

Research Brief

Grouping Students to Maximize Learning and Minimize Inequality: New Hope or False Promise?

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For over a century, educators have struggled to find the best way to organize students for instruction. One approach that seems logical is to separate students for instruction according to their different interests and abilities. This practice, known as tracking or ability grouping, is intended to allow teachers to meet students' specific needs. Unfortunately, long experience with tracking suggests that the practice tends to widen achievement gaps between students who begin at different performance levels. Moreover because prior achievement is linked to common bases of social inequality such as race/ethnicity and social class, tracking tends to reinforce achievement inequality among students from different social groups. In response, many educators advocate mixing students with different levels of academic preparation in the same classes. Yet this approach, known as mixed-ability teaching, has its own set of challenges, including a common finding that high-achieving students learn more when they are enrolled in high tracks than when they learn in mixed-ability classes.

If there were a simple solution to this dilemma, we would have found it years ago, as tracking is one of the most widely studied areas in the practice of education. Instead, because both tracking and mixed-ability teaching have advantages and disadvantages, school systems tend to lurch back and forth as the promise of each new approach meets the hard reality of its own limitations. Rather than seeking the single best solution, educators may be best advised to focus on implementing the approach they select in a manner that maximizes its benefits and minimizes its disadvantages. This brief report summarizes current research on:

- The effects of tracking and ability grouping in the U.S. and abroad.
- New efforts to implement mixed-ability teaching successfully.
- New approaches to differentiating instruction without magnifying inequality.

The new studies offer both promise and pitfalls for advocates of both approaches.

Tracking's Effects on Student Achievement

Generally, past research has shown that tracking tends to widen achievement inequality among students without raising the school's average level of achievement (for reviews, see Oakes, Gamoran, and Page 1992, Gamoran 2004 and 2010). This pattern occurs because students in high tracks benefit from their class assignments while low-track students learn less under tracking than under mixed-ability teaching. Most of the research comparing tracked to mixed-ability classes comes from outside the U.S. (e.g., Kerkhoff 1986), because tracking is nearly universal in the U.S., particularly at the secondary level in subjects such as mathematics, foreign languages, and English. Studies of tracking in the U.S. mainly concentrate on examining achievement gaps between students assigned to high and low tracks. These

studies take account of students' different starting points and consistently demonstrate that the gap between students at different track levels widens over time (Oakes, Gamoran, and Page 1992, Gamoran 2004). A more recent body of international work suggests that the U.S. is not alone in exhibiting a pattern in which tracking is linked to increasing inequality (see Gamoran 2010 for a review of recent international studies of tracking).

Differences in classroom instruction serve as a key mechanism linking tracking and achievement. Students in high tracks commonly experience more complex and rapidly-paced instruction compared to students in low tracks, who encounter more fragmented and slower-paced instruction. Of course, teachers intentionally provide more challenging instruction in high-track classes; the rationale for tracking is to allow teachers to gear instruction to students' abilities to respond to their teaching. But the research consistently shows that students in low tracks could respond positively to more demanding instruction than they typically encounter (Gamoran 2010).

Two possible responses emerge from this dilemma (Gamoran 2004). First, schools that maintain a tracking system must do a better job of serving students assigned to low-track classes. Second, schools that reduce or eliminate tracking must take steps to ensure that high-achieving students encounter instruction challenging enough to advance their learning in a meaningful way. Until now, however, educators have had difficulty finding success with both approaches. Detracking has proven to be difficult to undertake and cases of success are rare. Yet examples of tracking systems that allow low-achieving students to keep pace with their more advanced counterparts are equally if not more scarce.

Most recently, new research studies provide evidence of the conditions under which mixed-ability teaching can be successful for high- as well as low-achieving students. At the same time, promising new studies show that differentiated instruction not only can boost the learning of high achievers, but may also help to close gaps. It is still early to say whether these promising findings can be generalized across many contexts and grade levels, but the new studies give reason for hope that the tracking dilemma can be addressed without sacrificing the interests of any group of students.

New Research on Mixed-Ability Teaching

Burris and her colleagues (Burris, Heubert, and Levin 2006, Burris *et al.* 2008) studied a shift from tracking to mixed-ability teaching in mathematics in a New York school district. At the middle school level, teachers introduced an accelerated curriculum for all students, combined with an extra support class for students who had trouble keeping up with the fast-paced instruction. This reform also involved common planning time for teachers and increased use of calculators for students. At the high school level, teachers and educational leaders eliminated the low-track, non-Regents mathematics class. Instead, all students were placed in classes that prepared students for the Regents diploma. Just as, at the middle school level, students who struggled with the more advanced curriculum had extra help, in this case in the form of a supplementary class that met three times per week. To assess the impact of this shift, Burris and her colleagues used an "interrupted time series" research design in which they monitored student achievement before and after the reform and compared students' trajectories to those in other schools that did not undergo the reform. The results indicated that low-achieving students performed better under the new arrangement and high-achieving students did just as well as when they (or similar students in past years) had been enrolled in high-track classes.

What conditions supported these successful cases of mixed-ability teaching? Common to both the middle and high school cases was substantial supplementary instruction for low-performing students. At the high school level, this amounted to about 50 percent more mathematics instruction for low-achieving students. It should also be noted that the district studied by Burris and her colleagues was relatively affluent, with few high-needs students, and it is not clear the results would apply elsewhere.

However, Gamoran and Weinstein (1998) reported achievement benefits from mixed-ability teaching in an urban school where about half the students were on free or reduced-priced lunch. This school had garnered external resources that allowed it to support a Saturday tutoring program for students who struggled with their classes. The additional resources also allowed the school to limit class size to about 15 students per class. In addition, students had to be interviewed to be admitted.

The findings about successful uses of mixed-ability teaching are especially noteworthy because they occurred in mathematics, a subject area in which teachers commonly argue that the sequential curriculum makes it necessary to separate students according to their prior achievement. Although the findings are promising, they should be subjected to additional research and experimentation to determine whether they may generalize to other contexts.

Closing Achievement Gaps by Grouping Students for Differentiated Instruction

All too often, efforts to provide separate instruction for students according to their prior performance levels has resulted in widening achievement gaps. In a study of 25 middle and high schools, Gamoran (1993) uncovered two cases in which low-track students kept pace with their higher-achieving peers, instead of falling further and further behind. Common elements of these cases included high expectations by teachers, reflected in an academic curriculum that was more demanding than what is typically found in low-track classes; extra efforts by teachers to promote discussion in class; and avoidance of assigning weak or inexperienced teachers to low-track classes. Yet these were rare exceptions, and instances of successful instruction in low tracks are hard to find. Recently, however, two new lines of research suggest it may be possible to develop more general approaches for maximizing student achievement through differentiated instructional settings.

Diagnosis and Instructional Response. Designers of instruction have long embraced the notion of “scaffolding,” that is, promoting learning by meeting students where they are in their knowledge and skills and erecting supports that raise students’ performance to new heights (Palincsar and Brown, 1985). According to this view, students have different starting points, so they differ in what instruction best meets their needs. Recent research by Connor and her colleagues (Connor *et al.* 2007, 2009, and in press) develops and tests an approach for differentiated reading instruction in the early elementary grades. In this approach, teachers assess students’ reading performance and provide the assessment information to a computer algorithm called “Assessment to Instruction” (A2i). The A2i software not only diagnosis students’ performance levels and recommends an instructional response to indicate what instructional activities will promote each individual student’s reading, but also recommends within-class grouping arrangements that allow teachers to provide the same instruction to different small reading groups within the class. Thus, this approach uses flexible ability grouping with frequent monitoring of students’ progress and specific instructional materials and activities designed to support the learning of each small group of students. Based on a randomized evaluation, Connor *et al.* (2007 and 2009) have demonstrated that students whose teachers used the A2i software made more progress in their reading performance than students in the control condition. Moreover, in the A2i classes, the lowest achieving students showed the greatest gains, whereas in control classes this gap-closing did not occur.

The studies by Connor and her colleagues demonstrate that skill-based grouping can be an effective means to target instruction to students’ needs in a way that enhances learning for all students, not just those at the top of the achievement distribution. Many challenges remain, however, before this practice can become widespread. First, in contrast to early reading, where one may find extensive knowledge and broad consensus about instruction in response to specific skill levels (National Reading Panel 2000), other content areas and grade levels have much less specificity about how to match instruction to students’ needs. Second, a process of diagnosis and instructional response depends on well-designed as-

assessments that enable teachers to diagnose students' instructional needs. Current assessments, however, are typically too crude to allow such targeted responses. Lacking such assessments teachers exercise their professional judgments to determine how to allocate instruction across ability groups, but as the research literature makes clear, this typically results in widening inequality rather than narrowing gaps. Hence, more development is needed if this approach is to become widespread.

Connor's findings resonate with Slavin's long-ago (1987) conclusions: ability grouping can be an effective way to organize students and allocate instruction, but only if three conditions are met: if students are assigned to groups based on the specific skill to be taught; if instruction is targeted to address the specific skill; and if grouping arrangements are flexible enough to permit regrouping when new skills are assessed. Connor's research shows that, on the one hand, such steps are feasible and, on the other hand, we have much to learn before this approach can become standard practice.

Optimal Matching of Teachers and Students. A second approach to allocating instruction differentially without magnifying achievement inequalities draws on the extensive data now being collected through test-based accountability systems across the U.S. These new data systems, which contain achievement records for students from grades 3-8 (at least) in all schools, can be used to identify the contributions of individual teachers to students' achievement trajectories. What is less well known, however, is that the data can also be used to identify differential teacher effects; that is, to allow for the possibility that some teachers are more effective with one type of students (*e.g.*, high achievers) while other teachers find their greatest impact with other types of students (*e.g.*, low achievers). In principle, one could calculate differential teacher effects and then match students with the teachers whose impact on students is greatest for that type of student (Lockwood and McCaffrey 2007, Meyer and Dokumaci 2010). This approach would group students by performance level (ability grouping) but it would maximize each student's achievement potential by matching him or her with a teacher who, based on past performance, is expected to bring out the best in that student.

At a minimum, this approach would make it possible to ensure that low-achieving students are not continually assigned to the lowest-performing teachers, which is probably what typically happens with tracking. Beyond that step, however, many challenges remain. For example, it is not clear that differential teacher effects are widespread enough to cover a wide range of student performance levels. If there are many teachers who are especially effective with high achievers, but few who meet this criterion with low achievers, it may not be possible to match students with teachers who are especially effective with students who share their characteristics. Extending this approach also requires high-quality assessments, which may not exist in all places or for all grade levels. No study has yet examined the performance of students under this type of matching approach, so we do not yet know if it will really work to raise student performance and whether the gains for low achievers would at least equal those of their high-achieving peers.

Conclusions

Two decades ago, an NEA investigation of the tracking dilemma concluded that:

Tracking will remain an important part of American education. *Neither tracking nor heterogeneous grouping is necessarily good or bad.* The effectiveness of grouping depends on the specific situation and the needs within a school (National Education Association 1990, emphasis in the original).

Unfortunately, this conclusion remains accurate today. I regard this as unfortunate because tracking is commonly associated with achievement inequality; also, when students are separated by achievement level they tend to be divided by race/ethnicity and social class due to inequality in the wider society. It is clear that rigid forms of tracking such as low-level, dead-end classes for low achievers and

the division of students for the entire school day on the basis of a single criterion should be avoided. More flexible, subject-specific forms of ability grouping are less damaging for low achievers and tend, on average, to promote the achievement of high achievers. In the future, it may be possible to design instruction in a way that divides students but closes achievement gaps, but this approach has not been fully developed. Under the best of circumstances, mixed-ability teaching can boost the performance of low achievers without holding high achievers back, and has the advantage of combining students from all walks of life. It is not clear, however, whether optimal circumstances can be widely implemented. Hence, there is no single solution to the tracking dilemma. Instead, educators must attend to the limitations and challenges of whichever approach they attempt.

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