"HETEROGENIUS" CLASSROOMS

Detracking Math & Science

A Look at Groupwork in Action

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Foreword by Michelle Fine

6. Finally, teacher leaders, who are tired of witnessing poor instruction in tracked classrooms, might use this book in a book group of like-minded colleagues to begin a detracking movement from the ground up.

Why Should I Care About Detracking? What's Wrong with Tracking?

There are three main problems with tracking. First, research consistently demonstrates that students in lower-tracked classes are not afforded the same quality of instruction as students in higher-tracked classes. They get the least-experienced teachers, they do work that does not exercise critical thinking skills, and they experience low expectations, even from well-meaning teachers (Finley, 1984; Oakes, 2005; Page, 1991). The gaps in skills and content knowledge across tracks grow over time, making movement from low- to high-tracked classes virtually impossible without additional support.

Secondly, the assignment practices are very problematic. Many researchers argue that tracking plays a central role in perpetuating race- and class-based inequality in American society as students of color and/or students from low socioeconomic backgrounds are disproportionately assigned to the lower academic tracks, irrespective of academic achievement (Mickelson, 1999; Lucas, 1999). There are also studies that document how privileged parents use their power to place their children in higher tracks even when these students did not qualify, undermining the pedagogical rationale for tracking (Wells & Serna, 1996).

Third, many researchers question traditional notions of ability and intelligence that underlie the tracking assignments. How can educators assign students to tracks when ability is not fixed, innate, unidimensional, or easily assessed (Oakes, Wells, Jones, & Datnow, 1997)? When should the assignment practice start, and should "late bloomers" be relegated to inadequate educational opportunities in the low track? Research reporting that it is extremely rare for students to move up tracks once they are assigned to the lower tracks compounds the impact of placement decisions (Lucas, 1999).

Defenders say that problems with tracking lie in ineffective implementation. They say that educators need to improve the quality of instruction across tracks and implement fair assignment practices (Hallinan, 1994). Students in my teacher education courses often ask me if I would support tracking if the quality of low-tracked classes was better, and if the assignment practices were fair. My answer: No. It would be better, but it would still result in inequitable instructional opportunities. The hierarchical nature of grouping practices always privileges one group of students over

another, and students internalize and meet teacher and peer expectations for student performance. In addition, efforts to improve tracking practices have been tried and more often than not failed in typical public schools.

Why Is Detracking Math and Science Important?

Algebra and Chemistry/Physics Are Gate Keepers to College. Taking algebra in eighth or ninth grades and chemistry or physics before graduating from high school is essential for students to complete the advanced math and science sequence of courses that fulfill college prerequisite requirements. While students in the high track take these courses and continue with an advanced course of study in math and science, less proficient students in the low track often start a math sequence that begins with pre-algebra or other remedial math course and end their high school careers with at best two years of college preparatory math (Burris, Heubert, & Levin, 2004). In addition, these students often do not take more than one year of laboratory science (Blank & Langesen, 2005). This lower-level sequence precludes these students' opportunities to enroll in four-year institutions of higher education, which require at least three years of college preparatory mathematics (Algebra 1, Geometry, Algebra 2) and two years of laboratory science (biology, chemistry, or physics). An especially troubling aspect of this bifurcated curriculum is that Black and Latino students and students from low socioeconomic backgrounds are disproportionately underrepresented in the college-bound sequence of courses (Blank & Langesen, 2005).

Detracking Increases Enrollment in College-bound Math and Science Classes. Researchers report that detracking has led to a dramatic increase in the percentage of students successfully completing the college-preparatory math and science sequence of classes at the high school level with gains for all groups of students—including initial low and high achievers as well as

Table 1.1. Groupworthy Task Features in Teachers' Lessons

Groupworthy Task Features	Physics of Music	Perimeter Challenges	The New Swimming Pool	Inter-molecular Forces
Big Idea	X	X	X	X
Multiple Ability	X	X	X	X
Open-Ended	X	X	X	X
Interdependence	X	X	X	X
Individual Accountability		X	X	X
Assessment	X	X	X	X

Figure 1.1. Features of a Groupworthy Task

Big Idea: Is the organizing concept or big idea—a big idea indeed? How do you know? How central is the concept to the discipline?

Multiple Abilities: Do the resources incorporate multiple representations/ways of understanding/ways of presenting information? Is there a tight connection between the resources and the activity? What are the multiple intellectual abilities called upon to access and/or to complete the task?

Open-endedness: What is the problem to be solved in the activity? Is there a right or wrong answer, or an "expected" answer? (Is the answer "It depends?") Are there different ways of arriving at a possible solution?

Interdependence: Is there enough to do for a group? Is the activity rich and complex? Is there a group product? What is the relationship between the group product and the discussion questions? What is the relationship between the group product and the resources? Are there group data collected among members? How is the group discussion essential for producing a quality product?

Individual Accountability: Are individual reports included in the activity? Are they tightly connected to the activity and/or to the big idea/central concept? How will the group discussion become critical for a student completing the individual report?

Assessment: Are there clear evaluation criteria for group product and group process? How are they stated? How will you assess what students are learning as they complete this activity?

Source: Lotan, R. (2007). [Features of a Groupworthy Task.] Unpublished Handout.

students of diverse racial and socioeconomic backgrounds. Burris, Heubert, and Levin (2006) offer compelling research evidence that detracking helps all students. In a 6-year longitudinal study of students in the Rockville Centre School District in New York, these researchers compared the math achievement of three sixth-grade cohorts who learned math in a tracked setting with three sixth-grade cohorts who learned in a detracked setting. They report a statistically significant increase in the percentages of students who took math courses beyond Algebra 2 in high school for every subgroup: students from low socioeconomic backgrounds (32% to 67%), Black and Latino students (46% to 67%), initial low achievers (38% to 53%), average achievers (81% to 91%), and high achievers (89% to 99%). The mean standardized test scores of high-achieving students who learned in the detracked setting were statistically indistinguishable from comparable students learning in the tracked environment. In addition, more high-achieving students who learned in the detracked environment took the AP Calculus exam and scored higher than their counterparts in the tracked environment. These results led these researchers to conclude that not only are high-achieving

students performing better in mathematics, but that more students have become high achievers.

Dr. Carol Burris, scholar and visionary principal of South Side High School, and her dedicated team of teachers and administrators gradually expanded the school district's detracking efforts across different subjects at the high school level. The year-of-entry 2001 cohort was the first cohort to be heterogeneously grouped in all subjects, including math and science, in the ninth grade. During the 2005–2006 school year, heterogeneous grouping was extended into the tenth grade. Burris, Welner, Wiley, and Murphy (2008) compared three tracked cohorts with three detracked cohorts in their attainment of two diplomas (International Baccalaureate and New York Regents) that require rigorous course-taking and assessments far beyond those required for the local high school diploma. Most 4-year universities recognize International Baccalaureate (IB) courses as equivalent to or exceeding Advanced Placement (AP) coursework. Racial and socioeconomic demographic data remained stable across this time period. The researchers found that

> being a member of a detracked cohort was associated with an increase of roughly 70% in the odds of IB diploma attainment and a much greater increase in the odds of Regents diploma attainment—ranging from a three-fold increase for White or Asian students, to a five-fold increase for African American or Latino students who were eligible to receive free or reduced price lunch, to a 26-fold increase for African American or Latino students not eligible for free or reduced-price lunch. Further, even as the enrollment in IB classes increased, average scores remained high. (Burris et al., 2008, p. 572)

Detracking led to an increase in the numbers of students overall who successfully completed advanced-level high school classes, and who thereby fulfilled or exceeded 4-year university admission requirements. Subsequent research into the Class of 2009, which was the first detracked cohort in all subject areas through the end of the tenth grade, showed that 85% of the students elected to take IB English and IB math (Garrity & Burris, 2007). The approach of school-level leaders in the district was more rigor with support, not remediation through tracking.

Teacher to Teacher: Creating Groupworthy Tasks

The next four chapters feature teachers' lesson plans, which I hope will be of use to teachers writing their own lesson plans for heterogeneous classrooms. Teachers reflected on the challenges they faced enacting the lesson and how they would improve upon the lesson plan.