NATIONAL CENTER ON
Performance Incentives

Research Brief

The Effect of Performance Pay in Little Rock, Arkansas on Student Achievement

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In "The Effect of Performance Pay in Little Rock, Arkansas, on Student Achievement"— a paper presented at the National Center on Performance Incentives research to policy conference in February — Marcus Winters, Jay Greene, Gary Ritter, and Ryan Marsh (Department of Education Reform, University of Arkansas) examine evidence from a performance pay program implemented in five elementary schools in Little Rock, Arkansas, between 2004 and 2007. The authors address two key questions in their study:

1. What is the overall impact of offering teacher bonuses on student test score gains?

2. Is there a relationship between the impact of performance pay and a teacher's prior productivity?

The authors report that students whose teachers were eligible for performance pay made substantially larger test score gains in math, reading, and language arts than students taught by ineligible teachers. Additionally, the greatest gains were found with teachers who were previously less effective at producing learning gains.

What Is the Achievement Challenge Pilot Project?

The Achievement Challenge Pilot Project (ACPP) was a teacher performance pay program operated in the Little Rock School District (LRSD) from 2004 to 2007. Operating in five elementary schools in its final year, the stated purpose of the program was "motivating faculty and staff to bring about greater student achievement gains."

The schools selected by LRSD to participate in ACPP were among the district's most disadvantaged, with high concentrations of low-income, African American, and Hispanic students, as well as high percentages of students who were struggling academically. Prior to the program, these schools were not only experiencing low achievement results, but declining math and language arts scores as well. This performance pay program was intended to target and remediate these academic achievement challenges.

Under ACPP, financial rewards for teachers were based on a composite score of spring-to-spring student achievement gains on a nationally-normed standardized test. The composite score included student achievement on the math, reading, and language arts portions of the exam. Teachers whose students had an average achievement growth between zero to four percent earned $50 per student in their class; growth between five to nine percent resulted in $100 per student; growth between 10 to 14 percent resulted in $200 per student; and over 15 percent average growth resulted in $400 per student. ACPP average teacher bonuses ranged from $1,000 to $3,000 per year; approximately $100 per child.

How to Assess the Impact of ACPP on Student Achievement?

To estimate the effect of ACPP on student achievement, the authors analyzed student achievement results for ACPP participants relative to all other schools in the LRSD. Achievement results were limited to three of the five ACPP schools for which the authors had access to two years of student test score results on the Iowa Test of Basic Skills (ITBS). The test results for these schools were supplemented with student demographic information, an identifier for classroom teacher, and a unique student identifier allowing the investigators to track individual student performance over time. As mentioned previously, two test score observations were used to estimate achievement gains: spring 2005 results compared to spring 2006, and spring 2006 results compared to spring 2007.

The authors used several statistical models to detect the effect of ACPP on student achievement results. All models used individual student achievement results to compare the overall effect of the program on teacher-level results, controlling for observed demographic characteristics. The objective of this design was to determine whether students had improved achievement gains after their teachers became eligible for performance pay under ACPP. The authors were also able to identify whether teachers of differing performance prior to the implementation of ACPP had varying responses to the performance pay program.

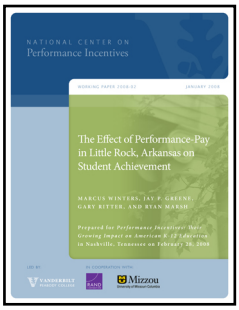
What was Impact of ACPP on Student Achievement?

The authors found a positive relationship between ACPP and students' spring-to-spring test score gains. The test scores were reported in Normal Curve Equivalent (NCE) units, which rank a student on a normal curve against a nationally representative group of students who have also taken the test. The analyses suggest that the ACPP treatment led to an increase of about 3.5 NCE points in math, 3.3 NCE points in reading, and 4.6 NCE points in language arts after only one year of teachers participating in the performance pay program. The size of these NCE effects is considered substantial. Additionally, when assessing the overall effect of ACPP on student achievement, the authors found a statistically significant, positive relationship between the performance pay program and student achievement in each participating school.

The authors also examined the impact of ACPP participation on teachers' performance relative to their previous productivity. Here, the results in each subject indicate that the performance pay program had the greatest positive impact on test scores of students belonging to teachers that previously were the lowest performing among their peers.

The authors contend that the most striking implication from their analysis is that ACPP may have the greatest impact on teachers who were previously the least effective at producing achievement gains for students. Due to a variety of factors including teacher hiring, pay, and transfer policies, these least effective teachers are typically employed in schools with high concentrations of minority and low-achieving students. If less effective teachers improve more under the performance pay program, the minority and low-achieving students served by these teachers stand to experience the greatest gains. They propose that if this result holds across evaluations of other programs, performance pay may be an effective strategy not just for improving overall achievement, but more particularly for closing the achievement gap.

The authors also acknowledge the potential limitations of their study. First, schools were not randomly assigned to the performance pay program. Second, ACPP schools had higher minority populations and more low-income students on average than schools not participating in the program. Third, a relatively small sample of schools—three—was used in the analysis. Though these limitations present reason for some caution when drawing conclusions from the study's findings, the authors contend that student-level achievement data from Little Rock permitted analysis with a rigorous research design. Further, their analysis indicates fairly large ACPP effects even after one year of implementation, suggesting promising implications for future performance pay programs.



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