

Achievement gap or opportunity gap?

Changing the perspective about school performance in mathematics

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Two teachers

- Teacher A and teacher B are in their first year of teaching.
- In the school of teacher A, the principal is brand new and is the fourth principal in three years; all teachers have three years or less experience teaching.

Two teachers

- In the school of teacher B, the principal has been with the school for eight years. Teacher B is the only new teacher this year. Most teachers have more than five years of experience.

Two principals

- Principal A is in her first year as a principal. Most of her teachers have three or less years of experience. She is given a budget that only allows her to hire brand new teachers.
- Principal B is an experienced principal in the same district. She is given a budget that allows her to keep all the experienced teachers in her staff and be able to hire additional experienced teachers.

This talk is not about blaming the victims

- Students
- Teachers
- Parents
- Principals

In education it is important to recognize a symptom such as low achievement in mathematics, but it is even more critical to understand and address its underlying causes.

Changing the way in which we frame the problem of the disparity of performance in mathematics among different groups of students can lead to an understanding of the causes for these disparities.

The so called achievement gap

- “Students of color continue to lag behind white students and some Asian students, and the so-called academic achievement gap still exists.” (State superintendent of public instruction)
- “Across the U.S., a gap in academic achievement persists between minority and disadvantaged students and their white counterparts.” (Governors’ Association)

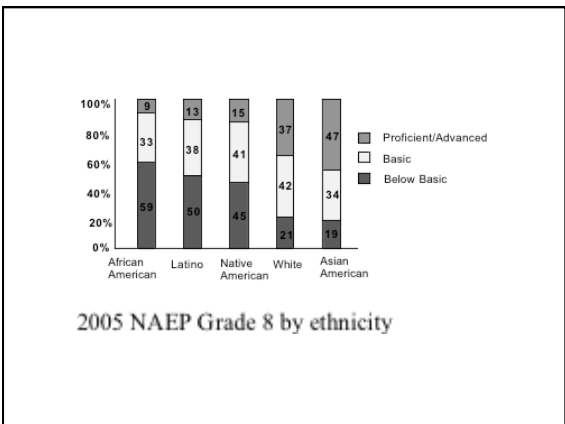
Hidden assumptions?

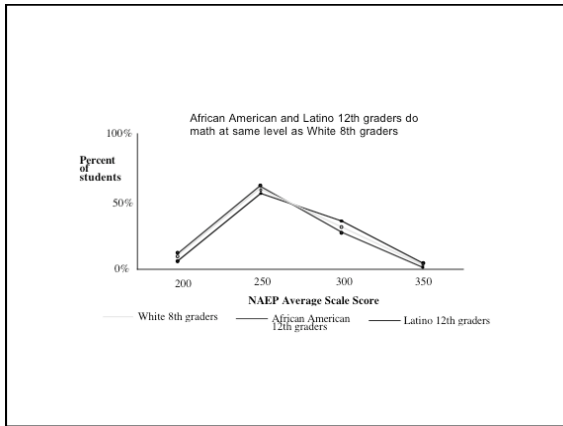
- What images do we form about the students who lag behind?
- What kind of assumptions do we make about their capacity of learning?
- What assumptions do we make about the educational system?

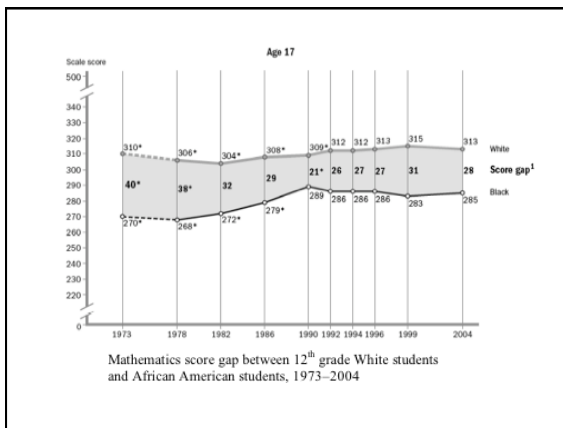
Danger of stereotyping

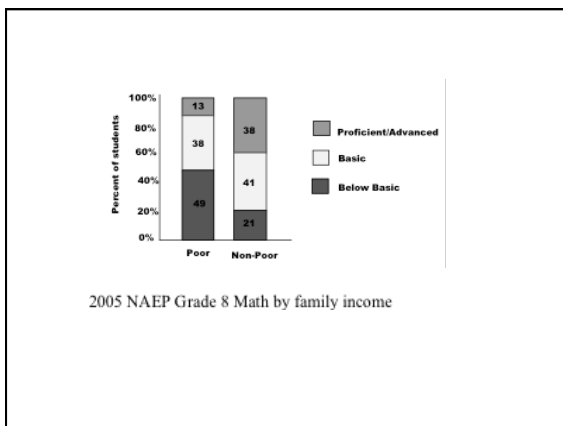
- Blanket statements about the low performance of certain groups of students in our schools without mentioning the underlying causes may reinforce prejudices and stereotypical images.
- Greene and Foster (2004) state that being *minority* is a disadvantage students bring to school and claim that as the percentage of White (non-Hispanic) students decreases in a school, the “teachability index” decreases, too.

Striking and persistent differences in performance in mathematics in state and national assessments between different groups of students in our schools.









Factors outside school have been studied to explain the differences in achievement

- Differences in intelligence
- Poverty and deprivation
- Cultural disadvantage and deprivation
- Cultural and language discontinuities
- Quality of family's life style.

A paradigm shift

Analyze the practice and the structure of classrooms, schools, and districts to seek responses to questions

Why do such disparities in school achievement exist?

What are the causes of these gaps?

Many low-income and minority students systematically

- Have less access to experienced and qualified teachers
- Face low expectations
- Receive less funding per student

These dimensions of opportunity are not the only important factors

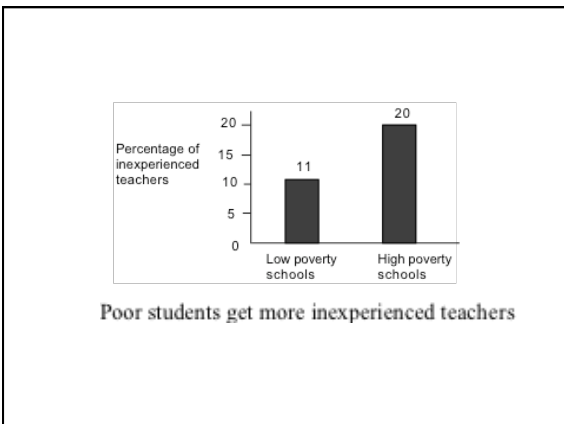
- Classroom practices are linked to student performance
- Bias in testing
- Language

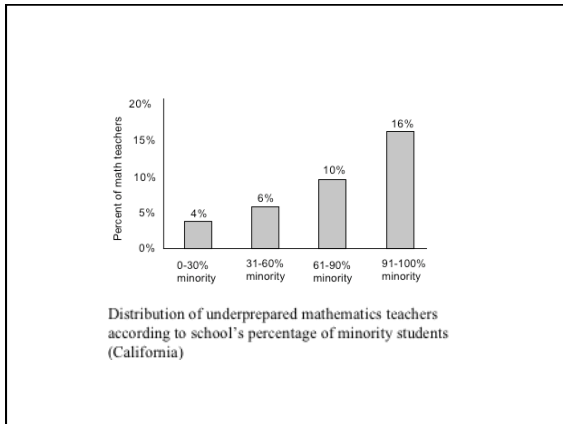
Having several experienced and highly qualified teachers in a row can improve dramatically the performance of students.

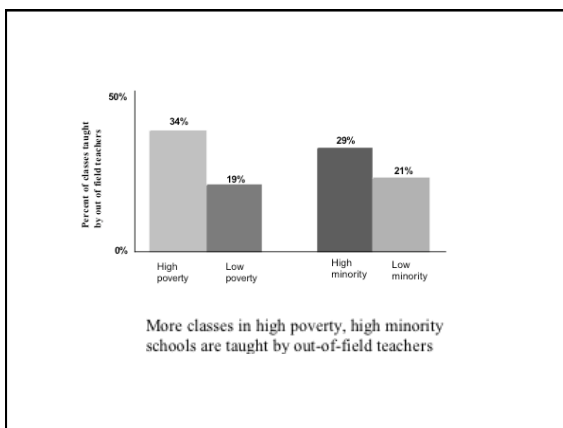
By pointing out inequities in the distribution of teacher quality among schools, my intention is not to denigrate the many outstanding, talented and dedicated teachers who are teaching our most disadvantaged children, often under very hard conditions.

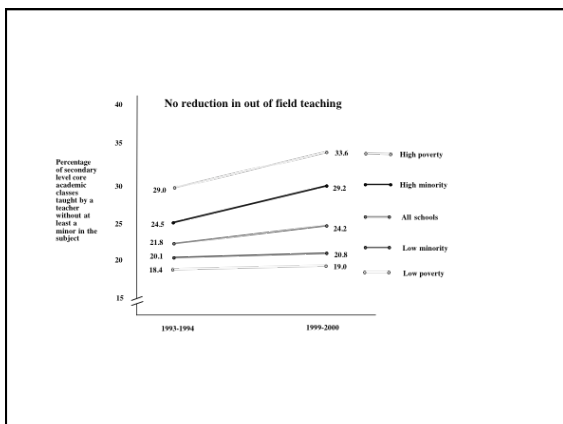
The intention is to underline the importance for all students to have access to their fair share of such exemplary teachers.

By stressing the importance of experienced and qualified teachers, the intention is not to blame inexperienced teachers, but to focus on structural inequities in opportunities for students at the school, district, and state level.







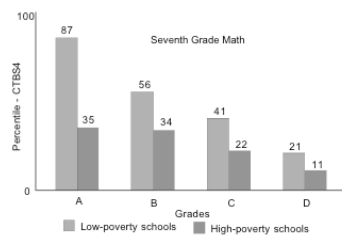



African American and Latino students, and low income students have fewer opportunities to have experienced teachers, teachers who are well qualified in mathematics, and teachers who are generally well prepared.

Low expectations


Teachers who had at least 60% African American or Latino students in their classrooms were far more likely to test low-level cognitive objectives than teachers who had a majority of White students in their classrooms

Students in poor schools who receive As perform in Comprehensive Tests of Basic Skills at the level of students who receive Cs in affluent schools.






- African American and Latinos are more likely than Whites to be placed in low-ability and remedial classes or in special education programs
- African American and Latino students are also less likely to be identified as capable learners and placed in enriched or accelerated programs



- 32% of White 8th-graders were in what teachers considered high ability classes
- Only 16% of Latino and 16% of African American 8th-graders were in such classes



- Only 49% of Latinos and 47% of African American students have taken prealgebra or algebra in 8th grade compared to 68% of European American students
- The grade students take prealgebra affects whether they will have the opportunity to take advanced mathematics (pre-calculus and calculus) in high school.

“We thought we were tracking students in or out of higher-level mathematics courses by their ability. Then we looked at the data on student achievement on standardized tests. We learned that African American and Latino students who scored as high as white students were getting tracked out of college-level courses.”
(an urban high school mathematics teacher)

Opportunity to take Advanced Placement courses

- In California, regardless of high school size, the availability of AP courses decreases as the percentage of African Americans and Latinos in the school population increases

Access to Advanced Placement courses

- In California one student filed a statewide class-action suit to achieve equitable access to advanced placement courses.
- Her school (99% African American and Latino students) offered 3 advanced placement courses, none in science or mathematics.
- Other public high schools (9% of African American and Latino students) offered more than 14 advanced placement courses, including calculus, computer programming, and physics

Gaps in opportunities to receive equal funding

- Gaps across districts
- Gaps within districts

Per student spending in several metropolitan areas 2002-2003

Metropolitan area	School District	Spending per student	Hispanic + African American	Low income
Chicago area	Highland Park Deerfield (HS)	\$17,291	10%	8%
	Chicago	\$8,482	87%	85%
Philadelphia area	Lower Merion	\$17,261	9%	4%
	Philadelphia	\$9,299	79%	71%
Boston area	Lincoln (K-8)	\$12,775	19%	11%
	Lawrence	\$7,904	86%	69%
New York City area	Manhasset	\$22,311	9%	5%
	New York City	\$11,627	72%	83%

Unequal funding exists also *within* districts.

- In many urban districts there are huge differences in average salaries for teachers from one school to another.

Different averages

- In Baltimore City Schools the district average salary of the teachers was \$47,178
- In one school the average salary of the teachers was only \$37,618
- In another school the average was more than \$57,000

- This inequity is not transparent because urban districts calculate school budgets using average teacher costs.
- A school with mainly senior staff with higher salaries does not appear in the official budget as receiving more money than another school that is staffed mainly by beginning teachers with lower salaries.

- Schools within the same district with a larger proportion of minority or low income students often have a larger proportion of inexperienced teachers.
- The schools that benefit from this budgeting system are schools with larger proportions of upper income students.

Closing the gap

The position of NCTM with respect to closing the achievement gap is that all students

- should have equitable and optimal opportunities to learn mathematics free from bias
- need the opportunity to learn challenging mathematics from a well-qualified teacher who will make connections to the background, needs, and cultures of all learners.

The solution is thus framed as opportunity to learn.

Highly achieving schools in mathematics serving low-income students from different ethnic backgrounds

- Teachers have high expectations and offer sustained support for academic excellence.
- Teachers make teaching and learning their priorities
- They provide supplemental support for student learning
- They regularly review basic skills learned in the past.

Highly achieving schools in mathematics serving low-income students

- Have a great variety of teaching resources to support their teaching
- Provide regular access to professional development opportunities for their teachers

Final comments

Inequities in achievement are often perceived as the result of a hierarchy of competence. When students who have been given more opportunities to learn show higher achievement they are perceived as more capable or having more aptitude.

- Schools alone cannot redress all the inequities in opportunities students face in society.
- Schools can only be a part of a solution, but schools must be part of the solution.
- Inequities in society cannot be ameliorated without the full participation of the schools and a clear understanding of the problem.

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