Broadening Participation in STEM by Addressing the Gifted Gap

Lenora Crabtree, UNCC
Lmcrabtr@uncc.edu

Sonyia Richardson, UNCC
Srichardson@uncc.edu
“Yes, he’s smart. Gifted probably. It’s a shame. If he had been born in a different neighborhood or to a different family, there is no telling what he might have become.”

*High school teacher*
The Gifted Gap, STEM Education, and Economic Immobility

Lenora M. Crabtree, Sonyia C. Richardson, and Chance W. Lewis

Abstract
Systemic inequities in educational opportunities contribute to reduced economic mobility. Extensive research has documented disproportionality in gifted education at national and state levels. However, limited research examines inequities in gifted education within districts. Informed by critical systems theory (CST), this research provides an analysis of the Gifted Gap in a school district serving a growing metropolitan area with surprisingly limited economic mobility. Results reveal underrepresentation of students experiencing poverty, and Black and Latinx students of all socioeconomic groups in gifted education programs. Inequities in gifted education create systemic barriers including reduced enrollment in Advanced Placement (AP) courses, a factor that impedes college completion and participation in science, technology, engineering, and math (STEM) research and innovation. Reducing gifted education disproportionality is a promising way to increase economic mobility and broaden participation in STEM.

Keywords
gifted education, disproportionality, STEM, economic mobility, Advanced Placement
Agenda

- How does Gifted Education disproportionality relate to the Opportunity Gap in STEM?

- Inquiry Activity: Is there a Gifted Gap in my district? How does my school contribute to limited opportunities for students in STEM?

- What can I do to bridge the gap in my school and community?
The Opportunity Gap and STEM

❖ In 2015, overall U.S. population:
  - Black (12%) and Latinx (15%)

Science & Engineering (S&E) sector:
  - Black (5%) and Latinx (6%)

❖ STEM Occupations provide Economic Opportunity
  - 50% of persons employed in the S&E sector earn annual salaries above $78K
  - 2010: U.S unemployment - 9.6%.
  - Science & Engineering unemployment – 3.9%

(National Science Foundation, 2018)
What factors contribute to the STEM Opportunity Gap?
Digging Deeper: Attaining a STEM Degree

What percentage of students who intend to major in STEM graduate with a degree in a STEM field?

- 46% - White students
- 27% - Black & Latinx students

Academic coursework prior to college accounts for a larger portion of the variance in college completion rates between Black and White students than any other factor including socioeconomic status.

(Flores et al., 2017; Hurtado, Newman, Tran & Chang, 2010)
Digging Deeper: The Advanced Placement (AP) Gap

❖ In 2011-2012, the U.S. total public school population:
  ▪ Black (16%) and Latinx (24%)

  Enrollment in AP science courses:
  ▪ Black (7.5%) and Latinx (13.5%)

❖ Predominantly White high schools offer more AP courses than predominantly Black high schools.

❖ Over 65% of Black & Latinx students with PSAT scores predictive of success in AP science courses are not enrolled in those courses.

Digging Deeper:
What factors and experiences influence enrollment in advanced courses?

Participation in Gifted Education programs results in:

- Improved academic performance
- Increased self-efficacy
- Higher levels of engagement
- Improved self-confidence

Increased enrollment in advanced high school courses = the "annointment effect"

(Darity & Jolla, 2009; Grissom & Redding, 2016; Milner & Ford, 2007; Tyson, 2011)
Digging Deeper: Finding the Roots of the AP Gap
The Gifted Gap:

The difference in the number of students at low poverty elementary and middle schools receiving gifted education services and those at high poverty schools receiving gifted education services.
Digging Deeper: What factors contribute to the Gifted Gap?

**Socio-Economic**
- High numbers of early career teachers in high poverty schools
- Curriculum narrowing as a response to high stakes testing

**Racial/Ethnic**
- Identification methods privilege Euro-centric ways of knowing and being
- Educators lack training in identifying giftedness
- Implicit/Racial bias
- Limited dual-language proficiency

(Peters & Engerrand, 2016; Berliner, 2007; Coronado & Lewis, 2017; Ford, 1995; Goings & Ford, 2018; McBee, 2010; Grissom & Redding, 2016)
STAMPED FROM THE BEGINNING
The Definitive History of Racist Ideas in America
Ibram X. Kendi

THE MISMEASURE OF MAN
Stephen Jay Gould
The definitive refutation to the argument of The Bell Curve
REVISED AND EXPANDED. WITH A NEW INTRODUCTION
Digging Deeper: Exploring the Gifted Gap

Fordham Foundation Report

January 2018

Link: Is There a Gifted Gap?
The Gifted Gap

The Gifted Gap in North Carolina is twice the national Gifted Gap.

(Yaluma & Tyner, 2018)
The Gifted Gap in one identified district in North Carolina is 2.5 times the national Gifted Gap.

For MSD: Low Poverty Schools, N=29; High Poverty Schools, N=66
Student Participation in Gifted Education Programs varies by School Socioeconomic Status

% of Students enrolled in Gifted Education Program

% of Students qualified for Free or Reduced-Priced Lunch

\[ y = -0.0018x + 0.2031 \]
\[ R^2 = 0.52628 \]

\[ r = -0.72 \]
In the district studied, students attending LP high schools are 4 times more likely to take an AP course than those attending HP high schools.
The number of AP courses offered at district high schools as a function of FRPL percentage at that high school. \( r = -.61 \)
Assessing the Gifted Gap – A Deeper Dive:

Go to [http://bit.ly/giftedgap](http://bit.ly/giftedgap) on your device or use one of the handouts provided.

Open the Google Form “Deeper Dive: Investigating the Gifted Gap at the School Level” and conduct the investigation.

- Is the distribution of advanced academic opportunities in your school or district equitable?
- What other data on this site is of interest to you?
To calculate the Gifted Gap at the District Level:

Google Form = Deeper Dive: District Level Investigation

- Identify all elementary and middle schools by FRPL percentages
  - above 75% (high poverty)
  - below 25% (low poverty)

- Create a spreadsheet and enter:
  - Name of School
  - Code for high or low poverty
  - Total School Population
  - Number of students in Gifted Education programs
Black and Latinx students in low poverty high schools have limited access to gifted education services.
Patterns of disproportionality produce extensive racial gaps in access to advanced academic courses.
Small Group Inquiry:
What patterns of (in)equity do you see?
Exploring your district’s Gifted Education Plan

- What is your district’s plan for identification?
- How are the needs of culturally and linguistically diverse students addressed through the assessment process?
In what ways does our background, cultural heritage, educational experiences and life history impact who we see as “gifted?”
What role can educators play in closing the Gifted Gap?
Let’s Play Solution-Focused 3 on 3!

- 3 Teammates
- 3 Solutions
- 3 Roles
  - Recorder
  - Reporter
  - Timekeeper
“We will bust down the doors to get a student qualified for special education, are we willing to do the same for our gifted students?”

Michael Hayes, 28 year veteran educator
Fifth Grade Math Teacher

Any questions?
Contact Information

Lenora Crabtree, MS
Instructor - Biology, University Honors Program & LEADS
Doctoral Candidate, Curriculum & Instruction, Urban Education
UNC Charlotte
Lmcrabtr@uncc.edu

Sonyia Richardson, MSW, LCSW
Clinical Assistant Professor
Doctoral Candidate, Curriculum & Instruction, Urban Education
UNC Charlotte
srichardson@uncc.edu
@sonyiacrich
Academically or intellectually gifted (AIG) students perform or show the potential to perform at substantially high levels of accomplishment when compared with others of their age, experiences or environment. Academically or intellectually gifted students exhibit high performance capability in intellectual areas, specific academic fields, or in both the intellectual areas and specific academic fields. Academically or intellectually gifted students require differentiated educational services beyond those ordinarily provided by the regular educational program. Outstanding abilities are present in students from all cultural groups, across all economic strata, and in all areas of human endeavor.
References


References


