

Title:

Access to Effective Teaching for Disadvantaged Students in 29 School Districts

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Background / Context:

Recent federal policy initiatives are aimed at improving disadvantaged students' access to effective teaching. These efforts, including Race to the Top and the Teacher Incentive Fund, arise from concerns that disadvantaged students are taught by less effective teachers.

A growing body of research uses value-added analysis to measure teacher effectiveness and then examine whether disadvantaged students receive less effective teaching. Value added measures a teacher's contribution to student learning, accounting for the student's previous achievement level and background characteristics.

Three studies compared the prevalence of high value added teachers in schools with high- and low-proportions of disadvantaged students. In Tennessee, highly effective teachers made up 17 percent of all teachers in the more disadvantaged schools compared to 21 percent in schools with lower percentages of low-income and minority students (Tennessee Department of Education 2007). In Los Angeles, students eligible for a free or reduced-price lunch (FRL) in upper elementary and middle school grades were less likely than non-FRL students to be taught by a highly effective teacher (Hahnel and Jackson 2012).

A study of 10 large districts found that high value-added teachers in English/language arts (ELA) and math were underrepresented in the highest-poverty middle schools within districts (Glazerman and Max 2011). Highly effective elementary school teachers, in contrast, were evenly distributed among high- and low-poverty schools. Access to effective teachers varied across the 10 districts: some districts had unequal access favoring low-poverty schools for elementary and middle schools, others for middle schools only, and two districts had unequal access favoring high-poverty elementary schools.

Two other studies measured access to effective teaching by comparing the average value added of teachers in higher- and lower-poverty schools. A study of high school teachers in all subject areas in North Carolina found that teachers in the highest poverty schools had average value added that was 0.03 student standard deviations lower than the average value added of teachers in the lowest poverty schools (Mansfield 2012).

In North Carolina and Florida, elementary teachers in higher-poverty schools were less effective on average than teachers in lower-poverty schools for ELA. The results were mixed for math, with teachers in higher-poverty schools on average less effective in North Carolina but more effective in Florida. The differences ranged from 0.01 to 0.04 standard deviations of student achievement (Sass et al. 2010).

Purpose / Objective / Research Question / Focus of Study:

Given the importance of teachers in improving student achievement and concerns about unequal access to effective teachers (Jerald et al. 2009; Brown and Haycock 2011), more evidence on access to effective teaching is needed. To address this need, the U.S. Department of Education's Institute of Education Sciences contracted with Mathematica Policy Research to examine access to effective teaching in a diverse set of school districts nationwide over a five-year period from the 2008–2009 to the 2012–2013 school years. This report addresses access to

effective teaching in grades 4 through 8 for the first three years of the study (2008–2009 through 2011–2011).

The study's primary research questions are:

1. To what extent do disadvantaged students have equal access to effective teaching within school districts, and how does this change over time?
2. How much does access to effective teaching vary across school districts?
3. If disadvantaged students receive less effective teaching, is it due to differences in effective teaching between schools and/or differences within schools?

This paper builds on the current evidence base in two ways. First, it includes districts that are diverse in terms of geography and size. We document access to effective teaching in 29 districts in 16 states and all four U.S. Census regions. Second, we measure the extent of inequities between as well as within schools. Most of the earlier research focuses on access to effective teachers between schools. Our measures of access to effective teaching incorporate the effects of both between-school sorting of students and teachers to schools and within-school matching of teachers to students

Setting:

We examined access to effective teaching in English/language arts (ELA) and math among a sample of students in 29 study districts in grades 4 through 8. These are the subjects and grades for which test score data are available from the end of the current and prior school years.

Population / Participants / Subjects:

The 29 study districts are geographically diverse, with at least 4 districts from each region of the country. In these study districts, the percentage of students from the South and Midwest is similar to the national distribution, students from the North are underrepresented, and students from the West are overrepresented. The study districts are large, on average, with a median enrollment of 60,000 students, and are located in medium-sized or large cities. Sixteen of the 29 study districts have more than 75 percent of students in a large city. The average study district has an FRL rate of 63 percent, with a range of 34 to 78 percent. Thirty-one percent of students in study districts are Black, 40 percent are Hispanic, and 18 percent are English-language learners.

Intervention / Program / Practice:

This paper measures the extent to which disadvantaged students have equal access to effective teaching within school districts based on the first three years of the study (2008–2009 through 2011–2011).

Research Design:

The first step in measuring access to effective teaching was to estimate the value added of participating districts' teachers in math and ELA for grades 4 through 8. Our basic approach was to rely on a regression model that accounted for a series of baseline student characteristics

potentially related to academic achievement and that may otherwise be confounded with the assignment of students to teachers. We measured value added in the two subjects separately. We accounted for a common set of student characteristics in each study district to ensure that any differences in effective teaching across districts did not result from estimating different statistical models in different districts.

To measure whether disadvantaged students have equal access to effective teaching, we calculated what we refer to as the Effective Teaching Gap (ETG). The ETG is a measure that compares the average effectiveness of teaching experienced by nondisadvantaged students with the average effectiveness of teaching received by disadvantaged students. We calculated the district ETG in four steps:

- Step 1:** Use value-added analysis to measure the effectiveness of each teacher in the district.
- Step 2:** Assign each student in the district the value added of his or her teacher in the relevant subject. This value added score represents the effectiveness of teaching experienced by the student for a given subject.
- Step 3:** Using students' free or reduced-price lunch (FRL) status as the measure of disadvantage, we calculate the mean value-added score among all nondisadvantaged students in the district and conduct the same calculation among all disadvantaged students.
- Step 4:** Calculate the district ETG by subtracting the mean value added score for disadvantaged students from the mean value added score for nondisadvantaged students.

To further understand access to effective teaching between and within schools in a district, we separated each district's ETG into between-school and within-school ETGs. The district ETG is the sum of the between- and within-school ETGs. Access to effective teaching can occur between schools if disadvantaged students attend schools that have less effective teaching on average than those attended by nondisadvantaged students. Access to effective teaching can also differ within a given school. Within-school differences can occur if teacher-student assignment within schools differs systematically for disadvantaged versus nondisadvantaged students.

We calculated the between-school ETG following the same steps described above for the district ETG, but we replaced teacher value added with the average value added of the teachers within each school, grade, subject, and year. Since the sum of the between- and within-school ETGs is the district ETG, we first calculated the between-school ETG and then subtracted it from the district ETG to determine the within-school ETG.

Data Collection and Analysis:

We collected administrative data to estimate teacher-level value-added models and measure access to effective teaching in study districts. In particular, we collected four years of standardized student test scores from state assessments in grades 3 through 8, a set of student characteristics (FRL status, limited English proficiency, special education status, gender, race, and ethnicity), school enrollment data for students, and teacher-student-course links indicating

the teacher responsible for teaching ELA and/or math to each student. We report results from the 2008–2009 through 2010–2011 school years for 24 districts, and results from the 2007–2008 through 2009–2010 school years for the other 5 districts where we gathered data from state databases that were lagged by one year.

Findings / Results:

Will be added once the report is released by the U.S. Department of Education.

Conclusions:

Will be added once the report is released by the U.S. Department of Education.

Appendices

Appendix A. References

Brown, C., and K. Haycock. (2011). *Essential Elements of Teacher Policy in ESEA: Effectiveness, Fairness, and Evaluation*. Washington, DC: Center for American Progress and The Education Trust.

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Tennessee Department of Education. (2007). *Tennessee's Most Effective Teachers: Are They Assigned to the Schools That Need Them Most?* Nashville, TN: Tennessee Department of Education.

Appendix B. Tables and Figures

Will be added once the report is released by the U.S. Department of Education.