Four lessons on how to encourage teachers to re-examine their views on tracking

The definition of tracking has become increasingly muddled as schools have moved to make educational opportunities more equitable, according to a recent study in *Teachers College Record*, which examined teachers’ perceptions of tracking.

For genuine detracking and educational equity to occur, teachers need to explore their deeply rooted notions about ability and intelligence, writes Maika Watanabe. While schools may aspire to give all students access to a challenging curriculum, the reality is that detracking reforms often meet with resistance, not only from parents but also from teachers, she says.

Rethinking ability and intelligence

“Unless teachers are convinced to rethink their notions of ability and intelligence, teachers will simply teach to traditional ‘ability’ levels within heterogeneous classrooms and will not be willing to try new teaching methods for all students in classrooms,” she writes.

Watanabe reports on a year-long teacher inquiry into detracking, ability and intelligence with six teachers from a college-preparatory urban high school that has historically disavowed tracking. The teachers met once or twice a month for a school year, were each interviewed twice by the researcher and were paid a stipend of $2,500. Such an inquiry could be a model for a professional development program for teachers on detracking, which typically takes the form of one-day workshops, Watanabe writes.

“A key finding of this research is that the definition of tracking has become muddled since the unremarked revolution, when the nature of the grouping changed from overarching program to subject area,” the researcher writes. (The change is referred to as an “unremarked revolution,” she explains, because it was not recorded in the literature that much tracking had become focused on courses and subjects.)

Currently, in the 9th and 10th grades, Meredith High School offers only one level of English, science, and history. In math, students take a sequence of courses that progress from algebra to calculus and are enrolled in classes based on the previous courses taken in middle school. In the 11th and 12th grades, the school offers various levels of courses including honors and AP classes. Those enrollment decisions are based on a combination of scheduling considerations, teacher recommendations, student and parent preference, previous academic performance and standardized test scores, previous courses taken and pre-tests.

From this inquiry, Watanabe says administrators can learn four lessons about working with teachers on advancing detracking reforms:

1. **Unpack definitions of tracking**

The group met for seven months before everyone realized that they all had different conceptions of what tracking is and isn’t, Watanabe says. A simple question to ask to get to these diff-
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ferring notions is, “Is this school a tracked school? If yes, in what ways? If not, why not?” Although Meredith High School disavowed tracking, some of the teachers thought of it as tracked and others thought of it as untracked, the researcher reports. A few said that while the 9th and 10th grades were not tracked, the 11th and 12th grades were tracked. One teacher believed the high school was tracked based on the homogeneity by race and ability she saw in her classes as well as by the number of levels of a course offered by the school.

2. Examine student choice in courses.

The issue of student choice in courses was at the source of teacher disagreement about whether the school was tracked. To some teachers, the opportunity for student choice in taking courses meant the school was not tracked. “Here, if a kid wants to take an honors class, they let the kid take an honors class,” one teacher said. “They don’t deny them because their test scores are low, or whatever.” That teacher acknowledged that that was not the case in math because students had to have a basic understanding of math before taking algebra. She also noted that there were other factors that limited a student’s range of academic choices.

“Maybe that’s all that they expect in themselves, maybe that’s what they’re used to their whole lives, maybe they don’t know to speak up for themselves and take the harder class, maybe they want to be lazy.” Another teacher found the choices to be artificial and saw the school as tracked. “I guess the other thing is that, even though you can choose what you want to take, how much choice do you really have if your math skills are at a certain place?”

3. Develop mature professional community

The researcher says the group went beyond the “poker model” of discussion, where participants throw ideas, much like poker chips, into the center and left untouched by discussion. While the group did not avoid conflict, it did not embrace it, and neither reached a consensus on a definition of tracking nor achieved a mature “communal responsibility for individual growth.”

4. Support professional development

One chemistry teacher in the group became more committed to detracking and to opening up science “for all instead of just science for the elite.” She was particularly interested in providing greater access and support to girls and minority students. Her goal, she told the group, was to merge conceptual and regular chemistry. As science department chair two years after the group met, she reduced the number of levels in chemistry from three to two levels. “Each year I can get my {conceptual chemistry}further up along doing regular stuff,” she told the researcher. “This year, I had conceptual chemistry kids, a few, for extra credit, doing the basic stoichiometry questions from the regular chemistry book. So if you can do that, then what can’t you do?”

Participants welcomed the opportunity to examine issues of ability, intelligence and tracking, but thought the work should be scheduled during the work day rather than after school on teachers’ personal time.

Early-grade retention shows little payoff for students

Exposure to next grade’s learning environment more beneficial

Despite warnings about the negative effects of retention, many educators continue to believe in the benefits of retaining students in kindergarten and first grade.

But, a new study failed to find any positive long-term effects of early-grade retention on reading and math learning in the elementary years, researchers report in a recent issue of *Educational Evaluation and Policy Analysis*.

“In general, we find no evidence that early-grade retention brings benefits to the retainees’ reading and math learning toward the end of the elementary years,” conclude Guanglei Hong and Bing Yu of the Ontario Institute for Studies in Education of the University of Toronto.

“Throughout the elementary years, the kindergarten retainees and the first grade retainees never achieved more on average than they would have if they had been promoted instead.”

Research on grade retention is challenging, they say, because there is no simple way to compare the potential outcome of retention with that of promotion for the same child.

“For this reason, even though the results of most published studies have consistently shown that the retained students tend to lag behind their same-age peers academically and are more likely to drop out of high school, it has remained uncertain whether promoting these students would have led to relatively better results,” the researchers write.

Analyzing six waves of data from the Early Childhood Longitudinal Study Kindergarten Cohort (ECLS-K), the researchers compared the math and reading performance of retained students and promoted students in the short-term and also Year 3 and Year 5 using “propensity scores” for the students. The scores reflect the probability that a student will be retained based on many variables (demographic characteristics, measures of cognitive and social-emotional development, absenteeism, Head Start or other preschool experiences); the researchers used 39 predictors in computing the probability of being retained in kindergarten and 27 predictors in the model for retention in first grade.

From the sample of 21,409 children, the researchers identified 201 children who were retained in first grade and 471 who were retained in kindergarten.

**Not helpful for cognitive development**

“It seemed that allowing children additional time to become mature, an important reason for kindergarten retention in particular, did not help in facilitating their cognitive development during the elementary years,” the authors write.

Exposure to the next grade’s learning environment itself explains the achievement gains of those who were promoted, the authors write. Evidence suggests that children who repeated kindergarten would have been capable of learning first grade reading and math content if they had been promoted. The same is the case for children who were promoted to second grade instead of being retained.

“Similarly, there is clear evidence that many children who were retained in first grade, if promoted to second grade instead, would have benefited from second grade reading and math instruction and would have displayed growth in reading and mathematics comparable with those of their same-cohort promoted peers in the rest of the elementary years,” the authors note.

In making decisions about retention, educators should consider the potential benefits of exposure to a more challenging curriculum for students, they write.

**Intervention on social skills expanded to academic motivation and responsibility**

An intervention program that reduces aggressive behavior by training students not to “jump to conclusions” about their peers’ intentions has now been expanded to encourage academic motivation and responsibility, write the developers of the program in a recent issue of *Educational Psychologist*.

“To our knowledge, this is the first successful intervention for children displaying high rates of aggression that blended social skills training with motivation skills training under one unifying theoretical framework,” write the authors, who developed The BrainPower Program and the Best Foot Forward program.

“The pervasive links between problem behaviors and school adjustment suggest that effective intervention programs to enhance school adjustment must focus both on decreasing the motivation to aggress and increasing the motivation to achieve.”

Based on attribution theory, the BrainPower program aims to reduce aggressive behavior by training children to more carefully appraise peer interactions. So, for example, when a peer walks by a student’s desk and knocks down a pile of books, the student is trained to consider that clumsiness or overly narrow aisles between the rows of desks might be the cause of the behavior and that it is not necessarily a hostile act.

Now, the authors say, they have taken the program one step beyond intentionality to teach students with hostile attributional bias to take greater responsibility both for their peer interactions and for academic success. In peer interactions, the Best Foot Forward program trains students to take responsibility for their personal relationships by practicing “account giving” or providing explanations for social transgressions that include apologies, excuses, justifications and denials. In school, students can attribute academic outcomes to themselves or to factors beyond their control such as poor teaching. The Best Foot Forward program promotes attributing achievement to personal responsibility and provides students with strategies based on motivational principles of choice (whether a student prefers easy, intermediate or difficult achievement tasks) and persistence (how a student manages challenge). To promote motivation, the program teaches students to select tasks of intermediate difficulty and proximal goal setting skills (breaking down goals into manageable components).

“Both academic motivation and achievement outcomes are enhanced when students choose tasks of intermediate difficulty, set proximal as opposed to distal goals, are task focused rather than ego focused, and attribute failure to controllable causes,” the authors write.

“A chilling tendency to give up on children”

“There is a chilling tendency in our society to give up on children much too quickly and declare them casualties of societal risk factors,” the authors write. They describe their intervention programs as cost-effective, educational strategies that can change these behaviors early before they become too entrenched.

In their recent article in *Educational Psychologist*, the researchers report on evaluation studies of their BrainPower program primarily with African American and Latino youth and also of their expanded program Best Foot Forward. In an initial controlled efficacy investigation of Best Foot Forward with 66 African-American elementary school males Grades 3 to 5, the researchers found changes in student behavior after the 12-week intervention.

Students who participated in intervention displayed changes in attitudes about the legitimacy of aggression, they report. When presented with scenarios of social transgressions, interven-
Intervention program expands its focus

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Intervention participants were more likely to select more appropriate social responses and to accept accounts of hypothetical peers who apologized or offered an excuse. (but they were not more inclined to forgive the peer). In the achievement domain, when asked to recall a recent failure, intervention participants were more likely to rate lack of effort very highly and lack of ability and external factors very low.

To implement the intervention programs in a school setting, participants typically receive 12 BrainPower lessons in six weeks (twice weekly) in small groups with two trained group leaders. Each group consists of four students displaying excessive aggression and two students with average behavior who are included to avoid the stigmatization of other participants and to provide positive peer models. This also provides the opportunity for average students to reappraise their own perceptions of peers with aggressive behaviors.

Best Foot Forward is a 32-lesson curriculum that focuses on enhancing social and academic motivation skills. The academic motivation component is divided into four sections: intermediate risk taking, goal setting, task focus and failure attributions. In one exercise, the Spelling Game, for example, students compete for points to win prizes for correctly spelling words from three lists of word, easy, intermediate and difficult. Participants learned that the best strategy for earning points that could be traded for prizes was to focus on words of intermediate difficulty, the authors write.


Lessons from TIMSS about making changes in U.S. math curricula

Introducing algebra in the 8th grade and earlier is only one of several changes in the U.S. math curricula that are needed to improve the math performance of the nation’s students, write the authors of a study included in Lessons Learned, What International Assessments Tell Us about Math Achievement, recently published by the Brookings Institution Press.

In other countries, algebra and geometry have been an important part of the middle school curriculum, not only for the elite, but for all students, the researchers write.

“Positioned for more than a century in the ninth grade, Algebra I recently began to move into the eighth grade, partly as a consequence of research showing that other countries were offering more algebra earlier than the United States was,” say researchers Jeremy Kilpatrick, Vilma Mesa and Finbarr Sloan. The researchers analyzed U.S. student performance on individual items in the Third International Mathematics and Science Study (TIMSS).

Only in the U.S. are algebra and geometry taught separately in the typical college prep high-school curriculum, an approach that helps to account for disappointing U.S. student performance in TIMSS in many areas, they say.

“The integration is left up to the student, a task many find difficult or fail to complete on their own,” write a team of researchers “In other countries, students are taught algebra and geometry (and other areas of mathematics) simultaneously, in either integrated mathematics courses or

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Lessons from TIMSS on US math curricula

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parallel strands.”

U.S. school mathematics curricula also tends to treat algebra as generalized arithmetic rather than taking the function-oriented approach common in other countries and recently advocated in the United States, they write.

“Recent developments in the U.S. school mathematics curricula suggest than an approach to algebra as the study and use of functions rather than as simply equation solving and manipulation of expressions may be gaining ground,” they write. Functions are introduced as rules for connecting one number to another, they explain.

Low-performance items

To identify strengths and weaknesses in U.S. students’ math performance in TIMSS, researchers identified test items that 25% or fewer of U.S. students answered correctly and those items which 75% or more of U.S. students answered correctly; they performed the analysis for Grade 4 and 8 students only for tests from 1995, 1999 and 2003. Each item was classified according to what it asked the student to do and to its cognitive demand (rich vs. lean content and open vs. constrained).

The items were classified as follows:

- patterns
- functions
- informal algebra
- algebraic reasoning
- equations
- algebraic manipulation
- inequalities

Eighth-grade students performed better than expected considering few of them had any exposure to algebra by that age, they note.

Based on their analysis, the researchers say U.S. 8th graders demonstrate relatively good understanding of:

- the notation for exponents;
- ability to interpret simple algebraic expressions;
- reasoning about sequences; and
- the notation for exponents.

In contrast, their performance is relatively weak in:

- interpreting symbols in an equation;
- completing a table showing a relation between variables;
- finding the sum of series expressed by verbal rules;
- identifying a pattern, manipulating a simple algebraic expression;
- extending sequences of geometric figures to find the pattern;
- solving word problems involving relations between quantities;
- translating from words into algebraic symbols; and,
- completing a geometric pattern.

The function approach to mathematics makes heavy use of technology in order to capitalize on its ability to manipulate linked tables, symbols and graphs representing functions, the authors write.

“This modeling approach to algebra, although growing, is still very much a minor theme in U.S. school mathematics,” they write.

While U.S. students say that their teachers spend half their lesson time relating mathematics to daily life, more than teachers in other countries, the researchers say, U.S. students do relatively poorly in setting up an equation to model a real situation. The reason may be that teachers do not use high-complexity problems in their classes, they write. U.S. 8th-grade teachers also spend 30% of their lessons reviewing topics.

How to grade individuals for group work: Peer and self-assessments may be key

In every group, there are those who pull their weight, those who pull more than their and those who pull less.

With group learning so popular in today’s classroom, grading students for group activities can be a vexing problem for teachers who are not privy to how the group dynamics are working and for students who resent or feel hampered by other students when the workload is not well-distributed.

In an article published in the *Journal of Chemical Education*, Thomas J. Wenzel, a professor of chemistry at Bates College says he asks his college students to give peer assessments and self-assessments on group lab and classroom work.

“I have found through course surveys that the students appreciate the chance to provide such evaluations, especially in the situation in which they have a laboratory partner who is not fulfilling his or her responsibilities on the project,” writes Wenzel.

“The use of peer- and self-evaluations allows me to provide better feedback to the students and to feel more confident in assigning each individual a grade for their contribution to the group laboratory project.”

One approach is to ask group members open-ended questions about group and individual performance:

Group processing questions include:

- Did everyone in your group contribute to the activity today? If so, explain how; if not, identify what individuals need to do to assure participation by all.
- Did everyone in your group understand the material covered in the activity today? If so, explain how your group assured that everyone understood; if not, identify what your group needs to do to assure that everyone in the group understands the material.
- Identify three things your group could do to work more effectively and efficiently.
- Identify one contribution made by each member of your group to today’s activity.
- What constructive feedback can you give another group member on application of a skill?
- Develop a short-term plan and a long-term plan to strengthen your team’s performance.

Individual questions include:

- Identify three ways you and the other group members have modified or could modify study habits and strategies in order to improve performance on examinations.
- List two strengths and two improvements in reference to yourself in today’s workshop.
- Cite two examples of how you carried out your team responsibility or role.

Wenzel also suggests an alternative approach: Give students a set of specific criteria that they then can evaluate on a numerical scale based on the quality of performance on that specific task, ability or contribution. His sample list includes:

- gathering preliminary background literature;
- helping to develop and write the project plan;
- undertaking a fair share of the work;
- ability to generate good ideas and solve problems;
- ability to arrive at consensus and overcome difficulties;
- ability to facilitate the group’s efforts;
- contribution to the final written report; and
- contribution to the final oral presentation.

Students may be reluctant to criticize peers and may be too generous in their evaluations,

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How to grade individuals for group work

Wenzel says. He stresses that the instructor plays a key role in guiding students to improve individual and group performance and in interpreting the peer- and self-evaluations.

“Participation of the instructor in a discussion of the evaluations and repetitive use of peer evaluation as the term progresses improves the quality of the student responses and feedback,” he says.

Students in Wenzel’s college classes are assigned to groups on the second day of class and the groups work together over the entire term. He tries to ensure that the groups are as heterogeneous as possible and spends a substantial portion of the first class describing the assessment processes and communicating his expectations for students working in the groups.

Halfway through the course Wenzel collects assessments to identify groups with problems. When Wenzel discovers that an individual is not pulling his or her share of the weight he meets with the person to discuss expectations for group work and improvements he hopes to see. In almost all cases, this has had the desired outcome, he says.

“Formative assessment of the workings of a group is useful because it will allow the instructor to intervene with groups that are exhibiting dysfunctional behavior,” Wenzel says. “Group learning is more effective when the groups examine their performance to identify what is working well and what needs improvement.”


Curriculum-based measurement helps evaluate writing progress before high stakes tests

At least 41 states require students to take a writing test. In many of these states, students must pass the test to graduate from high school.

How do teachers know their students, especially their students with disabilities, are on track? How do they know their writing interventions are working when writing, as many administrators know, is notoriously difficult to “measure”?

A new study published in Exceptional Children found that a curriculum-based measurement (CBM) of writing predicted how high school students performed on the Minnesota Basic Standards Test/Minnesota Comprehensive Assessments (MBST/MCA) in written expression. The measure is useful for lower-performing high school students and for English Language Learners (ELLs) who are fairly proficient in English and higher performing, the authors write.

Previous studies on CBM measures have mostly been done with middle school students, and none have examined the use of CBM measures to predict performance on state standards for high school students or for ELLs, the researchers write.

“Our study is the first step in the development of a data-based decision-making system for teachers to use to monitor student progress in written expression,” the researchers say.

“Results reveal that high school students need to write samples that are 5 to 7 min in length and that are scored for CIWS (correct minus incorrect word sequences),” the authors write.

In this study of 183 10th-grade students at two large, urban high schools, students produced two writing samples during their English classes.

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to narrative prompts. The narrative prompts were: “It was a dark and stormy night....” And “I stepped into the time machine and....”. Students were given 30 seconds to think and 10 minutes to write each story. At 3, 5, and 7 minutes, students were instructed to make a slash mark on their paper to indicate how far they were at each time point.

Writing samples were scored four different ways:

- words written (WW);
- words written correctly (WWC);
- correct word sequences (CWS); and
- correct minus incorrect word sequences (CIWS).

Separate scores were calculated for three-, five-, seven- and 10-minute samples of writing performance. The correlation between the two writing sample scores determined “alternate reform reliability” for the CBM measure. Predictive validity was calculated using the mean score for the two writing samples.

WW is the total number of word units written in the sample, regardless of spelling or usage. WWC is the total number of correctly spelled words in the sample. CWS is the number of sequences between two adjacent correctly spelled words and CIWS is the number of correct sequences minus the number of incorrect word sequences. Writing samples were scored by three graduate students who were trained in scoring in a three-hour session. Previous studies have suggested word measures were more effective for younger students and that word sequences were needed for older students.

“Viewed within the context of the technical adequacy of writing measures in general, the criterion-related validity coefficients we obtained in our study of .56 to .60 for CIWS are quite respectable,” the authors write. “Correlations for WW and WWC ranged from .23 to .31, for CWS from .43 to .48, and for CIWS from .56 to .60.”

One simple method for making the data from this measure user-friendly is to report a cut-off score—the score that best predicts passing the state standards test. An alternative is to create a Table of Probable Success that shows the probability of passing a state standards test along the entire continuum of CBM score. “Thus, teachers can view the probability of passing the state standards test associated with a CBM score of 5, 20, or 30,” the researchers say.

Data from a large, representative sample of students from a school, district or state is needed to create a good table, the researchers say. The accuracy of such a table depends on the strength of the relationship between the CBM predictor and the state test.

One limitation of the study, the authors write, is that ELL students in their sample had high levels of English language proficiency and were functioning in mainstream classrooms. Their results do not address the validity and reliability of writing measures for ELL students who are at lower levels of language proficiency.

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