Teacher Performance Pay in Andhra Pradesh, India

Researchers:

Karthik Muralidharan

Venkatesh Sundararaman

Sector(s): Education

Location: Andhra Pradesh, India

Sample: 500 schools

Target group: Teachers

Outcome of interest: Student learning

Intervention type: Cash transfers Monetary incentives Performance-based pay Unconditional cash transfers

AEA RCT registration number: AEARCTR-0001131

Partner organization(s): Azim Premji Foundation (APF), Educational Initiatives (EI), Government of Andhra Pradesh, World Bank, UK International Development

Though many countries have expanded primary school access over the past decade, concerns persist about education quality in low- and middle-income countries. Researchers conducted a randomized evaluation in the Indian state of Andhra Pradesh to measure the relative effectiveness of conditional versus unconditional bonuses on improving the quality of schools. Offering conditional incentives to individual teachers was a cost-effective way to improve student test scores across subjects.

□□□□□□□ □□□□□□□

Over the past decade many low- and middle-income countries have expanded primary school access, energized by initiatives such as the United Nations Millennium Development Goals, which call for achieving universal primary education by 2015. Improvements in school access however, have not always translated into improved learning for students. While traditional approaches to improving education often focus on providing schools with more resources, there has been growing interest in directly assessing and incentivizing schools and teachers based on student learning outcomes. Teachers in low- and middle-income countries often face little administrative pressure to provide high quality educational instruction. Linking teacher pay to student performance has been suggested as a way of improving accountability of educational providers to local communities and improving education outcomes in schools, but the theoretical predictions regarding its effectiveness are ambiguous and the empirical evidence to date is limited and mixed.

□□□□ □□□□□□□

While India has made substantial progress in improving access to primary schooling, average levels of learning remain very low. A recent Education Status Report found that over 58 percent of children aged six to fourteen could not read at the second grade level, though over 95 percent of them were enrolled in school. Public spending on education has been rising as part of the “Education for All” campaign, but there are substantial inefficiencies in public delivery of education services. A recent study of primary schools in India found 25 percent of teachers to be absent on any given day, and that less than half of those present were

engaged in any teaching activity. Since nearly 90 percent of the education budget is spent on teacher salaries, this implies considerable inefficiency in translating spending into learning outcomes.



Teacher teaching in a classroom in India

Photo credit: Shutterstock

□□□□□□□ □□□□□□□ □□ □□□□□□

This evaluation contributes to the debate on the relative effectiveness of input-based versus incentive-based policies in improving the quality of schools by conducting a randomized evaluation of a teacher performance pay program implemented in the Indian state of Andhra Pradesh (AP). Two types of teacher performance pay (group bonuses based on school performance, and individual bonuses based on teacher performance) are studied, with the average bonus calibrated to be around 3 percent of a typical teacher's annual salary. In a parallel initiative, two other sets of 100 randomly-chosen schools were provided with an extra contract teacher, and with a cash grants for school materials respectively.

Treatment groups summary table:

Group	Intervention description	Number of schools
1. Comparison	No inputs or incentives	100

Group	Intervention description	Number of schools
2. Inputs (unconditional)	Extra contract teacher	100
3. Inputs (unconditional)	Extra block grant	100
4. Incentives (conditional on improvement in student learning)	Group bonus	100
5.Incentives (conditional on improvement in student learning)	Individual bonus	100

As the table shows, the input treatments of one extra teacher or a cash grant were provided *unconditionally* to the selected schools at the beginning of the school year, while the incentive treatments consisted of an announcement that bonuses would be paid at the beginning of the next school year *conditional* on average improvements in test scores during the current school year.

The school year in AP starts in the middle of June, and the baseline tests were conducted in the 500 sampled schools during June and July of 2005. Researchers engaged the education testing firm Educational Initiatives (EI), to design the tests based on the syllabus. End of school-year assessments were conducted in all project schools. The results were provided to the schools in the beginning of the next school year, and all schools were informed that the program would continue for another year. Bonus checks based on first year performance were sent to qualifying teachers at the start of the next school year, following which the same process was repeated for a second year. The project was implemented in the field by the Azim Premji Foundation, with the full support of the Government of Andhra Pradesh.

□□□□□□□ □□□□□□□ □□□□□□□□□ □□□□ □□□□□□□□

Teacher pay based on student performance is found to be highly effective at improving student learning. After two years of the program, students in incentive schools performed on average 0.28 and 0.16 standard deviations higher than those in comparison schools in math and language tests respectively. Incentive schools do significantly better on both mechanical components of the test (designed to reflect rote learning) and conceptual components of the test (designed to capture deeper understanding of the material), suggesting that the gains in test scores represent an actual increase in learning outcomes. Students in incentive schools do significantly better not only in math and language (for which there were incentives), but also in science and social studies (for which there were no incentives), suggesting positive spillover effects.

School-level group incentives and teacher-level individual incentives perform equally well in the first year of the program, but the individual incentive schools significantly outperformed the group incentive schools in the second year. At the end of two years, the average treatment effect was a 0.27 standard deviation increase in test scores in the individual incentive schools compared to 0.16 standard deviations in the group incentive schools.

Changes in teacher behavior in response to the program are measured with both teacher interviews as well as direct observation of teacher activity. Results suggest that the main mechanism for the impact of the program was not increased teacher attendance, but greater (and more effective) teaching effort conditional on being present. The study also finds that performance-based bonus payments to teachers were a significantly more cost-effective way of increasing student test scores compared to spending a similar amount of money unconditionally on additional school inputs or extra teachers.

Muralidharan, Karthik and Venkatesh Sundarraman. 2011. "Teachers Performance Pay: Experimental Evidence from India." Journal of Political Economy 119(1):39-77. Muralidharan, Karthik. "Long-Term Effects of Teacher Performance Pay: Experimental Evidence from India." Working Paper, UC San Diego, April 2012.