STRATEGIC DATA PROJECT

THE NOVICE TEACHER PLACEMENT PATTERN

Do Low-Performing Students Get Placed with Novice Teachers?

SUMMARY OF FINDINGS

Lower-performing students are disproportionately placed in the classrooms of novice teachers. The pattern of placing students with lower prior-year test scores with novice teachers is observed in each of the districts in this brief, both across all schools in the district and within each individual school. Because novice teachers, on average, tend to be less effective than teachers with several years of experience, these systematic placement patterns can exacerbate existing achievement gaps by placing the students who are farthest behind with less-effective teachers.
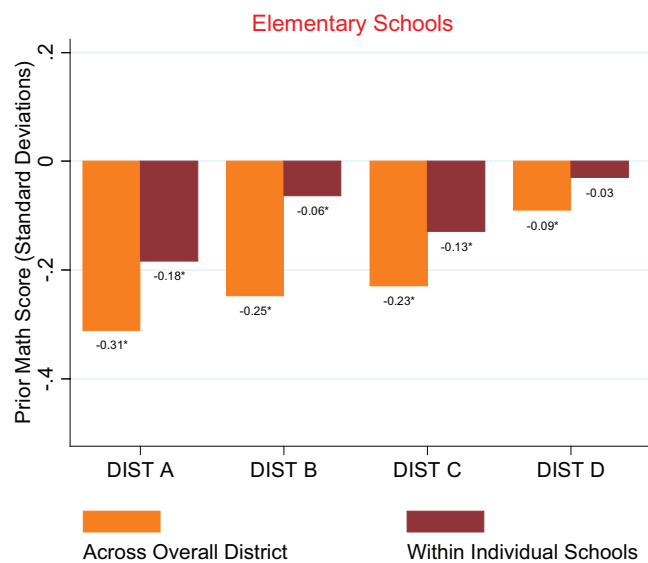
STRATEGIC PERFORMANCE INDICATORS

Strategic Performance Indicators (SPIs) are measures that reveal policy and management levers that have the potential to improve student outcomes. SPIs are derived from a set of rigorous analyses that the Strategic Data Project (SDP) performs on a common set of issues using existing data from partnering education agencies. Housed at the Center for Education Policy Research at Harvard University, SDP's mission is to transform the use of data in education to improve student achievement. The results of all of the SPIs are available at: www.gse.harvard.edu/sdp

THE PLACEMENT PATTERN

THE RETENTION RATE

FIGURE 1: DIFFERENCE IN AVERAGE PRIOR STUDENT MATH PERFORMANCE ASSIGNED TO FIRST-YEAR TEACHERS COMPARED TO TEACHERS IN THEIR FOURTH YEAR OR MORE

Elementary Schools

DIST A: -0.31*, -0.18*
DIST B: -0.25*, -0.06*
DIST C: -0.23*, -0.13*
DIST D: -0.09*, -0.03

Across Overall District | Within Individual Schools

Note: * indicates statistical significance at the 5% level.

Being a novice teacher

is one of the few factors that consistently relates to a teacher's impact on student achievement.[1] SDP analyses show that on average novice teachers in partner districts tend to be less effective than their more experienced peers.[2]

This brief focuses on the prior-year academic performance of students placed with these novice teachers. It provides findings from four districts, drawing on data from the 2004–2005 school year through the 2009–2010 school year.[3] These results show that novice teachers are consistently assigned students who are farther behind students placed with their more experienced peers.

In SDP districts, students placed

with novice math teachers are estimated to learn less than students placed with teachers with at least one year of experience. In one SDP district, for example, students placed with experienced teachers learn 0.053 standard deviations more than students placed with first-year teachers (see Footnote 2).

Who, then, do novice teachers teach? Are they placed with students who are more advanced academically, or with students who are behind?

To answer these questions, we created a Strategic Performance Indicator that compares the prior-year math achievement of students placed with first-year teachers to that of students placed with teachers in their fourth year or more. In this brief, we will use the term "experienced" to refer to those teachers who have completed three years of teaching and are in their fourth year or more of their teaching career. All teachers in their first year of teaching will be referred to as novice teachers. We make this comparison separately for elementary schools and middle schools, as placement patterns may differ for middle schools given their greater reliance on formal tracking systems. Because the analysis requires a measure of prior student achievement, the indicator is limited to math teachers in grades 4–8. (We should note that most state testing systems begin at grade 3 and only provide complete coverage for math and English language arts.)

The findings are striking—and generally consistent across the partner districts in which we have conducted this analysis. Novice teachers tend to be placed with students with lower prior-year test scores more often than their more experienced colleagues.

Given that schools with low-performing students also often have high levels of teacher turnover, and

thus more new teachers, we might expect to see such a pattern across the district as a whole. It could simply represent the disproportional placement of new teachers to high turnover schools. However, the same pattern is also evident within individual schools, reflecting a staffing process that intentionally or unintentionally assigns novice teachers to classrooms with lower-achieving students.

Although many first-year teachers perform at high levels in all four SDP districts, on average, novices are less effective than their more experienced colleagues. Even so, the systematic placement of novice teachers with lower-performing students can be expected to compound these students' academic difficulties and exacerbate achievement gaps. The Strategic Performance Indicator described below makes it possible to understand the extent to which this is occurring across SDP districts.

STRATEGIC PERFORMANCE INDICATOR

Which students are placed with first-year teachers?

For this Strategic Performance Indicator, we compare the average prior math performance for students placed with first-year teachers to the prior performance of students placed with experienced teachers. Figure 1 shows this for elementary schools, and Figure 2 shows the results for middle schools. In both figures, we show overall differences in the prior achievement of students placed with first-year and more experienced teachers across the district (the orange bars in the figures). We also show the differences within individual schools (the red bars). The district-

On average, students placed with first-year teachers start their year academically behind their peers placed with experienced teachers.

wide indicator (orange bars) reflects differences due both to the fact that some schools have more novice teachers and to the fact that novice teachers tend to be assigned lower-performing students within schools. The within-school indicator (the red bars) captures only those differences that are attributable to placement patterns within individual schools.

To illustrate, for District B in Figure 1, the district-wide indicator shows that first-year elementary teachers are placed with students with math test scores that are 0.25 standard deviations behind those of students placed with experienced teachers. The within-school indicator shows that first-year teachers in District B are typically placed with students who are 0.06 standard deviations behind the students of experienced teachers in the same elementary school.

In all four SDP partner districts included in this analysis, first-year elementary teachers are placed with students who are, on average, 0.1 to 0.3 standard deviations (or approximately 3–9 months of learning) behind the students placed with experienced teachers. The gap in test scores is much reduced when examined within schools in all four districts, though the estimates remain sizable and statistically significant in three of them.

Figure 2 shows that the gap in prior math achievement is even larger in middle schools. First-year middle
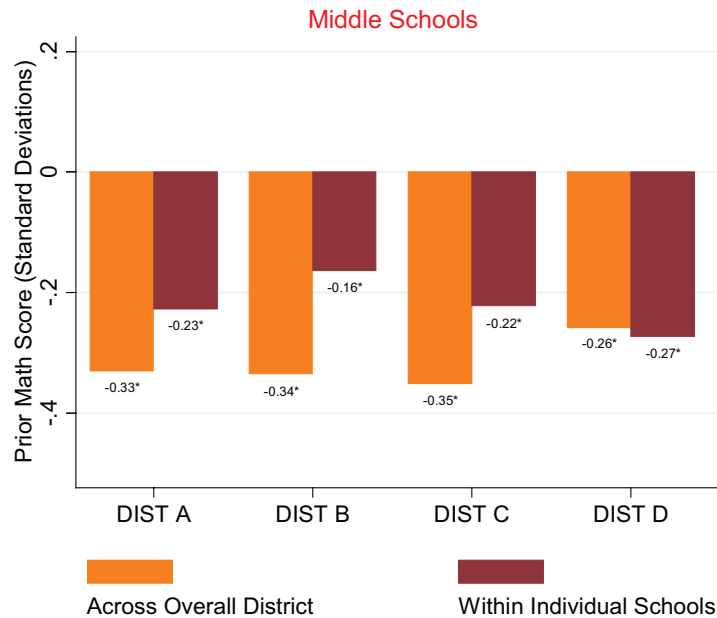
school teachers in SDP partner districts are placed with students who are as much as 0.35 standard deviations (or roughly 10 months) behind the students placed with teachers in their fourth year or more. Although the gap again tends to be smaller when examined within schools, the differences between first-year middle school teachers and experienced middle school teachers remain statistically significant in all four districts and are as large as the overall gap in elementary schools in some districts. Schools serving middle school grades may be more likely to have tracking systems that assign students to classrooms based on their level of academic preparation, thus the larger within-school disparities evident in Figure 2 may be the result of novice teachers being disproportionately assigned to basic or remedial math classes.

   In additional analyses we do not report here, we examined whether second- and third-year teachers were also placed with students with lower prior math test scores overall and within schools. While the gaps between elementary teachers in their second and third year and those in at least their fourth year are consistently smaller, they remain statistically significant and substantial. In other words, although the patterns documented by this Strategic Performance Indicator are most pronounced for first-year teachers, they are also clearly evident for other teachers early in their careers.

IMPLICATIONS FROM FINDINGS

Although the analyses presented above are based on data from only four school districts, the fact that we uncover the same patterns for each

FIGURE 2: DIFFERENCE IN AVERAGE PRIOR STUDENT MATH PERFORMANCE ASSIGNED TO FIRST-YEAR TEACHERS COMPARED TO TEACHERS IN THEIR FOURTH YEAR OR MORE

Middle Schools

Prior Math Score (Standard Deviations)

DIST A: -0.33*, -0.23*
DIST B: -0.34*, -0.16*
DIST C: -0.35*, -0.22*
DIST D: -0.26*, -0.27*

Across Overall District   Within Individual Schools

Note: * indicates statistical significance at the 5% level.

of them suggests that the placement of novice teachers to low-achieving students is widespread. Why do novice teachers tend to be placed with students with lower prior achievement?

   This is important to consider because the systematic placement of novice teachers with lower-performing students is essentially a "double whammy" for these students. Novice teachers, on average, are estimated to be less effective, which means they increase student achievement at lower rates than their more experienced peers. Also, the students placed with novice teachers are exactly those who need to accelerate their performance if they are to catch up. Systematically placing them with novice teachers can compound students' academic difficulties and exacerbate existing achievement gaps.

   Further, one should wonder about the potential impact of these placement patterns on novice teachers. Is it

the best strategy to develop and retain highly effective teachers by placing them in challenging teaching situations when they are at a critical stage in their development as teachers?

   A teacher's number of years of experience is one of the only characteristics that consistently predicts classroom effectiveness. Changing practices concerning the placement of students to novice teachers may be a mechanism to boost the achievement of those students who are farthest behind.

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These findings were obtained through the data analysis and research diagnostics performed by the Strategic Data Project between 2009–2012 with four partner districts: Charlotte-Mecklenburg Schools (North Carolina), Fort Worth Independent School District (Texas), Fulton County Schools (Georgia), and Gwinnett County Public Schools (Georgia). For more information about the SDP Human Capital Diagnostic and for more extensive analytic results for each of the districts covered in this SPI brief, please visit our website: www. gse. harvard.edu/sdp

1 See, for example, Rockoff, J. (2004, May). The impact of individual teachers on student achievement: Evidence from panel data. The American Economic Review, 94(2), 247–252. San Diego, CA: American Economic Association.

2 SDP diagnostic analyses with partner sites have consistently revealed that novice teachers have lower value-added scores. For one example, see slide #12 in the Fulton County report at http://hvrd.me/SDP-Fulton.

3 The specific dates vary by district based on data quality and availability.

4 For a description of how SDP reports trends based on teacher characteristics in terms of months of learning, please see the memo on the subject available on our website: www.gse. harvard.edu/sdp. The conversions of standard deviations of student achievement to months of learning reported in this document are based on Hill, C.J., Bloom, H.S., Black, A.R., and Lipsey, M.W. (2008, December). Empirical benchmarks for interpreting effect sizes in research. Child Development Perspectives, 2(3), 172–177.

Ask Yourself : Take Action

Why do these teacher placement patterns exist? The diagnostic analyses on their own are not designed to determine the causes for these findings. Rather, they prompt a series of questions that will help district leaders uncover causes and be positioned to make informed changes in management and policy. Asking and answering these questions should lead to a better understanding of the differences in outcomes across education systems, and to explore the underlying trends and causes of these differences. Ultimately, this should lead to proposed solutions.

ASK YOURSELF:

To what degree are the placement patterns driven by the concentration of novice teachers and lower-performing students in certain schools? How much is occurring within schools?

Are there internal school politics that influence placement patterns? Are there formal or informal arrangements that enable more senior teachers to choose their classroom assignments? Is there a norm within the district that novice teachers need to "put in their time" with more difficult assignments? Do parents of higher-achieving students influence placements to well-known teachers?

Are there timing factors that are important? Are classroom rosters drawn up early in the summer? Are students who enroll late assigned to teachers hired just prior to the school year?

Are within-school gaps concentrated in certain schools? Are there some schools in which novice teachers are actually assigned to higher-achieving students?

TAKE ACTION:

Take measures to reduce teacher turnover rates at schools serving more disadvantaged and lower-achieving students.

- Consider financial incentives for teaching in hard-to-staff schools, efforts to improve the working conditions for teachers in those schools, and exempting such schools from "last-in, first-out" layoff policies.

Change within-school assignment mechanisms.

- Encourage principals to reserve a few seats in each classroom for late-enrolling students to keep them from being placed disproportionately with novice teachers.

- Adopt policies for grades in which students are tracked to require teachers of advanced sections to take on remedial sections as well.

Provide principals with data on assignment patterns to encourage the development of a variety of strategies to address the problem.

- Enable leaders to track patterns within their own schools and monitor that data on an ongoing basis.

The Strategic Data Project

OVERVIEW

The Strategic Data Project (SDP), housed at the Center for Education Policy Research at Harvard University, partners with school districts, school networks, and state agencies across the US. **Our mission is to transform the use of data in education to improve student achievement.** We believe that with the right people, the right data, and the right analyses, we can significantly improve the quality of strategic policy and management decisions.

RIGHT PEOPLE

RIGHT DECISIONS

RIGHT DATA

RIGHT ANALYSIS
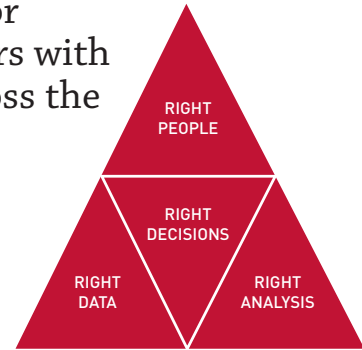
SDP AT A GLANCE

23 AGENCY PARTNERS
15 SCHOOL DISTRICTS
6 STATE EDUCATION DEPARTMENTS
2 CHARTER SCHOOL ORGANIZATIONS

79 FELLOWS
55 CURRENT
24 ALUMNI

CORE STRATEGIES

1. Placing and supporting top-notch analytic leaders as "Fellows" for two years with our partner agencies

2. Conducting rigorous diagnostic analyses of teacher effectiveness and college-going success using existing agency data

3. Disseminating our tools, methods, and lessons learned to education leaders broadly.

WHERE DO THE SPIS COME FROM?

SDP's second core strategy, conducting rigorous diagnostic analyses using existing agency data, focuses on two core areas: (1) college-going success and attainment for students and (2) human capital (primarily examining teacher effectiveness). The diagnostics are a set of analyses that frame actionable questions for education leaders. By asking questions such as, "How well do students transition to postsecondary education?" or "How successfully is an agency recruiting effective teachers?" we support education leaders to develop a deep understanding of student achievement in their agency.

The Strategic Performance Indicators (SPIs) are a small subset of SDP's research diagnostic analyses. The Human Capital SPIs are derived from the Human Capital Diagnostic. We conduct these analyses because teacher effectiveness matters more for student learning than any other factor under the control of school systems, making robust analyses of these issues vital for improving student achievement.

SDP conducts the Human Capital Diagnostics using each partner agency's own data to examine several stages in teachers' career paths, from how they are recruited and assigned to schools, to how their performance changes over time, to whether they remain in the agency or leave. We intend for the analyses to identify opportunities for policy changes that could leverage information about the movement and allocation of teachers to improve student achievement. To do so, the diagnostic examines teacher effectiveness patterns and compares these patterns across a combination of teacher, school, and student characteristics.

For more information on the SDP diagnostics, including a Toolkit that provides guidance for conducting SDP's other diagnostic on college-going patterns, please visit our website at:
http://www.gse.harvard.edu/sdp

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