Understanding the Flailing State: Experimental Evidence from a Large-Scale School Governance Improvement Program in India*

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February 10, 2018

Abstract

We present results from a large-scale experimental evaluation of an ambitious attempt to improve school governance at scale in India (implemented in ~1900 schools and randomized over ~5800 schools). The intervention consisted of several global best practices in school governance and included three main components: comprehensive school assessments by external school inspectors, customized school improvement plans based on these assessments, and regular follow ups on progress with ongoing monitoring and support. We report four main findings. First, the assessments were able to meaningfully evaluate school quality with scores being predictive of *future* student value-added and teacher absence. Second, though initial assessments (overseen by external consultants) were implemented well, subsequent monitoring by government officials was not affected by the intervention. Third, we find no impact on teacher absence, teacher effort in classrooms, student engagement or the engagement of School Management Committees. Finally, consistent with this, the intervention had no impact on student learning outcomes. Our results provide direct evidence of the challenge of improving service delivery at scale in developing countries and show how well-designed plans and programs fail due to poor implementation and state capacity.

*We are grateful to senior leadership in the School Education Department and the Rajya Shiksha Kendra, Government of Madhya Pradesh – in particular, Mr. S.R. Mohanty, Ms. Rashmi Shami, Ms. Deepti Gaur Mukherjee, Mr. Lokesh Jatav and Mr. K.P.S. Tomar – for their continuous support in evaluating this program. We are grateful for ongoing collaboration to staff at Ark, especially Ms. Kruti Bharucha, Ms. Kanupriya Mishra and Mr. Sachin Ashapure. Urmi Bhattacharya, Ghazal Gulati, Aditi Bhowmick and Ramamurthy Sripada provided outstanding research management and assistance. Fieldwork for this evaluation was supported by the International Growth Centre and the J-PAL Post Primary Education Initiative.

1 Introduction

Motivation

- While enrolment and grade progression have increased sharply in developing countries in recent decades, learning levels have not.
- Recent syntheses of a now-large literature identify weak governance, especially in government schools, as a binding constraint (Glewwe and Muralidharan, 2016): a striking indicator of this is teacher absence which has remained unchanged at about 23% at the time of surprise inspections (Muralidharan et al., 2017).
- Stand-alone interventions at modest scales, such as through installing cameras to monitor teacher attendance or linking financial incentives to student test score gains, have been shown to significantly improve teacher effort and student outcomes (Duflo et al., 2012; Muralidharan and Sundararaman, 2011). However, actually changing governance at scale is difficult and it is not clear that the same programs can be feasibly implemented when programs are rolled out across entire education systems.

Description of the program

- In this paper, we present an experimental evaluation of a large-scale attempt to improve school quality in the Indian state of Madhya Pradesh.
- The intervention, called the MP School Quality Assessment program (Shaala Gunwatta), is modelled after global 'best practices' in school accountability and was developed in partnership by the Government of Madhya Pradesh and Ark, a leading international education services charity over a period of two years. The program was funded by the UK Department for International Development (DFID) and also featured advice and inputs from the Office for Standards in Education, Children's Services and Skills (Ofsted) in the UK.
- The theory of change is based on insights from management theory, which argue that poorly performing organizations stay that way for a combination of reasons including (a) not knowing that they are performing poorly, (b) not knowing what they need to do to improve, and (c) not being motivated or held accountable for improvements. The intervention aimed to address each of these steps by having the following key components: (a) independent school-specific assessments of school quality, as a starting point for identifying strengths and weaknesses, (b) the creation of school-specific improvement plans with concrete action steps and (c) regular follow-up by supervisory staff to monitor progress and provide guidance and support towards achieving the school improvement plans. A further feature of the design was the creation of online tools to make the results of school assessments, and progress, easily accessible to senior education department officials as a way of enabling regular monitoring of school-level performance data.
- The design of the intervention recognized that, in a heterogeneous state such as Madhya Pradesh, binding constraints to school improvement are likely to be differ widely across schools. Thus while school-level monitoring is an integral part of the intervention, the objective of the program is to use the assessments, and customized planning, as a starting point for continuous school improvement. The program design is also very similar to a program that is being rapidly scaled up across Indian states under direction from India's National Ministry of Education.[1] Thus, the

[1] This program is called *Shaala Siddhi* and envisions reaching 1.6 million schools across India through a comprehensive system of school evaluation (`http://shaalasiddhi.nuepa.org/`). It has been developed for the Indian National Ministry of Education by national experts and states that "School Evaluation is the means and School Improvement is the goal".

program we study reflects a broad consensus among education sector experts as a program that can improve school governance at scale, and is being widely deployed.

Evaluation design and data

- The program was rolled out in August 2014, following two years of development and piloting. From a population of ~12,000 schools across five districts in Madhya Pradesh, we first randomly sampled a study universe of 5,824 schools. We then randomly assigned 1890 to receive the first phase of the program.[2] These cover schools at all levels from Grade 1 to secondary schools. To our knowledge, this is one of largest experimental evaluations of an education reform in any setting, and it provides an example of an "at scale" evaluation in all the three ways described in Muralidharan and Niehaus (2017).[3]

- We collected extensive information on directly-observed measures of school governance and pedagogy including teacher absence, classroom observations and surveys of school principals, teachers and students in a subset of around 532 schools (300 primary and middle schools, 232 secondary schools). This information is central to our efforts to understand the effectiveness of the program at all stages and serves to contextualize any eventual effects on test scores.

- The primary outcome of interest for our study is student learning outcomes. We measure this using three distinct data sources: (a) independently designed and administered tests of student achievement in 300 primary and middle schools, split across treatment and control schools, (b) individual student-level scores on comparable official assessments in these schools and (c) school-level aggregate scores on comparable official assessments across the full study population of ~6000 schools.

Results

Program implementation

- We show first that implementation of the initial school-based assessments was nearly universal among the schools assigned to treatment - assessments were completed in 93%(89%) of elementary (secondary) schools in the sample. School improvement plans were also made in these schools and uploaded on the internet portal. This stage of the implementation, while carried out primarily by government functionaries, had significant oversight from Ark, the (non-governmental) technical advisor to the project.

- Second, we show that these assessments have useful diagnostic content. There is variation in the assessments across schools, both in the overall scores and in the various sub-components (such as teaching quality and school management). This variation is predictive, even conditional on past school-level test scores, of future student achievement and future teacher absence.

- We document, however, that even if the initial assessment and information component of the intervention was delivered adequately, the (intended) ongoing monitoring was not subsequently carried out by government functionaries. Both in administrative records of visits by external government officials, and in teachers' reports of when their classrooms were last inspected, we see no difference between treatment and control schools. We also see no evidence that treatment

[2]Note that the program was implemented (and randomized) at the level of a cluster called a Jan-Shiksha Kendra (JSK), with each JSK averaging around 40 schools (but ranging from 20-50 in practice).

[3]These are randomization in samples that are representative of large populations, studying implementation across a large number of treated units, and studying implementation at a large unit (to estimate effects that are net of spillovers).

schools exhibited greater engagement with School Management Committes, which could act as a community-led mechanism for exerting accountability and were explicitly targeted by the intervention.[4]

No effect on school functioning

- In line with the program not having significantly altered monitoring mechanisms within schools, we see no evidence of improvement in multiple measures of school governance and pedagogy, the two constraints that the intervention specifically intended to ease. Teacher absence did not differ significantly across treatment and control schools and remained at high levels. Similarly, we did not discern any significant difference in how teachers used their time in classrooms in treatment and control schools, whether they used textbooks and workbooks, and whether they were more likely to have checked student homework books (which serves as a stock measure of teacher effort). Students do not report significantly different experience of classroom instruction in treatment and control schools either.
- Thus, it is not the case that the intervention changed behaviour but in ways that did not affect achievement (as may *a priori* have been possible if, for instance, the quality of advice based on the assessments was poor). Rather the program seems to have been ineffective in changing any behaviour within schools that may be expected to impact student achievement.

No effect on test scores

- Consistent with the lack of a program effect in any school-level processes, we find no program effects in student outcomes either in the short run (3-4 months after the intervention) or over a longer horizon (15-18 months after initial program rollout). This is consistently the case across low-stakes administrative tests, high-stakes high school completion tests, and independently-administered achievement tests in a subsample of schools.
- Given the size of the intervention, this null result is precisely estimated and we are able to reject modestly-sized effects of between 0.1 and 0.15σ.

Literature/Contributions

Lit 1: Public Service Delivery and accountability in Developing Countries

- Our results relate foremost to a large and growing literature on failures in public service delivery in developing countries. While we focus on education delivery in this paper, similar issues of governance have been shown to also be commonplace in, for instance, public healthcare systems (Das et al., 2016) and welfare systems (Niehaus and Sukhtankar, 2013).
- In showing precise null effects of this intervention, we underscore that achieving effective reform in the delivery of public services remains exceptionally difficult. In this respect, our results are perhaps most similar to Banerjee et al. (2008) and Banerjee et al. (2010). In similar spirit as Banerjee et al. (2008), we show that whereas the initial part of the intervention was delivered, later aspects which would have affected monitoring directly were not.

[4]School Management Committees are supposed to be deliberative oversight bodies which include representatives from the school, from the parents of pupils, and representatives of the local government. They are intended to exert community-based accountability pressure on schools.

- We interpret our results, in combination with those of the (Banerjee et al., 2008, 2010, 2012), as indicating that governance initiatives that rely crucially on coordination and ongoing effort at a decentralized level are unlikely to be effective in developing country settings like India. Initiatives that have been effective in reducing leakages and improving service delivery, such as biometric smartcards in workfare programs (Muralidharan et al., 2016), have relied on top-down technology-enabled modes of enforcement.
- This distinction also underscores crucial features of state capacity in India and similar countries. In keeping with the Pritchett (2009) classification of India as a 'flailing state', while the program may have been carefully thought out at inception at higher levels of bureaucracy, lower levels of the state machinery lack the capacity and the incentives to deliver this effectively. This is perhaps most evident in the Indian state's ability to achieve large logistical feats, such as the organization of elections, censuses and, in this case, school assessments effectively, but being unable to institutionalize consistent delivery of routine functions of government.

Lit 2: Education

- Our results further speak directly to a large literature in the economics of education which focuses on school accountability (see Figlio and Loeb, 2011 for an overview). Much of this literature has focused on school accountability regimes in North America and Europe, such as the accountability mechanisms present in the No Child Left Behind reform in the US. Evidence from these contexts typically indicates improvements in student test scores, especially in math, although there is also evidence that such pressures distort teacher behaviour and effort (Figlio and Loeb, 2011; Jacob and Levitt, 2003; Neal and Schanzenbach, 2010).
- In contrast, we find not only that the reform did not affect student outcomes but that it was unable to shift teacher or principal behaviour at all on a range of observed dimensions.
- We interpret our results as indicating that, given vast differences in the governance environment, the large evidence base on accountability reform in OECD countries is unlikely to provide much insight into achieving succesful reform in India and similar developing countries – and that even accountability mechanisms demonstrated to be effective in developed-country settings are unlikely to be directly transferable. Our results are a particularly good illustration of this point since analogous school monitoring regimes, such as those operated in the UK, have been shown to exert substantial accountability pressure and improve student/school performance in schools judged to be poorly-performing (Hussain, 2015; Allen and Burgess, 2012).

Policy Relevance

- Finally, and most consequentially, our results are particularly important for current policy debates on education reform in developing countries. While school accountability has risen in policy agendas as an urgent requirement to tackle weak governance and poor service delivery, the mechanisms for achieving this remain unclear. Comprehensive school monitoring interventions, such as the program evaluated here, remain at the forefront of policy discussions globally.
- For instance, in addition to government-led plans in India to scale a similar initiative nationally, the charity which partnered with the government of Madhya Pradesh here (Ark International), has also extended pilots of similar programs in multiple sub-Saharan African countries.
- While the precise effects of accountability reform are likely to be context-specific, our results suggest that these policy interventions are unlikely to be effective at scale. Given substantial expenditures of manpower and finance in these interventions, we suggest caution in large-scale expansions of these regimes without seeing positive results at least at smaller scales.

References

Allen, Rebecca and Simon Burgess, "How should we treat under-performing schools? A regression discontinuity analysis of school inspections in England," Technical Report, Department of Quantitative Social Science-UCL Institute of Education, University College London 2012.

Banerjee, Abhijit V, Esther Duflo, and Rachel Glennerster, "Putting a band-aid on a corpse: incentives for nurses in the Indian public health care system," *Journal of the European Economic Association*, 2008, *6* (2-3), 487–500.

_ , Raghabendra Chattopadhyay, Esther Duflo, Daniel Keniston, and Nina Singh, "Improving police performance in Rajasthan, India: Experimental evidence on incentives, managerial autonomy and training," Technical Report, National Bureau of Economic Research 2012.

_ , Rukmini Banerji, Esther Duflo, Rachel Glennerster, and Stuti Khemani, "Pitfalls of participatory programs: Evidence from a randomized evaluation in education in India," *American Economic Journal: Economic Policy*, 2010, *2* (1), 1–30.

Das, Jishnu, Alaka Holla, Aakash Mohpal, and Karthik Muralidharan, "Quality and Accountability in Health Care delivery: audit-study evidence from primary care in India," *American Economic Review*, 2016, *106* (12), 3765–99.

Duflo, Esther, Rema Hanna, and Stephen P Ryan, "Incentives work: Getting teachers to come to school," *American Economic Review*, 2012, *102* (4), 1241–78.

Figlio, David and Susanna Loeb, "School accountability," in "Handbook of the Economics of Education," Vol. 3, Elsevier, 2011, pp. 383–421.

Glewwe, Paul and Karthik Muralidharan, "Improving education outcomes in developing countries: Evidence, knowledge gaps, and policy implications," in "Handbook of the Economics of Education," Vol. 5, Elsevier, 2016, pp. 653–743.

Hussain, Iftikhar, "Subjective performance evaluation in the public sector evidence from school inspections," *Journal of Human Resources*, 2015, *50* (1), 189–221.

Jacob, Brian A and Steven D Levitt, "Rotten apples: An investigation of the prevalence and predictors of teacher cheating," *The Quarterly Journal of Economics*, 2003, *118* (3), 843–877.

Muralidharan, Karthik and Paul Niehaus, "Experimentation at Scale," *Journal of Economic Perspectives*, 2017, *31* (4), 103–24.

_ and Venkatesh Sundararaman, "Teacher performance pay: Experimental evidence from India," *Journal of political Economy*, 2011, *119* (1), 39–77.

_ , Jishnu Das, Alaka Holla, and Aakash Mohpal, "The fiscal cost of weak governance: Evidence from teacher absence in India," *Journal of Public economics*, 2017, *145*, 116–135.

_ , Paul Niehaus, and Sandip Sukhtankar, "Building state capacity: Evidence from biometric smartcards in India," *American Economic Review*, 2016, *106* (10), 2895–2929.

Neal, Derek and Diane Whitmore Schanzenbach, "Left behind by design: Proficiency counts and test-based accountability," *The Review of Economics and Statistics*, 2010, *92* (2), 263–283.

Niehaus, Paul and Sandip Sukhtankar, "The marginal rate of corruption in public programs: Evidence from India," *Journal of Public Economics*, 2013, *104*, 52–64.

Pritchett, Lant, "A review of Edward Luce's in spite of the Gods: the strange rise of modern India," *Journal of Economic Literature*, 2009, *47* (3), 771–80.

2 Tables

Table 1: Balance on observable characteristics

Panel A: All study schools

	Elementary Schools				Secondary schools			
	Treatment	Control	Difference	SE	Treatment	Control	Difference	SE
Total Enrolment	76.79	81.18	-4.39	1.75	250.30	256.00	-5.69	27.54
No. of teachers	2.59	2.69	-0.10	0.05	6.46	6.23	0.23	0.60
Proportion of qualified teachers	0.90	0.91	-0.01	0.01	0.89	0.89	-0.00	0.03
Proportion of female teachers	0.29	0.28	0.01	0.01	0.42	0.36	0.06	0.03
Pupil-teacher ratio	32.34	32.76	-0.43	0.77	43.87	44.14	-0.27	4.08
Rural	0.93	0.92	0.01	0.01	0.80	0.78	0.02	0.05
Head-master room	0.39	0.40	-0.01	0.01	0.51	0.48	0.03	0.06
Electricity	0.19	0.22	-0.03	0.02	0.59	0.62	-0.04	0.08
Visits from Block officials	2.11	2.15	-0.04	0.07				
Visits from cluster officials	8.27	8.21	0.06	0.14				
School-level test scores								
Pratibha Parv school score	67.04	66.81	0.24	0.42				
A Grade school	0.31	0.30	0.02	0.01				
B Grade school	0.44	0.47	-0.02	0.01				
C Grade school	0.19	0.19	0.01	0.01				
D Grade school	0.03	0.03	0.00	0.00				
E Grade school	0.02	0.02	-0.00	0.00				
Class X Board results								
Total score					265.13	266.18	-1.06	7.35
Hindi score					45.94	46.07	-0.13	1.36
Maths score					35.54	33.75	1.79	1.48
N	1774	3661			116	273		

Panel B: Schools in subsample with primary data collection

	Elementary Schools				Secondary schools			
	Treatment	Control	Difference	SE	Treatment	Control	Difference	SE
Total Enrolment	77.11	84.03	-6.92	7.08	250.30	265.28	-14.97	32.27
No. of teachers	2.67	2.71	-0.04	0.20	6.46	6.31	0.15	0.69
Proportion of qualified teachers	0.91	0.95	-0.03	0.02	0.89	0.89	-0.00	0.03
Proportion of female teachers	0.28	0.31	-0.03	0.04	0.42	0.36	0.06	0.04
Pupil-teacher ratio	31.77	33.39	-1.62	3.07	43.87	44.38	-0.51	4.68
Rural	0.89	0.91	-0.02	0.04	0.80	0.80	0.00	0.05
Head-master room	0.35	0.40	-0.05	0.06	0.51	0.48	0.03	0.07
Electricity	0.22	0.30	-0.08	0.08	0.59	0.59	0.00	0.09
Visits from Block officials	2.38	2.21	0.17	0.34				
Visits from cluster officials	8.13	7.94	0.19	0.57				
School-level test scores								
Pratibha Parv school score	66.39	67.05	-0.66	1.81				
A Grade school	0.24	0.33	-0.09	0.06				
B Grade school	0.51	0.44	0.07	0.06				
C Grade school	0.18	0.16	0.02	0.05				
D Grade school	0.06	0.04	0.02	0.03				
E Grade school	0.01	0.02	-0.01	0.02				
Class X Board results								
Total score					265.13	266.18	-1.06	7.35
Hindi score					45.94	46.07	-0.13	1.36
Maths score					35.54	33.75	1.79	1.48
N	100	202			116	116		

Note: This table presents mean characteristics of schools allocated to treatment and control status in the full study population and in the subset chosen randomly for additional primary data collection. The number of observations differs across rows slightly due to variable availability.

Table 2: 2. Ranking of treatment schools by school inspectors

VARIABLES	Percentage of schools				N
	Below	Close	Meets	Above	
Elementary Schools					
Std.1: School Development and Mentoring	17.5	46.9	31.6	4	1643
Std.2: Management	6.1	51.2	37.9	4.8	1643
Std.3: Teaching and learning	74.3	25.4	0.3	0.1	1643
Std.4: Support for students	6	37.5	51.9	4.6	1643
Std.5: SMC and engagement with parents	11	45.3	29.8	13.8	1643
Std.6: Academic Outcomes	28.2	62.6	8.9	0.2	1643
Std.7: Personal and Social Outcomes	7.4	62.2	28.3	2.1	1643
Overall	**16.2**	**74.9**	**8.9**	**0**	**1643**
Secondary Schools					
Std.1: School Development and Mentoring	8.7	22.3	60.2	8.7	103
Std.2: Management	3.9	36.9	46.6	12.6	103
Std.3: Teaching and learning	53.4	39.8	5.8	1	103
Std.4: Support for students	1	21.4	52.4	25.2	103
Std.5: SMC and engagement with parents	2.9	32	34	31.1	103
Std.6: Academic Outcomes	17.5	66	13.6	2.9	103
Std.7: Personal and Social Outcomes	4.9	28.2	58.3	8.7	103
Overall	**4.9**	**63.1**	**29.1**	**2.9**	**103**

Note: These ratings are taken from the administrative dataset and include all treatment schools for which data was available. The administrative data indicate that school inspections, and the corresponding input of assessments into the online portal, was done for 93% of the treatment schools at the elementary level and 89% at the secondary level.

Table 3: Is there useful diagnostic information in the school assessments?

	(1)	(2)	(3)	(4)	(5)	(6)
	PP 2014-15		Board Scores 2014-15		Teacher Attendance	
Overall Ark Grade						
—Close	0.071	0.096	0.107	0.115	0.182	0.083
	(0.069)	(0.067)	(0.107)	(0.192)	(0.050)***	(0.042)*
—Meet	0.257	0.297	0.134	0.163	0.268	0.145
	(0.090)***	(0.092)***	(0.126)	(0.242)	(0.080)***	(0.085)*
Lagged PP score/Board Score	0.436	0.460	0.690	0.573	0.019	-0.005
	(0.038)***	(0.034)***	(0.061)***	(0.074)***	(0.023)	(0.024)
Constant	-0.163	-0.185	0.064	0.063	0.479	0.560
	(0.062)***	(0.061)***	(0.095)	(0.183)	(0.044)***	(0.036)***
Block fixed effects	No	Yes	No	Yes	No	Yes
N	1642	1642	88	88	99	99

Note: This table relates future student achievement and teacher absence to the grades that schools receive in the MPSQA school assessments and lagged test scores. Columns 1-2 present regressions for primary and middle schools with the post-evaluation Pratibha Parv (administrative) test scores as the dependent variable. Columns 3-4 use Class X Board exam results for secondary schools. Columns 5-6 use data on teacher absence collected in a subsample of the treatment group through direct observation.

Table 4: Frequency and intensity of monitoring did not change due to the intervention

	Treatment	Control	Difference	SE	N(Treatment)	N(Control)
			Elementary Schools			
Number of visits (full sample)						
– by BRC and other block-level officials	2.00	1.86	0.14*	0.07	1749	3596
– by CRC and other cluster-level officials	7.88	7.67	0.21	0.17	1749	3596
Number of visits (sub sample)						
– by BRC and other block-level officials	1.90	1.77	0.13	0.30	99	201
– by CRC and other cluster-level officials	7.70	7.35	0.34	0.77	99	201
Time of last visit*						
-- within last month	0.41	0.33	0.08	0.06	100	202
-- within last 2 months	0.58	0.61	-0.03	0.06	100	202
-- within last 6 months	0.73	0.72	0.01	0.05	100	202
-- within last year	0.79	0.77	0.02	0.05	100	202
Time spent by inspector						
-- Minimum 30 minutes	0.90	0.89	0.01	0.04	100	202
-- More than 30 minutes	0.85	0.87	-0.02	0.04	100	202
-- More than 1 hour	0.57	0.51	0.06	0.06	100	202
-- More than 3 hours	0.17	0.18	-0.01	0.05	100	202
			Secondary schools			
Number of visits (full sample)						
– by BRC and other block-level officials	1.05	1.44	-0.39	0.24	116	271
– by CRC and other cluster-level officials	1.37	1.61	-0.24	0.38	116	271
Number of visits (sub sample)						
– by BRC and other block-level officials	1.05	1.33	-0.28	0.27	116	115
– by CRC and other cluster-level officials	1.37	1.17	0.21	0.37	116	115
Time of last visit*						
-- within last month	0.24	0.20	0.04	0.05	116	116
-- within last 2 months	0.36	0.40	-0.03	0.06	116	116
-- within last 6 months	0.59	0.58	0.02	0.06	116	116
-- within last year	0.80	0.69	0.11*	0.06	116	116
Time spent by inspector						
-- Minimum 30 minutes	0.93	0.91	0.02	0.04	116	116
-- More than 30 minutes	0.89	0.88	0.01	0.04	116	116
-- More than 1 hour	0.48	0.45	0.03	0.07	116	116
-- More than 3 hours	0.17	0.13	0.04	0.05	116	116

Note: The number of inspections are as self-reported by the school in the official District Information System for Education (DISE) dataset and is available for the full sample. The time of the last visit was collected using the official records maintained by the school (primarily inspection register) in the subsample of 302 elementary schools covered in the primary data collection. The time spent by the inspector was reported by the headmaster/school in-charge. If no details were available, a school was visited up to 3 times to complete the survey. In addition to this information, the content of the inspector's comments were also transcribed and do not reveal any important differences between the treatment and control schools.

Table 5: School Management Committee

	Elementary Schools					
	Treatment	Control	Difference	SE	N(Treatment)	N(Control)
Details of SMC/PTA						
School has SMC/PTA?	1.00	1.00	0.00	0.00	99	200
SMC/PTA found useful?	0.85	0.78	0.06	0.05	98	198
Last SMC/PTA Meeting						
-- within last month	0.37	0.29	0.08	0.06	100	202
-- within last 2 months	0.67	0.60	0.07	0.06	100	202
-- within last 6 months	0.83	0.82	0.01	0.05	100	202
-- within last year	0.87	0.83	0.04	0.04	100	202
SMC/PTA Useful for?						
Motivating parents	0.77	0.71	0.06	0.05	100	202
Increase involvement of parents	0.52	0.44	0.08	0.06	100	202
Increase involvement of Community	0.44	0.41	0.03	0.06	100	202
Collecting money for the school	0.06	0.05	0.01	0.03	100	202
Teachers gets more recognition	0.13	0.19	-0.06	0.05	100	202

Note: This table uses data from the direct data collection in elementary schools and is based on interviews with two teachers per school. School Management Committes are governing bodies comprising representatives from the school staff, parents and local authorities which are intended to exert community-based accountability on schools.

Table 6: Teacher and student attendance did not change

	Elementary Schools					Secondary Schools	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	School closed	Teacher Attendance		Student Attendance		Teacher Attendance	Student Attendance
Treatment	0.033	-0.030	-0.020	-0.005	-0.020	-0.052	-0.027
	(0.022)	(0.025)	(0.042)	(0.018)	(0.020)	(0.042)	(0.027)
Process Monitoring Round=2	0.175	-0.163	-0.074	0.023	-0.077		
	(0.024)***	(0.025)***	(0.041)*	(0.016)	(0.019)***		
Process Monitoring Round=3	0.100	-0.163	-0.193	0.067	0.013		
	(0.021)***	(0.022)***	(0.037)***	(0.013)***	(0.015)		
Constant	-0.008	0.786	1.566	0.512	0.515	1.589	0.514
	(0.009)	(0.016)***	(0.030)***	(0.013)***	(0.014)***	(0.027)***	(0.020)***
Sample	All schools	All schools	Open schools	Open Schools	All Schools	Open Schools	Open Schools
Observations	3046	3045	2751	809	897	2608	230

Note: All regressions incorporate block fixed effects by including block dummy variables. Standard errors are clustered at the academic cluster level. Teacher attendance was collected for individual teachers three times in the 2015-16 school year. Student attendance was collected at the school-level three times a year from official records.

Table 7: Pedagogical inputs did not change

	Elementary Schools				Secondary Schools			
	Control mean	Treatment coefficient	SE	N	Control mean	Treatment coefficient	SE	N
Textbooks used during class	0.720	-0.007	(0.040)	531	0.918	0.028	(0.024)	444
Workbooks used during class	0.119	-0.17	(0.028)	532	0.089	-0.043	(0.022)*	445
% time on-task	87.984	-0.492	(1.718)	514	89.071	-0.025	(1.853)	433
Child has HW notebooks which is checked	0.753	0.045	(0.032)	1216	0.733	0.008	(0.042)	940
Teacher praised students	0.434	0.005	(0.049)	509	0.423	0.022	(0.047)	422

Note: Each row presents results from a separate regression of the relevant outcome on the treatment dummy and block fixed effects. Standard errors are clustered at the JSK level. These outcome variables were collected through direct interviewer observation of two classes each in Hindi and mathematics in Grades 2, 4, 6 and 8. In observed classes, the notebooks of 5 students, randomly selected based on the enrolment register, were also inspected. PENDING: Match with IGC tables for HW review

Table 8: Treatment effect on individual student scores

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Independent tests (Feb 2016)		Administrative school tests (Dec 2015)				
VARIABLES	Math	Hindi	Math	Hindi	English	Science	Social Studies
Treatment	0.031	0.0042	0.067	-0.005	0.086	-0.010	0.065
	(0.058)	(0.059)	(0.070)	(0.065)	(0.068)	(0.151)	(0.115)
Constant	0.0054	0.0032	-0.000	0.001	0.001	0.007	-0.013
	(0.025)	(0.025)	(0.036)	(0.029)	(0.033)	(0.059)	(0.047)
Observations	9,988	9,988	18410	18292	18571	7550	9411
R-squared	0.060	0.052	0.042	0.039	0.070	0.111	0.048

Note: All regressions incorporate block fixed effects by including block dummy variables. Standard errors are clustered at the school level. The independent tests were conducted only in primary and middle schools and administered to all students present on the day fo the assessments. Individual student-level scores on the administrative school tests were transcribed from official registers for all students at the time of school visits. The number of observations is lower for independently-administered tests (in comparison to official tests) because of student absence, whereas official tests are mandatory. The number of observations for Science and Social Studies is lower than other subjects in the offical data since these subjects are not tested in all grades.

Table 9: Treatment effect on school-level aggregate scores on official tests

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Elementary schools				Secondary schools			
VARIABLES	December 2014		December 2015		March 2015		March 201616	
Treatment	-0.024	-0.010	0.068	0.076	0.004	0.057	0.030	0.066
	(0.043)	(0.041)	(0.052)	(0.049)	(0.066)	(0.049)	(0.062)	(0.059)
Pre-treatment school score		0.45***		0.340***		0.619		0.417
		(0.041)		(0.032)		(0.052)***		(0.062)***
Constant	0.0027	0.0016	0.036	0.036	0.218	0.112	0.201	0.130
	(0.021)	(0.017)	(0.023)	(0.020)*	(0.052)***	(0.039)***	(0.046)***	(0.042)***
Observations	5,414	5,414	5337	5337	202	202	202	202
R-squared	0.060	0.241	0.101	0.199	0.378	0.684	0.260	0.431

Note: All regressions incorporate block fixed effects by including block dummy variables. Standard errors are clustered at the academic cluster level. The outcome variable is the Pratibha Parv test scores administered in December of every school year in primary and middle schools and Class X Board exam scores in the secondary schools, administered in March. These tests are conducted using standardized question papers and protocols across schools. Pre-treatment school-level scores refer to Pratibha Parv and Class X Board results from the 2013-14 school year.