

Equitable Teaching and Learning: Tracking and Detracking of Mathematics for Minority and Low-Socioeconomic Students



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Abstract

Many science, technology, engineering, and mathematics (STEM) classrooms are faced with a common issue; lack of involvement from minority and low-socioeconomic students. Not only are these students not participating in STEM, but they are not receiving as much support when it comes to pursuing STEM as an option for higher education or as a career. A major part of this pattern starts with a system used by many schools called tracking. "In the US, it has become obvious that tracking is causing inequality in students' mathematics levels" (Holm, 2013). Based on my findings, there is currently a presence of bias and discrepancy when involving minorities in not only mathematics, but STEM as a whole.

Research Questions

- What types of students are placed on a lower/higher paced track than other students? Are they still placed that way today?
- How can teachers as educational facilitators influence minority and low-socioeconomic students to participate in detracked STEM classrooms?

Pros and Cons

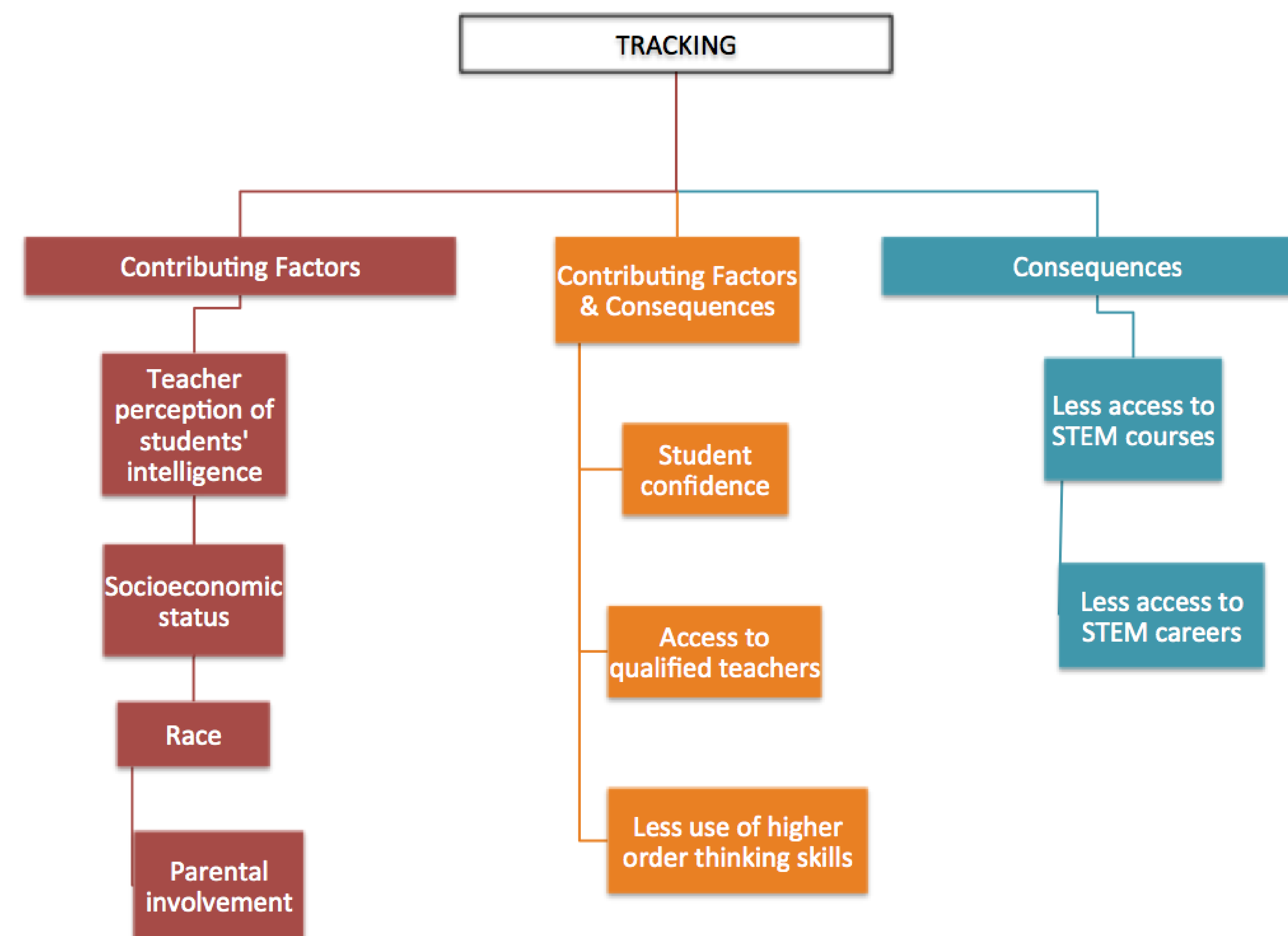
Pros

- Multiple forms
- Allows lesson modifying to satisfy students' abilities
- Targeted instruction

Cons

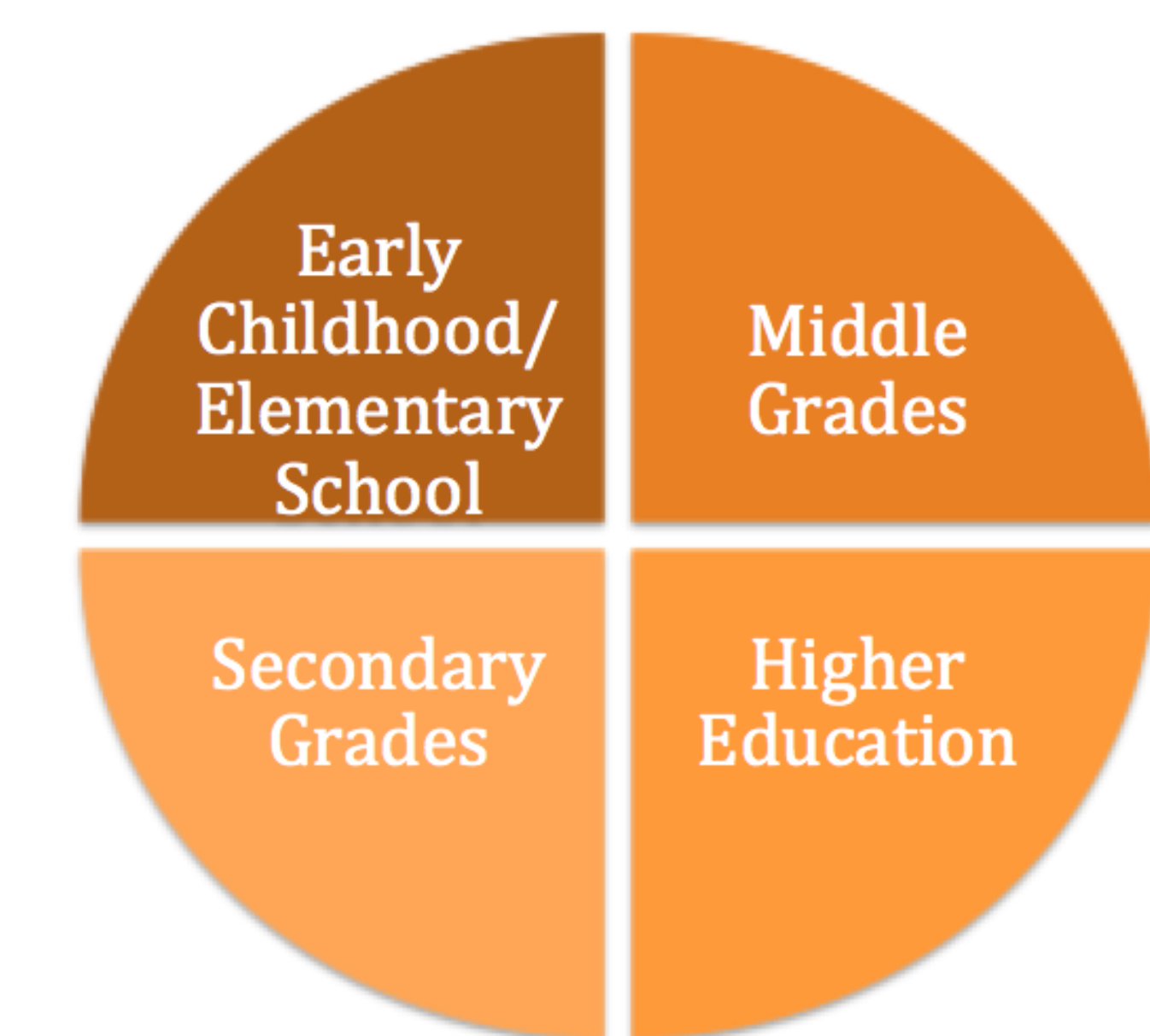
- Unfair placement
- Lack of resources
- Self-image
- Teacher quality

Conceptual Framework



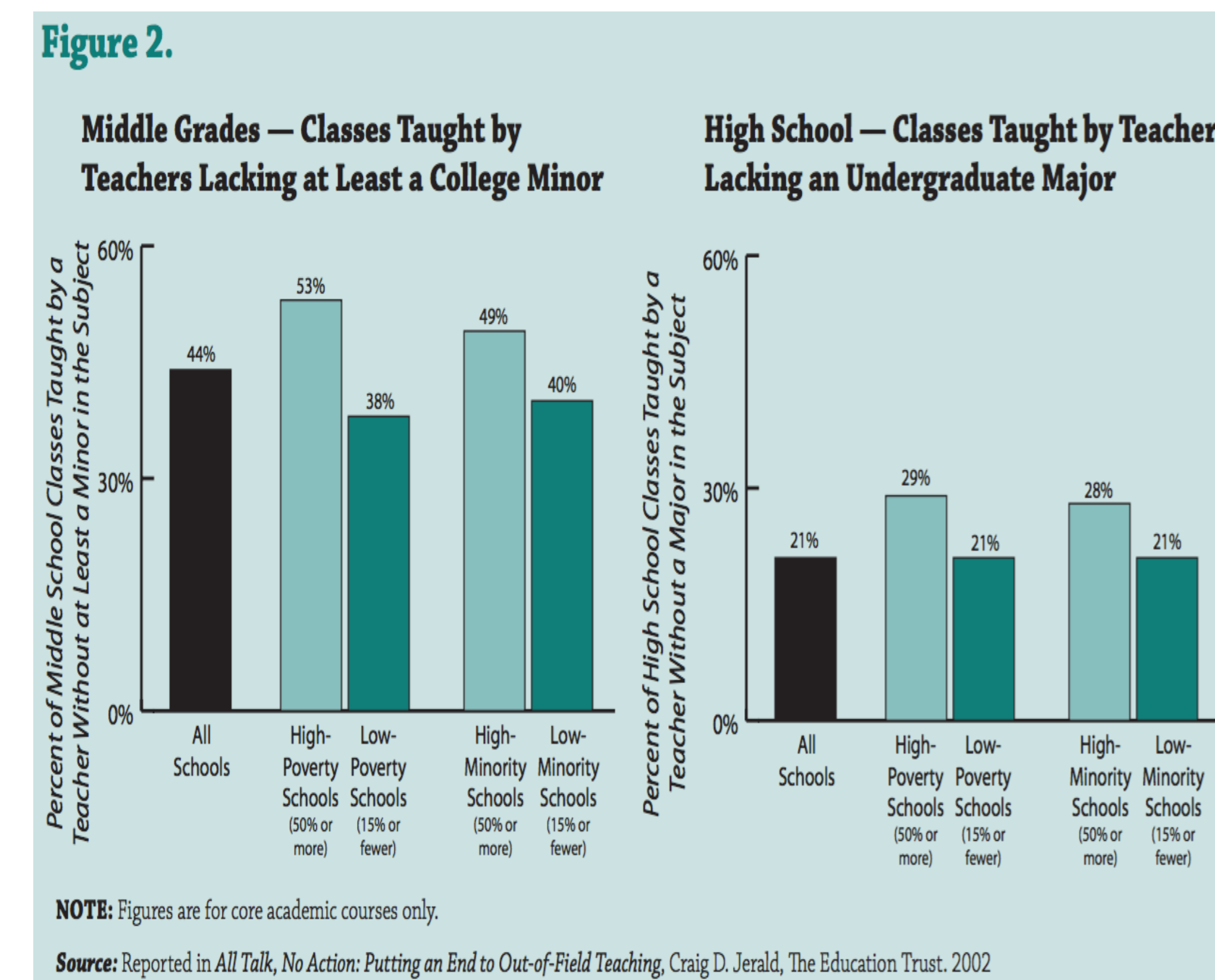
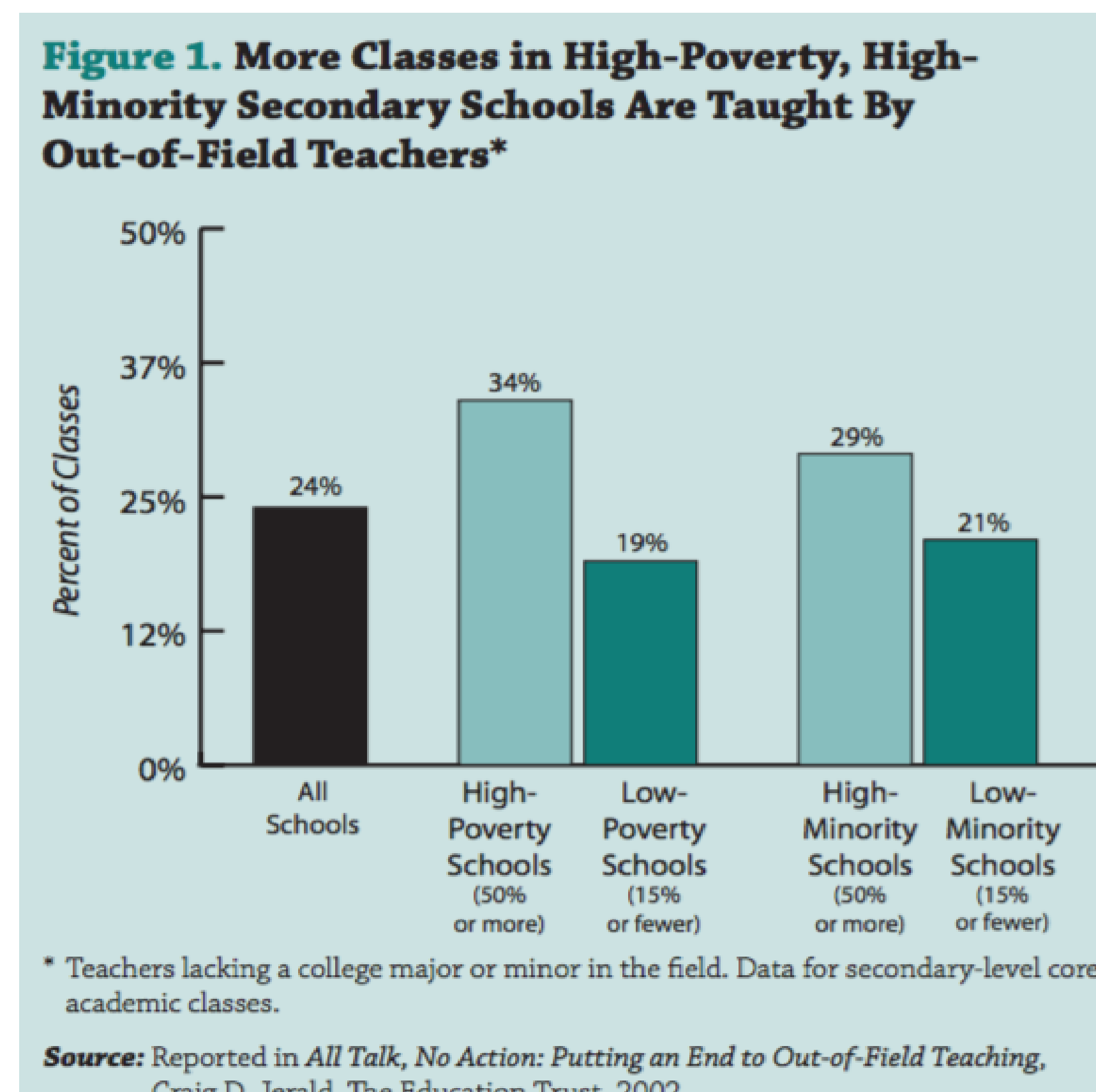
Conclusions

- Collaboration amongst students, parents, peers, and administrators
- Cultural responsiveness, sensitivity, and awareness of stereotypes
- Curriculum reform
- Expectations
 - Teacher from student
 - Student from teacher
 - Teacher from parent
 - Parent from teacher
- Need for qualified, minority, math teachers



Socioeconomic and Cultural Segregation

- Study done by Haycock and Peske (2018) comparing the quality and qualifications of teachers in high and low poverty areas
- Data collected from three large cities involved in tracking: Cleveland, Ohio, Chicago, Illinois, and Milwaukee, Wisconsin
- Low-socioeconomic/minority students assigned novice, out-of-field teachers twice as often as student who were not minorities and upper-class
- 70% of minority math classes taught by a teacher who does not even have a college minor in math or a math-related field
- "Industrial schooling" by Jeanie Oaks in the 1980's, suggests "upper-class students received more educational opportunities while lower-income students were funneled into vocational programs and given limited educational opportunities" (Barrington, 2018)



Implications and Future Work

Implications

- Personal: raising awareness of unjustified tracking of minorities
- Teachers and Administrators: adjustment of policies, increasing parent involvement and awareness

Future Work

- Data collect through a survey for parents, teachers, students and administrators

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