

Closing the Opportunity Gap: A Call for Detracking Mathematics

*A position statement from NCSM:
Leadership in Mathematics Education*

Our Position

NCSM, Leadership in Mathematics Education, believes that all students should have access to high-quality instruction and post-secondary educational opportunities. While we acknowledge that many factors hinder such student access, in this position statement we call for the cessation of one clear, addressable factor: the practice of tracking. As a practice, tracking too often leads to segregation, dead-end pathways, and low quality experiences, and disproportionately has a negative impact on minority and low-socioeconomic students. Additionally, placement into tracks too often lacks transparency and accountability. Overall, tracking does not improve achievement but it does increase educational inequality. In light of this, NCSM calls instead for detracked, heterogeneous mathematics instruction through early high school, after which students may be well-served by separate curricular pathways that all lead to viable, post-secondary options.

Tracking: Policies and Practices Widening the Opportunity Gap

“Tracking is the practice of dividing students into separate classes for high-, average-, and low-achievers.”¹ In practice, these might be considered low or high tracks, or some other, similar categorization, and students might be placed into these tracks based on questionable methods using grades and placement exams, perceived ability through teacher recommendation, or non-academic expectations adults have for the students. Much of the research on tracking policies demonstrates the negative effects on certain subgroups of students by denying them access to rigorous coursework.²

More generally, a number of studies point to the influence course-taking patterns have on academic outcomes.³ This influence is true for student subgroups like emergent bilingual students⁴ and students from low income backgrounds, different racial and ethnic groups, and different genders.⁵ It may disable students from pursuing whatever course of study interests them when they get to high school, college, career or beyond. Tracking becomes worse for students year-over-year, as each consecutive year in a track makes it more difficult to move out of that track.

¹ Oakes, 2005

² Lee & Bryk, 1988; Gamoran, et al, 1997; Cogan, et al. 2001

³ Lee, et al, 1997; Gamoran, 1997; Wang & Goldschmidt, 2003; Riegle-Crumb, 2006; Riegle-Crumb & Grodsky, 2010; Gottfried et al., 2014

⁴ Umansky, 2016; Thompson, 2017

⁵ Oakes et al., 1990; Riegle-Crumb, 2006; Long, et al., 2012; Palarady, et al., 2015

Tracking is a form of de facto segregation as students in higher tracks have historically been predominantly White or Asian American from affluent families, whereas students in lower tracks have been primarily students of color and students who are economically disadvantaged. Research studies show that minority students are often denied access to high level mathematics through discriminatory [whether intentional or not] tracking and course placement.⁶ Additionally, students in lower tracks usually “experience instruction that focuses on memorization and rote procedures.”⁷

It is important to separate this position statement from the current pathways (or branching) conversations currently focused on re-thinking mathematics in the later years of high school. Examples of these include the Charles A. Dana Center’s Launch Years Initiative at the University of Texas at Austin; NCTM’s Catalyzing Change; Just Equation’s Branching Out; and the Math Pathways report by the Center for American Progress. Such pathways are about equally rigorous mathematical experiences that are relevant to students’ desired post-secondary experiences and also provide students opportunity to move between each pathway of courses when appropriate. NCSM supports work in this direction.

Because tracking often begins as ability grouping in the elementary school, there is a need to address tracking as well as the appropriate use of early acceleration in the elementary school. However, the focus of this first position statement in a series focused on closing the opportunity gap is on detracking mathematics in middle and high school.

Policies and Practices Reducing the Opportunity Gap: Detracking

Detracking is the intentional practice of placing students into heterogeneous classrooms usually in an effort to reduce the opportunity gap and allow all students to learn mathematics at high levels. Detracking requires the interruption of policies that have led to the inequitable sorting of students into mathematics courses. If detracking is to happen, school districts and states must go through the difficult process of establishing a new vision for mathematics teaching and learning that dispels the culture of “low” and “high” students as well as “faster means smarter.” This will undoubtedly involve a change in educators’ beliefs about who can and cannot do mathematics. School districts must be aware that teachers, coaches and leaders will need intense professional development before and during the process of detracking as well as continued support throughout. In addition, districts will need to communicate to parents and community stakeholders to assure them that students that have traditionally been in the “higher” levels of tracking will remain competitive with detracking.

The detracked mathematics courses will need differentiated instructional materials and approaches that support heterogeneous classrooms with students of varying levels, learning experiences and demographic backgrounds. This type of instruction will provide opportunities for students to demonstrate a balance of conceptual understanding of mathematical concepts, procedural fluency of mathematics skills and the ability to apply mathematical knowledge to solve problems. Research shows that often the students who participate less and are positioned as not smart are African American students and students whose primary language is not English.⁸ Teachers’ use of culturally responsive pedagogies and complex instruction have been found to provide more equitable participation in mathematics because both

⁶ Boaler, 2016

⁷ Huinker, 2019

⁸ Martin, 2009; Zavala, 2014

provide opportunities for mathematical discourse and increased contributions from students traditionally left out. Research also suggests that mathematics tasks which are group worthy and rich with detail are best suited for engaging students of all ability levels⁹ and hence are well suited for use in heterogeneous classrooms.

As stated earlier, we acknowledge that the detracking of math courses alone will not create equitable math instruction. There is a myriad of variables contributing to the opportunity and achievement gaps and interacting with detracking policies.¹⁰ Issues like systemic racism and stereotype threat¹¹, challenges with teacher recruitment, training, and retention¹², and other factors interact with the opportunity and achievement gaps as well. Detracking continues to be “tied to larger social inequities and racial injustice.”¹³ Therefore, the goal of detracking will not be realized without working to dismantle the various social, political, and cultural reasons tracking persists.¹⁴ Those that have been privileged by the current system must be willing to give up that privilege for more equitable schooling.

Recent Evidence from Research and Practice that Supports our Position

There are promising studies about schools and school systems which detracked their courses with positive effects, including specific advancements in students’ opportunities to learn, teaching practices, and student achievement.¹⁵ For example, Garrity found evidence to suggest that removing tracking and teaching all students as if they were high achievers did not “drag down” high achievers, but rather pulled up the performance of average students when math classes were detracked in Rockville Centre, New York starting in 2001.¹⁶ Even more recently in her 2016 AERA Presidential Address, Oakes, reported on research that found previously successful students seemed to do every bit as well in detracked settings as they had in tracked settings, as did previously struggling students.¹⁷

Additionally, there have been some successful examples of educational achievement outside the United States where students are taught in heterogeneous groups until sometime in high school.¹⁸ NCTM (2019) has highlighted several case studies of school districts and state departments of education that are making bold moves toward more equitable mathematics programs that benefit all students (see www.nctm.org) including the work unfolding in San Francisco, California. In 2014, San Francisco’s Board of Education unanimously passed the Math Course Sequence Policy, which established heterogeneous math courses through the end of tenth

⁹ Cohen, 1994

¹⁰ Oakes & Guiton, 1995; Welner & Carter, 2013

¹¹ Steele, 2011; Carter, 2012

¹² Moore Johnson, 2003; Ladson-Billings, 2009; Carver-Thomas & Darling-Hammond, 2017

¹³ Rubin & Noguera, 2010

¹⁴ Oakes, Wells, & Associates, 1996

¹⁵ Rubin, 2010

¹⁶ Garrity, 2004

¹⁷ Oakes, 2018

¹⁸ Hiebert, et al., 2005; Provasnik, et al., 2016

grade while still offering acceleration for students who wish to pursue advanced math coursework later in high school. With San Francisco's graduating class of 2019 as the first group of students to experience this mathematics course pathway, starting with a full year of grade 8 CCSSM in heterogeneous classrooms, there is some early evidence of greater access to mathematics courses to students and more diverse students accessing higher levels of mathematics courses.

How All Stakeholders Can Implement Our Position

In Support of this position statement, NCSM offers the following recommendations:

- Leaders and policymakers should:
 - Adopt policies in mathematics which detrack courses with appropriate prerequisites and supports
 - Detrack students' mathematics courses at the middle and high school
 - Detrack teachers at the middle and high school levels ensuring balanced teaching assignments so that more experienced teachers have both upper-level and entry-level mathematics courses
 - Create a systemic plan that includes a shared vision and purpose for mathematics including:
 - Broadening the purposes for teaching mathematics
- Teachers of mathematics should:
 - Teach according to equity-based instructional practices (i.e., standards-based mathematics instruction, complex instruction, culturally relevant teaching, and teaching mathematics for social justice, etc.)¹⁹
 - Adopt a mindset needed to support the development of students from different levels of skill and knowledge in mathematics, and examine bias towards students who traditionally have been excluded from opportunities to take higher level math courses
 - Teach from a non-deficit perspective (planning instruction based on students' strengths not their deficits) in order to develop students mathematical identities, increase their agency toward doing mathematics and improve their disposition of mathematics²⁰
- Sustained professional learning and coaching for teachers and leaders to develop the conditions needed for heterogeneity in mathematics courses and equitable teaching practices (i.e., diversity of thinking, growth mindset, student math identity development, etc.)
- Providing teachers time for collaboration about new instructional strategies to assist with differentiated teaching of rigorous mathematics that prepares students with a set of skills that centers on the communication and use of mathematical language
- Providing parental outreach to communicate to parents and the community on the needs for and benefits of detracking

¹⁹ Rubel, 2017

²⁰ Aguirre et al., 2013

- Program and curriculum developers should:
 - Adopt existing or develop new content materials that support heterogeneous classrooms (i.e., group-worthy mathematics tasks, cognitively demanding mathematics tasks, etc.)
 - Develop a curriculum that is accessible to all students and addresses students' mathematics identity and agency (i.e., culturally relevant mathematics tasks, mathematics tasks with multiple entry points, etc.)
- Informal educators (all adults outside of the classroom including parents, after school programs, summer educational camps, museums, etc.) should:
 - Assist with developing positive math identities in all students through engaging students in mathematical experiences that draw on community knowledge
 - Provide enrichment activities that connect mathematics to familiar everyday activities
 - Provide diverse role models in STEM-related fields for students
- Institutions of Higher Education
 - Universities, colleges, and community colleges should continue to refine admissions language to better align with standards that address appropriate mathematical rigor rather than a listing of course completion (i.e., rethinking course requirements other than Calculus)
 - Work together with K-12 systems to ensure academic continuity in mathematics

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