

# Tracking, De-Tracking, and Student Achievement: Is There A Better Way?

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# Why Do Schools Assign Students to Classes by “Ability”?

- ✔ Seems logical and efficient
  - Students differ in their performance levels, so divide students to match instruction more closely to their needs
  - A narrower range of student performance levels makes it easier to organize the curriculum
- ✔ So why is this problematic?

# Problems of Tracking

- Due to circumstances outside of school, separating students by academic performance may also separate them by race and social class
- Homogenous classes lack the diversity that may foster rich discussions

# Problems of Tracking

- Although tracking is intended to provide equally effective instruction to all students, that rarely occurs
  - *Teachers* are also tracked
  - Cycle of low expectations
  - Low-level classes as caricatures
  - Emphasis on procedures in low-level classes, discussion in high-level classes

# Tracking and Unequal Instruction

## Track Level

|                                     | Low  | Middle | High |  |
|-------------------------------------|------|--------|------|--|
| Discussion time<br>(minutes/lesson) | .70  | 1.44   | 3.30 |  |
| Envisionment<br>(standardized)      | -.52 | -.06   | .80  |  |
| Revision of<br>content (0-1)        | .53  | .60    | .73  |  |
| Homework<br>(hours/week)            | .88  | .98    | 2.01 |  |

Source: Applebee, Langer, Nystrand, & Gamoran, 2003.



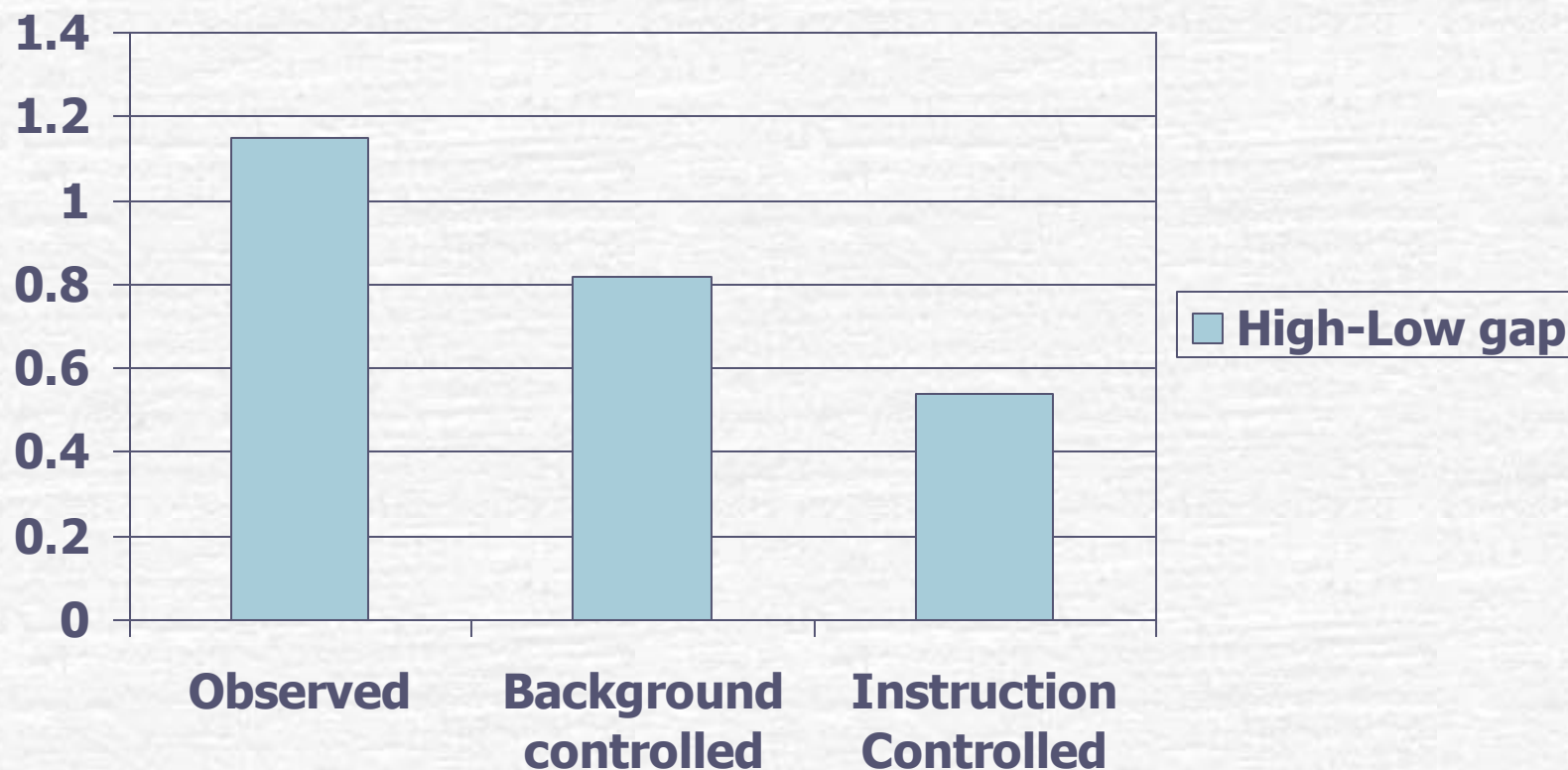
# Tracking and Unequal Instruction

## Track Level

|                                     | Low  | Middle | High | Mixed |
|-------------------------------------|------|--------|------|-------|
| Discussion time<br>(minutes/lesson) | .70  | 1.44   | 3.30 | 1.42  |
| Envisionment<br>(standardized)      | -.52 | -.06   | .80  | -.24  |
| Revision of<br>content (0-1)        | .53  | .60    | .73  | .47   |
| Homework<br>(hours/week)            | .88  | .98    | 2.01 | 1.01  |

Source: Applebee, Langer, Nystrand, & Gamoran, 2003.

# Achievement Gaps between High and Low Tracks



Source: Applebee, Langer, Nystrand, & Gamoran, 2003.

# Problems of Tracking

- Partly as a result of unequal classroom conditions, inequality between students assigned to high- and low-level classes widens over time



# Many Replications of These Findings

- Example: Long, Conger, Iatarola, 2012
  - High school course taking affects test scores, high school completion, postsecondary enrollment and performance
  - Estimated with propensity models to strengthen causal inference
  - Effects largest for disadvantaged students and for those in schools with high proportions of low-income students

# Consequences of Tracking

- No effect on achievement **productivity**
- Increase in achievement **inequality**
- Supporters focus on productivity while critics emphasize inequality



# International Research

- For decades, most of the research on tracking/ability grouping came from the U.S. and U.K.
- Many new international studies have emerged in the last decade
- International research finds the same pattern as in the U.S. and U.K.: tracking is linked to increasing inequality

# International Research

- PISA: Achievement inequality increases more in countries that track students in earlier grades
- TIMSS: Achievement inequality grows more in countries that use ability grouping between classes



# International Research

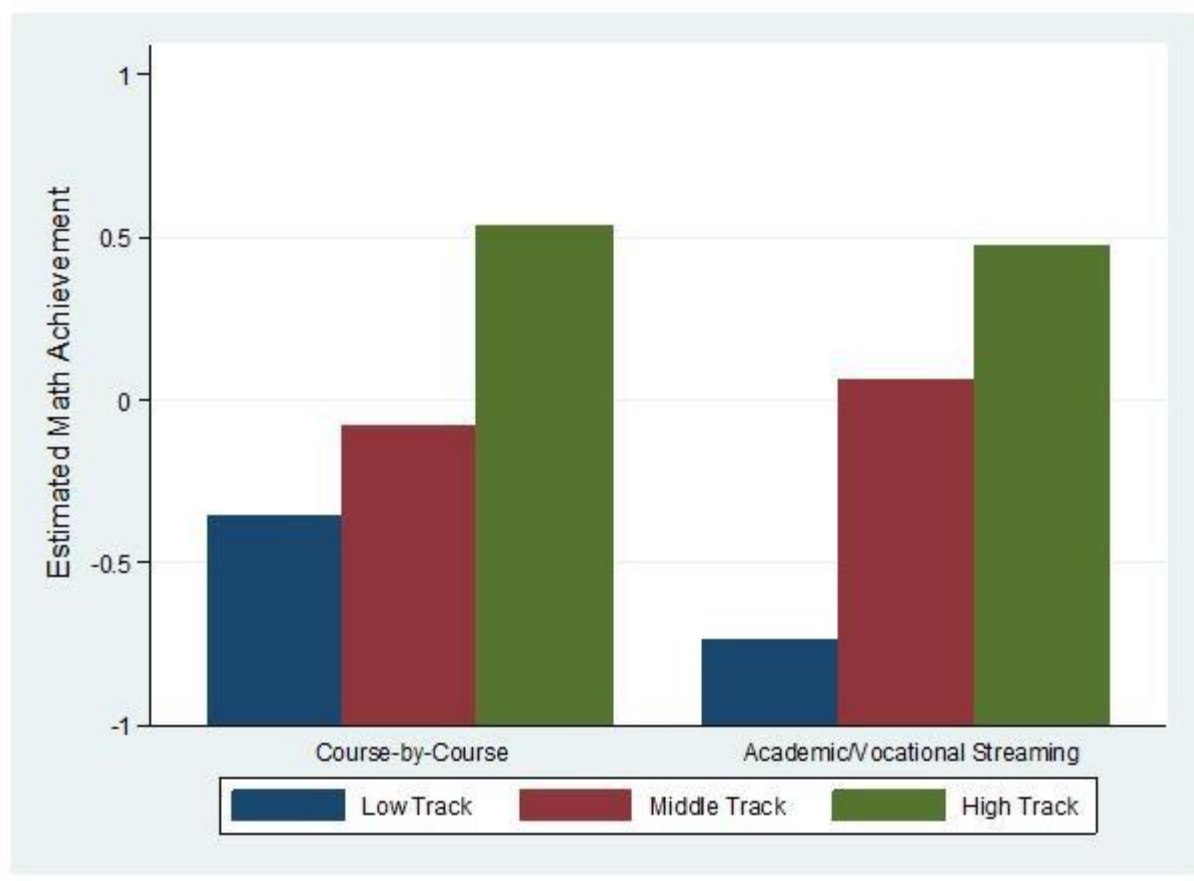
- Tracking and grouping take different forms in different countries
  - Between schools (Japan, Germany)
  - Within schools (US)
  - Between and within schools (Taiwan, UK)
- Results tend to be the same: tracking reinforces inequality without boosting overall productivity



# International Research

- New analysis of PISA contrasts “academic vs vocational tracking” with “course-by course tracking”
  - Finds similar achievement gaps across systems
  - SES disparities in achievement are also similar
- Support for maximally maintained inequality

# International Research



Source: Anna K. Chmielewski, *AJE Forum*, 9/15/2014

# International Research

- Exception: M. Brooded study of education in Taiwan (*Sociology of Education*, 1997)
  - High-stakes exams targeted at different achievement levels led *all* students to work hard at their studies
  - Tracking contributed to *smaller* achievement gaps
- Replications by me: Israel, Scotland

# International Research

- ☞ International research suggests effects of tracking/grouping depend on context
- ☞ Incentives matter for low achievers
- ☞ Difficult to implement on a large scale
  - Efforts to use ability grouping to raise standards have not succeeded in the U.S.

# Tracking and English Learners

- Research on tracking of English learners is a hot topic in the US
  - Landmark study by Callahan (2005): track placement matters more than English proficiency for academic performance
  - Low track assignment holds back advancement of English learners



# Tracking and English Learners

- Failure to reclassify English learners as proficient relegates students to a watered-down curriculum
- Policies are inconsistent across states
- One study showed that a state that reclassified students more quickly produced better test scores over time
  - Probably because students experienced richer academic content

# Tracking and English Learners

- Language policies also differ across states, and even within states and school districts
  - English immersion versus two-language programs
  - New research suggests that English immersion leads to faster reclassification, but two-language programs have better results in the long term

# Tracking and English Learners

- Another study showed that English development classes helped students right after they arrived, but were harmful for students who were retained too long
  - Diverted students from rich academic content

# Tracking and English Learners

## ☞ Implications for Europe

- Ethnic minority groups increasing in size
- Ethnic inequality increasingly recognized
- Tracking reinforces ethnic inequality in Europe just as in the US

# Responses to the Problem

- Reduce the use of tracking, but provide challenging instruction to high achievers
- Maintain tracking, but provide effective instruction in low tracks
- For English learners, break the link between English proficiency and access to academic content



# Responses to the Problem

- New research suggests promising new directions for both responses
  - Conditions that support successful mixed-ability teaching
  - Conditions that support effective instruction in low groups or tracks

# New Research Points to New Directions

- ✓ Successful mixed-ability teaching
- ✓ Supplemental instruction for low-track students
- ✓ Grouping students to maximize learning
- ✓ Optimal matching of students and teachers

# Successful Mixed-Ability Teaching

- Case study of detracking in a New York school district
  - Carol Burris and colleagues
  - Replaced tracking with mixed-ability teaching in middle and high school math
  - Improved outcomes for low achievers without losses by high achievers

# Successful Mixed-Ability Teaching

- Middle school reform
  - Accelerated curriculum for all students
  - Extra support workshop for struggling students
  - Common planning time for teachers
  - Increased use of calculators

# Successful Mixed-Ability Teaching

- ✓ High school reform
  - All students assigned to Regents classes
  - Supplementary class for students who struggled with the more advanced material
    - Met three times each week



# Successful Mixed-Ability Teaching

## Research design

- Interrupted time series
- Compares successive cohorts of students in the same school, and to other schools that did not undergo the reform

# Burris: High School Results



Source: Burris, Heubert, and Levin, 2006.

# Conditions that Support Successful Mixed-Ability Teaching

- ✓ Substantial supplementary instruction for low-performing students
  - High school: 50% more instructional time
- ✓ Note: this was an affluent district with few high-needs students
- ✓ Will these results generalize?

# Conditions that Support Successful Mixed-Ability Teaching

- ✔ Similar findings from a 1998 study of mixed-ability teaching in an urban school
  - Additional resources allowed a Saturday tutoring program and small class sizes
  - Admission required an interview for students
  - Still a diverse student body



# Conditions that Support Successful Mixed-Ability Teaching

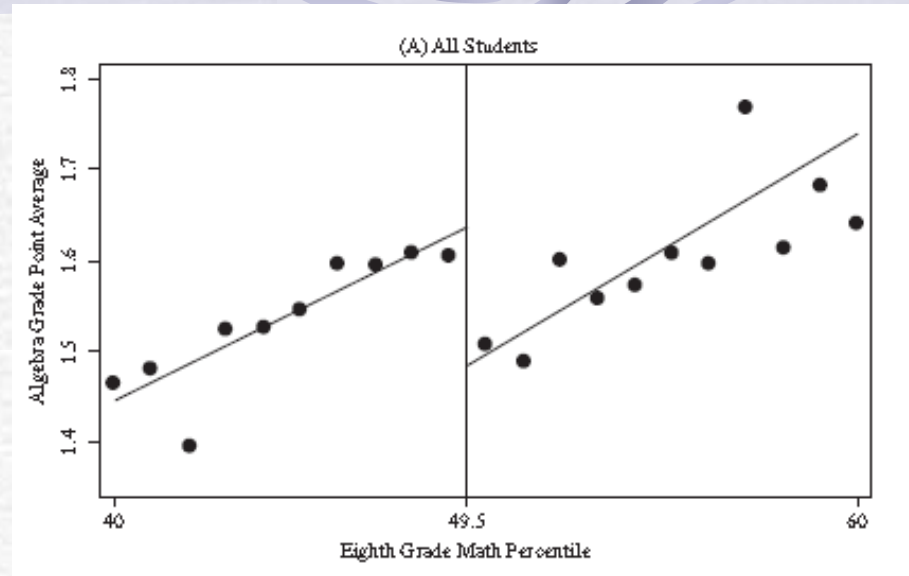
- ✓ Evidence is accumulating that:
  - Successful mixed-ability teaching is possible
  - Extra resources to support low-achieving students is an enabling condition



# Supplemental Instruction in a Tracked System

- New study of long-run effects of double-dose algebra for low achievers
  - In Chicago – NOT an affluent district
- Double dose boosted test scores, credits earned, high school graduation, college enrollment
- Shows value of following reform for the long term

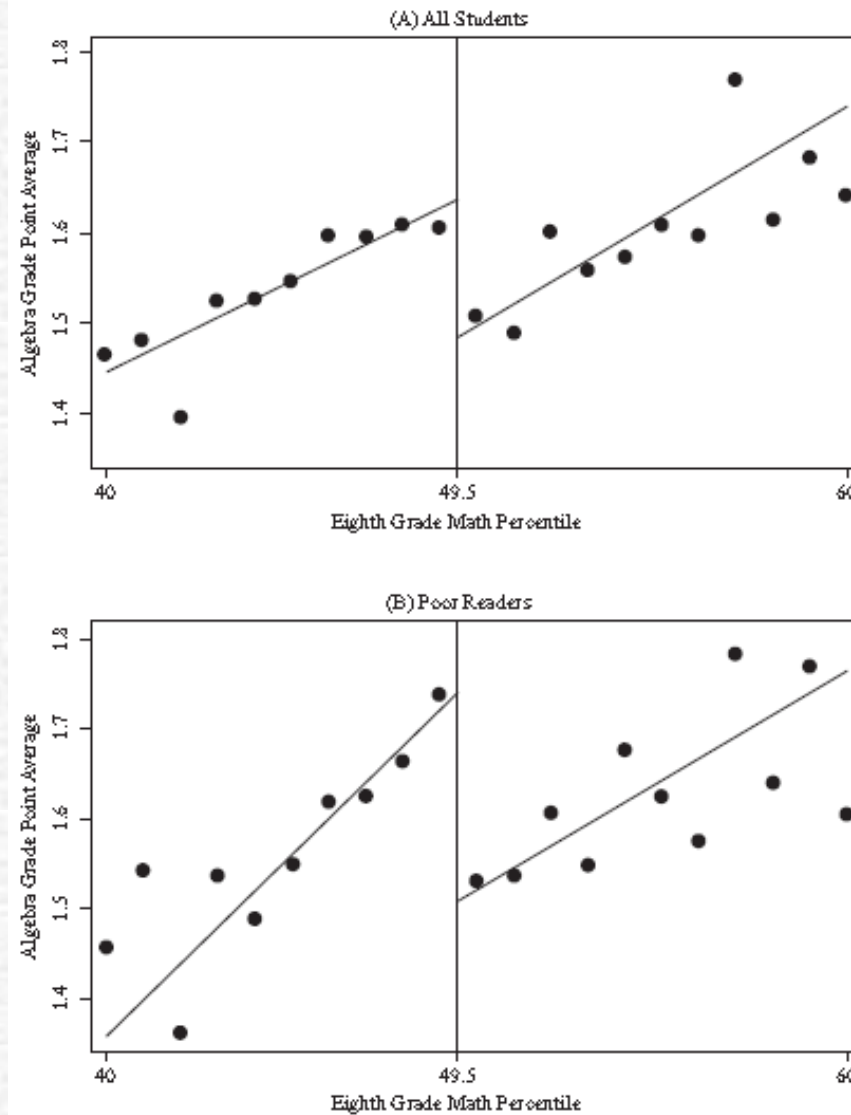
Regression discontinuity analysis on high school grades



Source: Cortes, Goodman, & Nomi, *Journal of Human Resources* 2015.

Regression discontinuity analysis on high school grades

Strongest effects for weakest students



Source: Cortes, Goodman, & Nomi, *Journal of Human Resources* 2015.

# Supplemental Instruction in a Tracked System

- What matters may be the supplemental instruction, not whether the students are taught in a tracked or mixed-ability setting

# Grouping Students to Close Achievement Gaps

- New research on grouping systems that close gaps instead of magnifying gaps
  - Carol Connor and colleagues
  - A series of studies on grouping students for early reading instruction



# Grouping Students to Close Achievement Gaps

- Diagnosis and instructional response
  - Assess reading performance
  - Input assessment results to a computer algorithm called “Assessment to Instruction” (A2i)
    - Diagnoses student performance
    - Recommends an instructional response
    - Recommends within-class groupings to facilitate instructional responses

# Grouping Students to Close Achievement Gaps

## Randomized evaluation

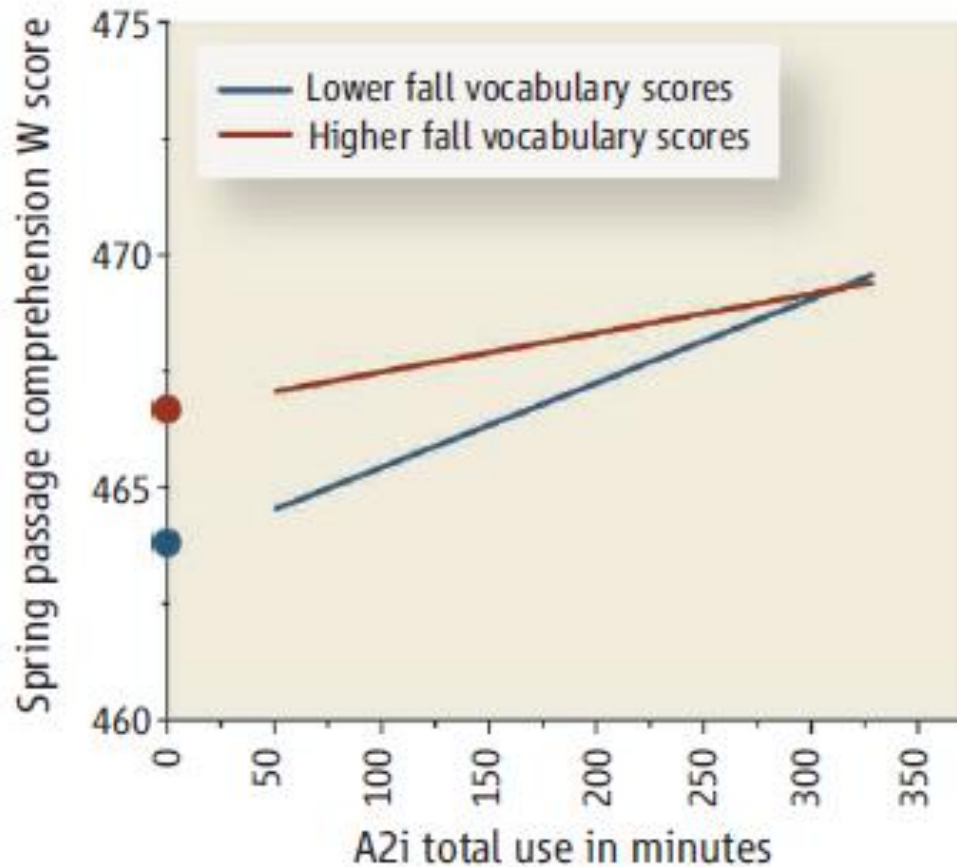
- Teachers in the “treatment” group received the A2i software and training on how to use it
- Comparison group of teachers who did not receive A2i

# Grouping Students to Close Achievement Gaps

## Results

- Students whose teachers were assigned to the A2i group outperformed those in the control conditions
- Low-achieving students received the largest benefits
- The benefits were greatest for students whose teachers made most use of A2i

# Connor: First Grade Results



Source: Connor et al. 2007, p. 465.



# Conditions that Support Successful Use of Grouping

- ✓ Connor's results echo long-ago conclusions of Robert Slavin (1987)
- ✓ Tracking can be effective *if*:
  - Students are assigned to groups based on the specific skill to be taught
  - Instruction is targeted to the specific skill
  - Grouping arrangements are flexible



# Grouping Students to Close Achievement Gaps

- ☛ Another approach to maximizing achievement through grouping
  - Optimal matching of teachers and students
- ☛ Annual testing of students can provide evidence of teachers' contributions to student achievement
- ☛ Are some teachers more effective with one type of students than with others?

# Grouping Students to Close Achievement Gaps

- ✓ Requirements for optimal matching
  - Annual achievement data
  - Students linked across years and to teachers
  - Test for differential effects
    - Teachers may not produce the same effects with all students
    - In particular – some may be more effective with high achievers, others with low achievers

# Grouping Students to Close Achievement Gaps

- *IF* there are differential teacher effects
  - Students may be assigned to teachers who are particularly effective with students with their qualities
  - Students would get teachers who, based on past performance, are expected to bring out the best in them
  - Teachers would get students who are like those with whom they've had success

# Grouping Students to Close Achievement Gaps

## Problems with optimal matching

- Not clear there are differential effects, or that they are widespread
  - What if many teachers are especially effective with high achievers, but few are especially effective with low achievers?
- Not clear that assessments are good enough to be meaningful
- No study has examined this in practice



# Conclusions

- *“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



# Conclusions

- ✦ Eliminate dead-end courses.
- ✦ Break the link between language proficiency and access to content.
- ✦ Where tracking is maintained, implement high standards for low-achieving students.
- ✦ Where tracking is eliminated, see that standards for high-achieving students are not lowered.

# Conclusions

- Under the best of circumstances, both grouping and mixed-ability teaching can be successful
- It is not clear whether the best circumstances can be widely implemented