INDONESIA

Can Performance-Based School Grants Improve Learning?

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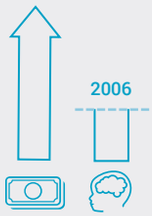
REACH funded an evaluation to assess whether bonuses distributed to schools lead to improved student learning.



Despite large investments via grants, there have been no significant improvements in learning in Indonesia since 2006.

Performance-based school grants + Intervention (such as training) = Learning outcomes

Studies have shown that performance-based school grants can improve learning when combined with other interventions.

***The Results in Education for All Children (REACH) Trust Fund** supports and disseminates research on the impact of results-based financing on learning outcomes. The EVIDENCE series highlights REACH grants around the world to provide empirical evidence and operational lessons helpful in the design and implementation of successful performance-based programs.*

The Results in Education for All Children (REACH) Trust Fund at The World Bank funded an evaluation that assessed the early impact of a performance-based school grants program on student learning in Indonesia. While all Jakarta government schools receive a fixed grant per student, under the new program top performing schools also receive an added bonus. This evaluation focused on two separate effects in the first two years of the new program: the effect of announcing the performance-based incentive to schools, and the effect of receiving the bonus for top-performing schools. Announcing the performance incentive had different impacts on primary and junior secondary schools. Student test scores improved in all junior secondary schools, with the largest gains being made in schools that were already the highest performing. However, in primary schools the impact on test scores was slightly negative, with modest improvement in low-performing schools offset by losses in high-performing schools. While the gains at low-performing schools were similar in magnitude in both primary

Al-Samarrai, Samer, Unika Shrestha, Amer Hasan, Nozomi Nakajima, Santoso Santoso, and Wisnu Harto Adi Wijoyo. "Introducing a performance-based component into Jakarta's school grants: What do we know about its impact after three years?." *Economics of Education* Review 67 (2018): 110–136.

and junior secondary schools, these mixed results highlight the risk that performance-based competition can actually have a demotivating effect for some schools. On the other hand, there is little evidence that schools that received performance bonuses performed better than those that did not. The effect of the program on learning was largely due to the change in incentives created by announcing the performance-based grants, rather than by the additional grant funding itself.

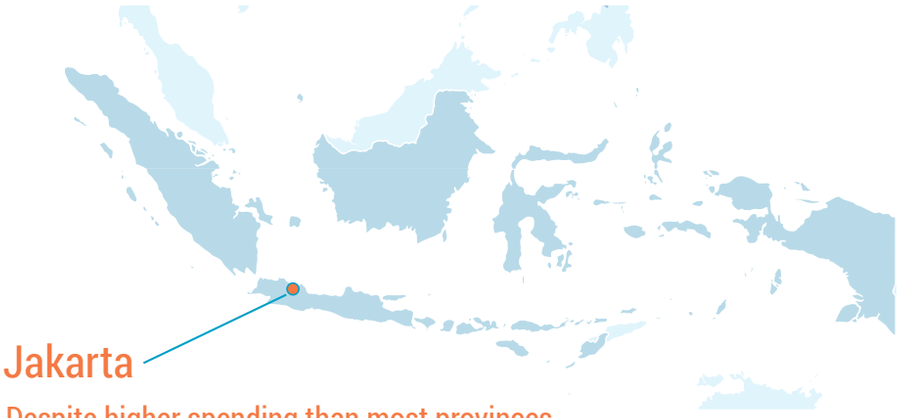
The Jakarta school grants program is distinct from many other pilots of performance-based grants in that it introduced RBF at scale, across an entire education system. The evaluation of this program took advantage of pre-existing administrative data, which made it possible to include all government schools at relatively low cost, without separate data collection for the evaluation. As such, there are several lessons learned from the implementation of this program that could inform the design of other interventions at scale. Future programs could be improved by using other measures of school performance in addition to test scores, considering alternative designs of the formula to determine grant allocations, and allowing schools more flexibility in experimenting with ways to improve learning.

CONTEXT

Indonesia has made large strides in improving educational attainment, increasing average years of schooling from six to eight years per adult between 2000 and 2012. At the same time, government education spending tripled from 2001 and 2011, including the introduction of the Bantuan Operasional Sekolah (BOS) school grants program in 2005. Although responsibility for primary and secondary schools is devolved to the provincial and district level in Indonesia, under the BOS program the federal government supplements local funding with school grants of a fixed amount per student. In the nation's capital, the Jakarta city government also began giving school grants to all government primary schools in 2005 through a program modeled on the national BOS program. The Jakarta program evolved significantly between 2005 and 2014, expanding to include all government secondary schools and more than doubling per-student funding levels.

In 2014, junior secondary schools received $111 per student from the Jakarta city government and $60 per student from the national program. With strict limits on the fees they can collect from parents, schools are heavily reliant on these grants, receiving more than 80% of their discretionary funding from the national and Jakarta city programs.

Despite these large investments, there have been no significant improvements in learning in Indonesia since 2006. Furthermore, despite higher spending than most provinces, schools in Jakarta scored barely above average in student test scores. In response to the limited impact of this spending, there has been a renewed focus on improving the effectiveness of school financing. This has led to increased appetite in Indonesia for trying new RBF approaches to incentivize schools to use resources more effectively and align spending with learning outcomes.



Despite higher spending than most provinces, schools in Jakarta scored barely above average on student test scores.

WHY WAS THE INTERVENTION CHOSEN?

Recognizing that Jakarta's school grants program represented a large and important part of the education budget, the city government was intent on improving the effectiveness of this spending. To incentivize improved learning at the school level, in 2014 the Jakarta government adjusted the formula for determining school grant allocations to include a component based on learning performance. The new performance-based component of Jakarta's school grants program was implemented at all government schools, including 1,629 primary schools and 291 junior secondary schools. The introduction of a performance-based component into this program builds on successes in several other countries using RBF to make education spending more effective. A large body of evidence shows that how resources are spent, how they are tied to results, and how incentives are designed can be more important than resources themselves.

While many countries have seen similarly disappointing results of school grants alone, grants can improve learning when combined with other interventions. In the Philippines, school grants raised test scores when combined with school-based management to give schools more autonomy in spending decisions.[1/2] In Tanzania, school grants improved learning when combined with teacher incentives to improve student performance.[3] Indonesia itself found in a previous tweak of its school grants program that grants raised student learning when combined with improved linkage between the school committee and the village council to strengthen school oversight.[4] In Senegal, a program that allowed schools to apply for grants and compete with each other on school performance had a positive effect on learning.[5] While there has been no other assessment of the effect of tying school grant allocations directly to school performance, there are many examples from other sectors—particularly health—showing that tying financing to the achievement of desired results can be effective at various levels of service delivery.

The new performance-based component of the grant was designed to improve student learning by creating stronger incentives to improve at the school level. It was expected to improve learning through three main channels. First, the announcement of the performance incentive was expected to motivate teachers, school principals, and other stakeholders to exert greater effort to improve learning. Second, it was expected to encourage schools to align their use of funding more closely to the objective of improved learning, for example by shifting funding away from uses not proven to improve learning in Indonesia, such as hiring contract teachers. Third, it was expected that schools that receive performance bonuses would improve further by using the resources to support additional learning-enhancing activities.

HOW DID THE INTERVENTION WORK?

The new program was announced to all Jakarta government schools after the 2014 national exams, with a formal regulation posted on the education department website. In addition, a socialization meeting was scheduled by each of Jakarta's six district education offices for all school principals to attend to ensure the new incentives were well understood. Under the new program, all government schools continued to receive the basic grant allocation, but top performing schools received an added per student bonus equivalent to 20 percent of the basic grant—a significant increase in total discretionary funding. The size of the bonus was determined to be the maximum amount that was affordable within Jakarta's education budget, making sure to keep the basic grant allocation unchanged. School performance was judged on two dimensions: average student performance on national exams over the last two years (beginning with 2013 and 2014), and percentage point improvement in exam scores over the same period. Each school was given an average ranking across these two dimensions, and schools in the top quartile (25%) were awarded the performance bonus the next year.

New Program

Basic grant allocation + per student bonus for best performing schools based on:

1) Average national exam scores
2) Percentage point improvement in exam scores

To make the program more equitable and incentivize more schools, the school ranking was conducted separately in each of Jakarta's six districts so that schools only competed against other schools serving students from similar backgrounds. However, despite these efforts to achieve equity, schools with higher initial performance were much more likely to receive the performance bonus. Of the schools that received the performance bonus in 2015, 62% of primary schools and 75% of junior secondary schools were already in the top quartile before the program. Furthermore, bottom quartile primary schools needed to improve 7 percentage points to receive the bonus, while top quartile schools could drop 2 percentage points and still earn the bonus. This imbalance was likely due to a combination of factors: the design of the bonus formula mechanically favored schools with higher initial performance; some schools may have felt less motivated to achieve the bonus based on how much improvement was required to earn it; and schools may have differed in their ability to act on the increased incentive.

The impact of the redesigned program was measured by comparing changes in test scores before and after the introduction of performance bonuses between eligible government schools and ineligible non-government schools. In addition, the impact of receiving the performance bonus itself was measured by comparing changes in test scores between schools just above and just below the required performance threshold.

WHAT WERE THE RESULTS?

Telling schools that a component of their grant would be based on their performance resulted in higher test scores for students in all government junior secondary schools. After the performance-based grant component was announced after the 2014 national exams, test scores increased by 2.6 percentage points in 2015 and 4.6 percentage points in 2016 for all government junior secondary schools. This is equivalent to an increase from 72.5 percent in 2014 to 75 percent in 2015 and 77 percent in 2016, suggesting that the impact may have spread across more schools over time. As this represents the early impact of just the first two years of the program, it is possible that these gains will continue to grow as the program becomes established and stakeholders gain a better understanding of its incentives. These gains of 0.36 and 0.63 standard deviations in 2015 and 2016, respectively, are large in magnitude compared to other interventions to improve student test scores, such as computer-assisted learning, teacher training, class size reductions, provision of instructional materials, school grants, or other types of incentives.[6]

However, test scores improved the most at junior secondary schools that were already the highest performing, widening the gap between high and low-performing schools. Schools were assigned to quartiles based on their average student test scores in 2013 and 2014, before the performance-based component was introduced. Test scores for the top quartile of junior secondary schools improved by 6.9 percentage points (0.96 standard deviations) in 2016, compared to only 2.2 percentage points (0.30 standard deviations) for schools in the bottom quartile. This led to growing inequality across schools, with the top junior secondary schools increasing from 83 percent in 2014 to 90 percent in 2016, and the bottom quartile of schools only improving from 70 to 72 percent. This may be an indication that better performing schools believed they were more likely to receive the performance bonus and therefore exerted more effort to improve, or that these schools simply had greater capacity to improve learning.

On the other hand, the announcement of the performance-based component resulted in slightly lower test scores overall for students in government primary schools. After the announcement in 2014, student test scores remained unchanged in 2015 and decreased by 1.3 percentage points (0.11 standard

Table 1. Impact on Student Exam Scores in 2016 (percentage points)[7]

	Bottom quartile	2nd quartile	3rd quartile	Top quartile	Overall
Primary schools	1.6	-1.3	-2.8	-2.9	-1.3
Junior schools	2.2	3.8	5.2	6.9	4.6

deviations) in 2016 for all government primary schools. This is equivalent to a reduction in scores from 71 percent in 2014 to 70 percent in 2016.

While the impact was slightly negative overall at the primary level, the program benefited students at the lowest performing primary schools. However, these gains were offset by negative impacts on test scores at the schools that initially performed higher. Test scores for the bottom quartile of primary schools rose by 1.6 percentage points (0.15 standard deviations), from 63 percent in 2014 to 65 percent in 2016. These gains are similar in magnitude to those of the lowest performing junior secondary schools. However, test scores at primary schools in the top quartile decreased by 2.9 percentage points (0.27 standard deviations), from 83 percent in 2014 to 80 percent in 2016. This suggests that staff at previously high-performing primary schools were either unmotivated or unable to improve learning.

While it is not possible with the available data to reach definitive conclusions on the cause of this negative impact at primary schools, it may be due to ineffective decision-making at the school level. There is some suggestive evidence that school principals shifted spending away from hiring temporary teachers and towards renovating classrooms, which may have reduced student learning by disrupting class instruction.

There are several potential explanations for the difference in impact between primary and junior secondary schools. First, junior secondary schools have more qualified and experienced staff, which may have led to greater capacity to improve learning. Second, while the performance bonus was 20 percent of the basic grant allocation for all schools, in absolute terms it was much larger for junior secondary schools, which may have led to stronger incentives to improve. Many primary schools felt they needed a larger basic grant allocation, and were unmotivated by the bonuses. Third, the initial gap between high and low-performing schools was much smaller at junior secondary schools, which may have led to more incentive for top schools to improve to stay ahead of other schools trying to narrow the gap.

While announcing the performance-based grant component had an impact on some schools, actually receiving the performance bonus yielded no additional impact.

Comparing schools just above and just below the threshold for receiving a performance bonus, there is little evidence that receiving additional resources caused any improvement in student test scores in 2015, the year the first bonuses were awarded. One possible explanation is that the amount of the bonus was not sufficient to impact learning for schools at the margin, or that the additional spending may not have translated quickly enough into improved learning. In fact, receiving the performance bonus had no impact on intermediate outcomes such as the quality of teachers or school infrastructure, so it is not surprising that test scores were unaffected.

WHAT WERE THE LESSONS LEARNED?

The evaluation of Jakarta's performance-based school grants program took advantage of pre-existing administrative data, and therefore was able to include all government schools in a scaled up program at relatively low cost. However, this data had limitations. With the data available, few potential channels could be empirically tested to explain the observed results. There are many ways that schools may have reallocated funding in response to the program's incentives, but only data on hiring teachers and infrastructure spending could be tested. Strengthening these data systems or supplementing them with focus group discussions could help draw more concrete conclusions and create more robust feedback loops to inform future policy.

There are several potential lessons learned for improving future school grants programs that stem from the challenges encountered in implementation. The evidence suggests that ineffective decision-making in how to reallocate spending may have adversely affected student learning at some schools. This could be improved by providing schools with support in effective resource management, which is already being addressed through a new system of mandatory electronic school plans to make schools more accountable. At the same time, only certain types of expenditures were allowed under the school grants program, such as teacher training and procurement of learning equipment. This limited flexibility in the type of spending allowed may have made it difficult for some schools to respond effectively to the new incentives created by the program, and may have caused some school grants to go unspent. This could be improved by making grants more flexible, and encouraging schools to experiment with other interventions shown to improve learning such as increased teaching time and improved pedagogy. Furthermore, the program's impact may have been limited by delays in the disbursement of both the basic grant allocations and the bonuses, which may have prevented schools from taking advantage of resources they were entitled to.

There are also concerns in Indonesia that national exams may not be the best indicator of school quality, due to issues of cheating, "teaching to the test," and exam questions that do not reflect students' learning. Using alternative measures of school performance instead of or in addition to student test scores—for example school self-evaluations and Indonesia's well-established quality assurance system that assesses schools across eight dimensions—could provide a more holistic view of school quality and more actionable guidance to schools on areas of improvement.

On the other hand, some schools may have been able to improve but were unmotivated to do so because the incentives were too weak. In particular, the improvement required to receive the performance bonus may have been either too large (for low-performing schools) or too small (for high-performing schools) to induce greater effort. Developing alternative designs for the formula to determine grant allocations—perhaps with different weights for level of performance and improvement—could help ensure that both high and low-performing schools are motivated to improve, and could potentially narrow the gap between high and low-performing schools.

What is needed?

1. Support in effective resource management

2. Flexibility in regards to type of spending allowed

3. More reliable indicators

4. More appropriate requirements and incentives depending on the school

CONCLUSION

The Jakarta city government in Indonesia is a pioneer in using RBF to improve student learning. Two years after the introduction of a performance-based school grants program at all government schools, the early results are mixed. While the performance bonuses led to improved learning at junior secondary schools, the mixed results at primary schools show that incentives do not necessarily benefit all schools. Several possible factors explain why some schools failed to improve learning, including lack of ability to effectively allocate spending, limited flexibility in the spending allowed under the program, and weak incentives to improve. Nevertheless, Jakarta's performance-based school grants program has shown the potential for large learning gains, at least for some schools. These results also suggest several potential avenues for improving the program in the future. Making the grants more flexible would allow schools to customize their spending to their specific needs, and help to ensure that all schools spend their resources effectively. Using alternative measures of school performance in addition to test scores could help to mitigate the risk of cheating on national exams and reward schools based on a more holistic view of school quality. Lastly, developing alternative grant allocation formulas could help to motivate schools at all levels of initial performance to improve, and ensure greater equity. Further experimentation would be valuable to refine the program and determine which design features and supporting interventions could maximize its positive impact.

1 Khattri, N., et al (2010). "The Effects of School-based Management in the Philippines: An Initial Assessment Using Administrative Data." *Policy Research Working Paper Series.* No. 5248, The World Bank.

2 Yamauchi, F. (2014). "An alternative estimate of school-based management impacts on students' achievements: evidence from the Philippines." *Journal of Development Effectiveness.*

3 Mbiti, I., et al. (2015). Inputs, Incentives, and Complementarities in Primary Education: Experimental Evidence from Tanzania, process.

4 Pradhan, M., et al. (2014). "Improving educational quality through enhancing community participation: Results from a randomized field experiment in Indonesia." *American Economic Journal. Applied Economics* 6(2): 105.

5 Carneiro, P. M., et al. (2016). "School grants and education quality: experimental evidence from Senegal." *Policy Research Working Paper Series.* No. 7624, The World Bank

6 McEwan, P. J. (2015). "Improving Learning in Primary Schools of Developing Countries: A Meta-Analysis of Randomized Experiments." *Review of Educational Research* 85(3): 353-394.

7 The values in the table are coefficients from a difference-in-differences framework using full controls, comparing changes in test scores between eligible government schools and ineligible non-government schools before and after the announcement of the performance-based school grants program.

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