** How do the different parts of this book help me on my journey to detrack math classes in my community?

While this chapter does not provide a systematic review of the research on tracking, we refer, whenever possible, to research or cases from practice to help explain these terms. We also rely on our experiences from detracking math classes in SFUSD to provide an example of one community's journey.

WHAT DO TRACKING AND DETRACKING MEAN?

Historically, a tracked system in mathematics classrooms has placed and sorted students into particular classes based on perceived abilities, grades, teacher recommendations, and so forth. According to Oakes (2005), "*Tracking* is the process whereby students are divided into categories so that they can be assigned in groups to various kinds of classes" (p. 3). Most often, students placed in a particular track are placed there by late elementary or early middle school, and once they are in a track, they usually do not move to another track. Consequently, tracking happens at all levels: elementary, middle, and high school. The students who are placed in high tracks are expected to be college bound. The low tracks are often at grade level or may be below grade level or remedial classes that may or may not allow a student to pursue postsecondary education.

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The rationale for tracking has been to provide students with instruction according to their perceived ability. In theory, the argument is that if students are placed in math classes according to their existing skill and knowledge levels, they will receive the instruction that builds on their natural ability. If students are placed in classes without the prerequisite skills, they may struggle, lose self-esteem, and may slow down the pace of instruction for the rest of the students. A tracked system assumes that some students have a more natural ability to learn math. According to Gamoran and colleagues (1995), "Ability grouping is the practice of dividing students for instruction according to their purported capacities for learning." Forms of ability grouping in math classes, like the practice of tracking, influence the instruction that students experience.

The term *detracking* means to change a tracked system of coursework that sorts students into different classes based on their perceived ability into one that places all students—with different strengths and challenges—into the same classes, where teachers use instructional strategies to support all students with their differing needs. According to Oakes and colleagues (1997), detracking involves "[moving] from homogeneous to heterogeneous instructional groupings" (p. 482). This contrasts with the notion that all students are capable of learning mathematics with the proper instruction. Students need the opportunity to access that content through instruction, what some researchers refer to as giving students the "opportunity to learn" (Carter & Welner, 2013).

Additional evidence suggests that detracking math classes is more complex than simply moving from homogeneous to heterogeneous classrooms of students at a systems level. What happens *inside* the classrooms in a detracked system also matters greatly. In a heterogeneous classroom, there are students with varying mindsets, skills, and knowledge related to mathematics. Teachers use differentiated instruction to adjust their pacing, scaffolding, and pedagogy based on students' interests, test results, and learning styles (Tomlinson, 2014). Some teachers may receive training in differentiated instruction during preservice training, and some school systems may provide teachers with professional development in differentiating their instruction. However, many teachers are not prepared for the heterogeneous classroom and its complexities.

For example, Cohen and Lotan (1997) argue that if, in a heterogeneous math classroom, a teacher's instruction does not include approaches that address issues of bias, status, and authority, then it can reinforce perceived abilities of students. Lotan (2006) describes how issues like stereotype threat—or students underperforming according to others' stereotypes of them—can influence students' performance in heterogeneous classrooms. Similarly, Domina and colleagues (2019) have gone so far as to outline five distinct dimensions of within-school, cross-classroom tracking systems to explain the variables involved, including (1) differentiation in curriculum taught within a class, (2) the level of heterogeneity in student skill levels within classes, (3) the rate of student enrollment in classes teaching *advanced* skills or skills beyond the stated grade-level standards-based requirements, (4) the extent to which

The changes involved in detracking are complex and multidimensional.

students move between more or less advanced classes or tracks over time, and (5) the relationship between track assignments across subjects. The changes involved in detracking are complex and multidimensional as described by Lotan and Domina and colleagues.

THE PERVASIVENESS OF TRACKING IN U.S. AND CANADIAN SCHOOLS

Across schools in the United States and the Canadian province of Ontario, the practice of placing students in tracks (or streams, in Canada) of classes based on their perceived ability in a content area continues to be pervasive, especially within secondary schools. In a report published by the Brookings Institution, Loveless (2013) describes the persistence of tracking, especially in mathematics, by citing survey data collected from high school principals during the administration of the National Assessment of Educational Progress (NAEP). When asked whether students are "assigned to classes based on ability so as to create some classes that are higher in average ability or achievement than others" (p. 18), more than 70% of the principals reported students attending tracked math classes from 1990 through 2011. Some professional organizations of mathematics educators have started to advocate for detracking. For example, the National Council of Teachers of Mathematics (2018) published *Catalyzing Change in High School Mathematics: Initiating Critical Conversations,* which recommended high schools in the United States stop the practice of tracking students and teachers into different math classes or pathways that do not lead to outcomes like high school graduation.

Why does tracking persist? The answer to this question is more complex. Hallinan (2006) argued in *Education Next* that teaching in a detracked school system is more difficult given the range of students' skills and knowledge in each classroom. She goes on to explain that detracking requires modifications in school scheduling and resource allocation as well as adjustments to curriculum and professional development for teachers, which may be burdensome to schools. Also, parents of perceived higher-ability students may prefer for their children to have access to homogeneous classes, which are seen as more rigorous, to prepare their children to be competitive during the college admissions process. Cuban (2018) explains the long history of tracking, starting in the 1920s, where school leaders divided students into career paths: college preparatory, general, and vocational. Then, in the mid-20th century, schools sorted students according to subject area. After research in the 1980s and 1990s from Jeannie Oakes, among others, states like California and Massachusetts started to mandate detracking in middle schools. Yet in most school systems across the nation, tracking still persists, with the rationale that students with certain perceived abilities needed access to coursework beyond their grade level.

In addition to the history of tracking in the United States, many Canadian school systems use streaming, a form of tracking, in their school system. Curtis et al. (1992) describe streaming as placing students in either informal or explicit groupings based on perceived ability. School leaders' sorting of students starts in elementary school in a more informal way through placement in programming similar to special education or gifted and talented programs. By high school, students have traditionally been placed in different streams—university preparation or *elite* streams, basic, or vocational or special education—based on their perceived ability. Clandfield and colleagues (2014) documented some attempts in Canada's school systems to eliminate streaming, or *destream*, in 9th or 10th grade to promote equity in the secondary school system. This change in streaming has allowed more low-income, Black, or Latinx students to graduate and access postsecondary education, but these authors and others (e.g., Campbell, 2021) describe how barriers still remain for students. For example, Parekh and colleagues (2011) describe how high schools in Toronto with a greater number of elite or university preparation streams or tracks had lower amounts of low-income students enrolled and higher amounts of students with university-educated parents enrolled. High schools with more vocational programming, for example, have one in five students receiving special education programming as compared to the university preparation or elite schools, which have one in eight and one in seven students receiving special education programming, respectively. Whether in Canadian or U.S. schools, streaming or tracking has been pervasive and created barriers for students historically underserved by public school systems—particularly low-income, Black, Latinx, multilingual students and students receiving special education services.

Streaming or tracking has been pervasive and created barriers for students historically underserved by public school systems.

THE IMPACT OF TRACKING AND DETRACKING ON STUDENT OUTCOMES

Tracked systems have limited math opportunities and outcomes for students historically underserved by schools. Most of the research on tracking policies demonstrates the negative effects on these specific subgroups of students because it denies them access to rigorous coursework (Cogan et al., 2001; Gamoran et al., 1995; Lee & Bryk, 1988). This in turn consequently reduces their likelihood of graduating (Gamoran & Mare, 1989), continuing on to postsecondary enrollment (Muller et al., 2010), and pursuing careers in pathways like STEM (Riegle-Crumb & Grodsky, 2010; Tyson et al., 2007). More generally, a number of studies point to the negative influence course-taking patterns have on students' achievement (Gamoran, 1997; Lee et al., 1997; Riegle-Crumb, 2006; Riegle-Crumb & Grodsky, 2010; Wang & Goldschmidt, 2003). Some studies point to the impacts of tracking that limit access to coursework by students like multilingual learners

(Thompson, 2017; Umansky, 2016) and students from low-income backgrounds, different racial and ethnic groups, and different genders (Long et al., 2012; Oakes et al., 1990; Palarady et al., 2015; Riegle-Crumb, 2006). The impact tracking has on achievement and access to coursework may be a barrier to students wishing to pursue whatever pathway interests them when they get to high school, college, career, or beyond, and more largely impacting the promise of public education to serve all students.

SFUSD provides one case demonstrating the effect of a tracked math system on students' math achievement. After years of students taking tracked math classes starting in 6th grade through 12th grade, SFUSD students' math achievement differed according to subgroups. For example, when looking at the SFUSD class of 2015 proficiency rates when SFUSD school systems used a tracked system for math classes, 19.1% of all 10th-grade students in Algebra 2 were proficient in mathematics as measured by the California State Test, while only 1.4% of African American students and 3.8% of Latinx students demonstrated proficiency on the same test by the end of 10th grade.

In addition to data showing the negative math outcomes for students in a tracked math system from SFUSD, there is an emerging research base rationalizing a move to detracked math classes in schools and districts. Some research suggests that increasing access to rigorous mathematics classes through detracking coursework and focusing on equitable practices within mathematics classrooms closes opportunity and achievement gaps. For example, Boaler and Staples (2008) describe a cross-case analysis involving three schools purposefully selected to examine equitable math teaching practices. They found one school, Railside, with detracked, heterogeneous math classes showing strong outcomes for students, both academic and social emotional, compared to two other schools using more tracked, homogeneous math classes. At the Railside school, certain conditions existed in their math classes like block scheduling with 90-minute classes, collaborative planning among teachers on a weekly basis, and content taught at a much quicker pace than in the other two schools. Railside used groupwork to structure their instruction that is related to an instructional approach called *complex instruction* designed by Cohen and Lotan (Cohen, 1994; Cohen & Lotan, 1997).

> ***Research suggests that increasing access to rigorous mathematics classes through detracking coursework and focusing on equitable practices within mathematics classrooms closes opportunity and achievement gaps.***

Other case studies of schools' efforts to detrack show similar findings both in the United States and other countries. Attebury and colleagues (2019) found that detracked coursework from 6th to 10th grade and universal access to advanced coursework in 11th and 12th grades increased access to advanced coursework (in this case International Baccalaureate [IB] classes) for students who would have been traditionally placed into lower tracked classes.

Attebury and colleagues' study also found some suggestive associations between the school's work to detrack its IB classes and the closing of the Black-white gap, Latinx-white gap, and economically disadvantaged-advantaged gap on New York's Regents exams during the period of detracking.

While fewer findings exist from studies of school systems (e.g., districts and states) working to detrack their classes, some emerging evidence points in a positive direction with a few cautions. Some research by Burris and colleagues (2006; 2008) shows school districts' efforts to detrack their math classes led to improvements in students' access to higher-level math classes and increased achievement *without* negatively impacting students perceived to have higher abilities in mathematics. Some concerns with detracking are the misunderstanding and misrepresentation that it creates a ceiling for students who might otherwise accelerate their achievement in *high ability* math classes. And students in these traditionally homogeneous classrooms are now in heterogeneous classrooms, potentially constraining their ability to accelerate their learning. As you will see in this chapter, this is not the case. Detracking can serve *all* students well, for different reasons.

One notable example is McEachin et al.'s (2019) examination of California's efforts to detrack math during middle school by placing all students in Algebra in 8th grade. While controversial, implemented prior to the Common Core State Standards enactment, and generally poorly operationalized across the state, California schools' detracking effort shows some positive outcomes for historically underserved students—allowing students to improve their math test scores and access higher-level mathematics later in high school. However, other studies have found the opposite effect, with the algebra-for-all era negatively impacting student achievement in the school district they studied (e.g., Penner et al., 2015). Even McEachon and colleagues caution that the variation in implementation of California districts' detracking effort led to differential effects, with only some districts in fact placing all 8th graders in Algebra, some districts building conditions to support the teachers and students during the change to detrack the math classes. To back up this notion, another study by Domina and colleagues (2016) found variation in implementation, with some middle schools with higher socioeconomic status "tracking up," thereby increasing access for students to the more advanced math classes in middle school, including geometry coursework in 8th grade. At the same time, other middle schools from communities with lower socioeconomic status responded by being more likely to detrack as expected and placing all students in middle school within the same math classes in 8th grade.

THE APPETITE FOR AND CRITIQUES OF DETRACKING

There may be hope that as a pathway to more equitable instruction, tracking will soon wane in practice. There are more and more teachers and leaders working toward practices and structures supporting detracking. For example, Stanford University professor Jo Boaler conducted a survey of 300 teachers attending one of her youcubed workshops, where almost 75% of respondents said they were "leading or supporting detracking of their math classrooms," or "moving to a more detracked system" (youcubed, 2021).

However, the move to a detracked system is not easy and barriers exist. Such a move will need to reflect the complexity of the process and be done in such a way that acknowledges and addresses the concerns of those who critique detracking and remain proponents of a tracked system. The move to detracking will bring and has already brought critique of the change to math course sequencing. Here are some of the questions and comments about detracking in the field that are exploring these complexities and critiques:

- Why does detracking feel like a one-size-fits-all solution? What happens inside detracked classrooms? Do heterogeneous classrooms provide access for my students' needs?
- If we detrack math courses, will this dumb down the content and slow students' progress, especially for the students who get it fast?
- Can my students still reach Calculus and get into the prestigious universities near us?

Now, let's turn to the case of San Francisco to explore some of these complexities of detracking and the answers to these questions. In this book, we use the case of San Francisco to address the concerns described previously. Other questions and comments about detracking are still being worked out by the field through further research and continuous improvement efforts in schools and districts.

THE COMPLEXITY OF DETRACKING MATH CLASSES

In 2012, San Francisco Unified School District's Deputy Superintendent Guadalupe Guerrero knew he had a problem—one that had been going on for years. SFUSD middle schools had a two-tracked system of classes—grade-level classes and honors classes across all content areas—that was causing deep inequity in who had access to the highest level of rich mathematics learning and consequently which students scored proficient on state tests in mathematics, not only in middle school, but also beyond. SFUSD district leaders had created an administrative practice of automatically placing students who qualified for SFUSD's gifted and talented in education (GATE) program into honors classes in middle school. To get into the GATE program, students and their families had to submit a number of pieces of evidence to the school district to qualify for the program including their test scores, a letter of recommendation from a teacher, or a letter of recommendation from a parent. The district's approach to using multiple forms of evidence to help students qualify for the program was admirably aimed at increasing opportunities and removing barriers for students. Yet it didn't *always work that way. In some cases, this meant large portions of more privileged students whose families had the time, means, and knowledge to submit the paperwork could qualify for SFUSD's GATE program as a ticket into honors classes in middle school. These students had a ticket to* advanced *content in subjects like math and English language arts, which would give them further access to advanced content in high school, potentially even college. Yet those students whose families did not have the know-how to access what was seen as better, more advantageous classes did not have this access, regardless of their grades or mathematical aptitude or interest.*

Consequently, the way SFUSD's GATE program operated as both a gateway and a barrier in a two-tracked system led to inequitable outcomes and failed to serve all students in the district's charge. Notably, the students left out of the GATE program, and consequently left out of honors classes in middle school, which affected their class placement in high school, tended to be Black and Latinx students.

When Guerrero became deputy superintendent in 2012, he was always on the lookout for what policy decisions he could make to support the district's goal of access and equity. And when he took the helm, it seemed changing this two-tiered, segregated system could help the district take one more step toward equity. At the same time, he was approached by the SFUSD math team who had been developing a new math program to meet the new Common Core State Standards in Mathematics (CCSS-M). The SFUSD math administrators reported that the new standards in middle schools pulled in content from the strands of algebra, geometry, and statistics. Specifically in 8th grade, many of the CCSS-M Grade 8 standards included what was previously in a 9th-grade Algebra 1 class and in high school Geometry. In other words, the requirement for 8th-grade mathematics was now made more rigorous and also overlapped with what was already being taught in the advanced 8th-grade algebra classes. Based on their review of the standards and their consultation with researchers and other district leaders, they believed that to teach to these new standards effectively, it no longer made sense to distinguish between what was previously divided up as 8th-grade general math and 8th-grade algebra. The new standards essentially leveled the playing field. They would need to eliminate the two-tracked system of general math classes and honors math classes in all SFUSD's middle schools. Could this be the moment Guerrero and other SFUSD leaders had been looking for where they could create a more equitable system of accessing classes in SFUSD middle schools?

The process of planning, developing, implementing, and supporting a detracked system cannot be rushed. It needs to be purposeful, methodical, and well-supported to succeed.

Similarly to the complexity presented in this story about SFUSD's work to detrack its math classes, a lot of the research we have summarized thus far has emphasized the complex endeavor of detracking. For example, Burris and colleagues' study (2008) discussed the importance of conditions such as high expectations, beliefs students can achieve, and enriched curriculum to support the detracking efforts. The process of planning, developing, implementing, and supporting a detracked system cannot be rushed. It needs to be purposeful, methodical, and well-supported to succeed.

The story of SFUSD's effort to detrack its math classes is also complex. The process did not involve a simple change in school scheduling. To illustrate that complexity in SFUSD the team working to detrack attended to three key design features they believed were necessary to support a successful detracking effort:

1. *Systems and policies designed to support equity and access*. To achieve an equitable and accessible system of math instruction that supports all students, including historically underserved student groups and historically well-served groups, to be successful and learn at a deeper level of understanding, there needs to be a systems-level policy change that influences central leaders' decision making, school site leadership and operations, classroom practices, and community mindsets. The SFUSD Board of Education adopted a new policy in 2013–2014, which was developed using a couple of steps. First, the school district leaders developed a partnership with the Strategic Education Research Partnership (SERP), an intermediary nonprofit organization centered on bridging research and practice, who helped engage with experts from the field of mathematics over a 10-month period to help think through the design of a systems-level policy that could enable CCSS-M implementation. Some of the concepts that formed from these discussions were

- the need for heterogeneous classrooms
- at least one course pathway in high school that students can opt into to reach Calculus by 12th grade
- decision points along the way for students and families to choose math class pathways based on the students' interests

Leaders in the effort used information from their research partners, local experts, and other sources like SFUSD teachers' math expertise to articulate the rationale for the policy outlined in a position paper that defined the class pathways needed to support the CCSS-M. The thought partnership with these researchers and other local leaders and experts bolstered SFUSD leaders' understanding of the complexity involved in detracking math classes. In addition to confidence, the position paper provided common talking points with evidence for leaders to reference when explaining the reason for the policy change, including using SFUSD's own historical data showing incredible inequities and opportunities gaps over years of mathematics instruction.

LESSON LEARNED

Thought partnership between local experts and SFUSD leaders bolstered leaders' understanding and confidence of the rationale for detracking math classes while also building a body of evidence to support the policy and practice changes.

2. *Math instruction within diverse heterogeneous classrooms of students*. At the heart of the journey to detrack math classes sits (1) the enhancements of curriculum, (2) professional development, and (3) coaching combined with (4) a change in policy related to the math classes sequence. These four levers, when interconnected and designed with equity in mind, support the development of effective teaching and the subsequent learning for all students, especially those historically underserved.

To support a detracked math classroom, teachers will need to teach heterogeneous groups of students, whose backgrounds and experiences, as well as mathematical strengths and understandings, differ. What is the vision for a heterogeneous math classroom? For San Francisco, teachers created a vision statement of the equity-based math instruction that they are working toward in all classrooms: *All students will make sense of rigorous mathematics in ways that are creative, interactive, and relevant in heterogeneous classrooms*. This statement and all the four levers supported educators, administrators, caregivers, and community members to consider what it might look like, sound like, and feel like to be a math learner in any San Francisco PK–12 math classroom. The central math team created guiding principles (see Chapter 3) and premises (see Chapter 6) to help others expand their understanding of this vision, expand on the many ways people can all be smart in mathematics, and view each student with a strengths-based lens of knowing that each brings brilliance to the mathematics.

Before beginning its detracking journey, SFUSD had strengthened its equitable math instruction practices through various professional development programs, even when resources were scarce. One of the professional development programs in SFUSD was specifically created to re-culture mathematics departments through the lens of Complex Instruction (Jilk & O'Connell, 2014). Based on research by Elizabeth Cohen and Rachel Lotan (1997) at Stanford University, Complex Instruction develops teachers' instructional skill in teaching heterogeneous classrooms by using strategies that mitigate status issues, often stemming from racial and social power imbalances in classrooms, to improve access to participation with the mathematics content (Cohen, 1994). This equity-centered approach became a foundational step to creating a critical mass of teachers who had successes with heterogeneous classes and were an important part of the conditions that allowed SFUSD to successfully detrack its math classes.

LESSON LEARNED

Detracked math classes require a strong network of learning for teachers and leaders to support rich instruction for all students and enact the curriculum needed for heterogeneous math classes.

3. *Leadership at all levels of the system advocating for the same change*. In addition to these important conditions—curriculum, professional development, coaching, and ultimately the operations involved with changing the math sequence—as well as the systems-level policy change focused on equity, San Francisco's change to equitable and accessible mathematics also took specific leadership moves. To pull off a wide scale change, SFUSD would need leadership from students, teachers, coaches, site leaders, central leaders, and policy makers articulating and defending a new approach to mathematics instruction, even in the face of the resistance from some communities to make this change.

Leadership looked like everyone from superintendents Richard Carranza and Vincent Matthews to SFUSD math teachers and students advocated for the same policy change in concert at the right moment. The support for the policy started with Superintendent Carranza but continued across changes in senior leadership from the chief academic officer to the superintendent. Carranza gave an impassioned speech to the SFUSD school board and subsequent SFUSD community. As seen here, Carranza quotes specific statistics about which students take Advanced Placement math exams (either AP calculus or statistics):

> *Of the 928 students who took those AP math classes at this high school over the past two years, <u>only 7</u> were African American, and <u>only 21</u> were Latino—NOT 7% and 21%,* **but** ***<u>7 and 21 actual students.</u>*** *(At this school there was an approximately 10% Latino student population and a 3% African American student population.)*

In other board meetings, many teachers advocated for the new math policy and the increase in heterogeneity in math classes. Most of these teachers had been trained in Complex Instruction, an approach to instruction that centered on heterogeneous classrooms. The teachers also became the early adopters of the SFUSD homegrown curriculum and took on leadership roles in the teacher professional development.

LESSON LEARNED

Many leaders at all levels must be on board with the change and be able to sustain over time their defense of the change to detrack the math classes to make the most persuasive case to all community members.

While this was SFUSD's journey to address the complexity of detracking math classes, your school, district, or state may have different conditions or realities that make your journey a bit different. As you continue to read through this book, we come back to the SFUSD's story as an example of a school district working to detrack its math classes. We share lessons learned along the way, and hopefully SFUSD's story can provide some inspiration and ideas to support your journey.

USING THIS BOOK TO SUPPORT YOUR DETRACKING JOURNEY

In this book, we walk you through a road map to detrack math classes and help you think about—and even plan out—the necessary conditions along your journey. Think about this as a workbook that will help you put into place both ideas and specific practices for detracking within your school and district settings. This book is divided into three parts: developing a policy for detracked math classes, implementing detracked math classes, and sustaining detracked math classes.

Developing a Policy for Detracked Math Classes

The first part will support your understanding of the policy development process to detrack your math classes. In Chapter 2, you will explore the different levels of the context in which your detracking efforts will take place. As you develop the policies to guide your detracking of math classes, you will need to take into account the realities of your unique context—the leadership, the history, the goals, any legal action, and so on. In Chapter 3, you will explore how to design a policy to detrack your math class. You will work on building the vision for a detracked system of math classes among all community members and outline your visions for the future of math classes. You will explain your *why* or the rationale for this change and explain the steps you took to reach this conclusion. You will also explain the investigations and evidence collected to inform the design of the new policy. In Chapter 4, you will talk about working with all the community members to gain support for the policy. You will work with the students, families, teachers, school leaders, district leaders, school board members, policy makers, and other administrators necessary to gain their support, or in some cases prepare for their opposition to your policy. We explore building coalitions to get the policy passed by whatever governing agency—instructional leadership team, school board, or state congress—needs to approve the policy.

Implementing Detracked Math Classes

The second part of this book helps you design the implementation of your detracked math system. Chapter 5 explores the selection and design of curriculum to support student collaboration in heterogeneous classrooms. Chapter 6 addresses the necessary professional development for teachers to support their instruction in classrooms requiring dynamic instruction. Finally, Chapter 7 highlights the role of instructional coaching during the implementation of new heterogeneously grouped math classes as another means to support teachers' professional learning. These chapters explore the important conditions that will allow teachers and leaders working in the new detracked math classes to thrive.

Maintaining Detracked Math Classes

In the third part of this book, you will explore how to sustain a detracked math system. You will examine the role of research in Chapter 8 in understanding the implementation, development, and impact of a system of detracked math classes. In Chapter 9, we discuss monitoring the policy by collecting internal evidence using continuous improvement practices. In Chapter 10, we discuss how to support ongoing stakeholder engagement as one approach to maintaining an effective detracking policy.

Questions to Consider for Your Context

► As we compile the lessons learned from research, the experiences of the team in SFUSD, and cases from other schools and districts, we want to offer a set of questions that the team found helpful as they started their journey to detrack math classes. These questions can be used to help you prepare for your professional journey as well as in small group discussions related to planning for detracking. These questions relate back to the SFUSD journey, but we think they are generalizable in nature:

- What are the demographics of your students, teachers, leaders, policy makers, and community members? What is their racial or ethnic identity? What special programs do they participate in (e.g., programs serving multilingual learners or students with an Individualized Education Program)?
- What are various community members experiencing from their perspective as it relates to math classes in your school, district, or state? Do certain groups of families currently favor or oppose your math programming as it is currently designed?
- From your perspective, what are the conditions that could support detracked math classes? Currently, how does the leadership at all levels, the professional content and systems for learning, and the current policies and structures support detracked math classes?

Activity 1: Starting Your Journey With the Five Whys Protocol

▶ **Directions:** Use this protocol to explore the rationale for why your community would want to detrack its math classes. You can do this activity with a large group that splits into small groups (3–7 people) to work through the questions and share out their responses, or do this with a smaller group (3–7 people) that works through these questions together.

- Step 1: **State the problem.** What is the problem your school, district, or state is trying to solve by detracking math classes? See if you can relate the problem back to student outcomes in mathematics.
- Step 2: **Ask why the problem is occurring.** Anticipate having your team or teams name multiple reasons why.
- Step 3: **For each problem identified, ask "Why?" up to four more times.** Select one of the reasons why, and then ask the team to come up with another explanation or rationale. Continue to ask why until there are no more reasonable explanations to the question. You may go through this process a few different times based on the number of original reasons your team came up with in Step 2.
- Step 4: **Agree on an action to address the problem from occurring**. In some cases, your team may leap to, "Let's detrack our math classes." This is good, but detracking is complex. If you make this leap, then ask your team members to go back to the why to see if there are a few specific actions that could address the multiple causes to the problem unearthed by the Five Whys protocol.