The Effects of Increasing Community Participation on School Management Outcomes: Evidence from India

Natalia Cantet, University of South Carolina
Clara Delavallade, World Bank
Alan Griffith, University of Washington
Zhe Liu, University of Washington
Rebecca Thornton, Baylor University[1]

Abstract

Policies aimed at improving school governance via community-based management are common but understudied. We present the results of a cluster-randomized trial of a multi-faceted education intervention that involved support for local School Management Committees (SMC) in rural India. The intervention increased SMC meetings held by 17 percent and completed school improvement plans by 38 percent, gains that persist for one year after the intervention ends. We find a 14 percent increase in the number of teachers and a 25 percent increase in the likelihood of having a kitchen. We provide suggestive IV analyses to show that the increases in teachers and having a kitchen may be attributed to the increased school management committee activities.

JEL CODES: I28, I21

---

[1] Cantet: Darla Moore School of Business, University of South Carolina, 1014 Greene St, Columbia, 29201, US (ncantet@sc.edu). Delavallade: Africa Gender Innovation Lab, World Bank, 1818 H Street, NW Washington, DC 20433, US (email: cdelavallade@worldbank.org), Griffith: Department of Economics, University of Washington, Savery Hall, 410 Spokane Ln, Seattle, WA 98105, US (email: alangrif@uw.edu), Liu: Department of Economics, University of Washington, (email: zliu525@uw.edu), Thornton: Department of Economics, Baylor University, US (email: rebecca_thorntno@baylor.edu). The authors thank the members of the NGO field team for their cooperation and contributions in all stages of the project and would especially like to acknowledge the useful comments provided by many seminar participants. Oxana Azgaldova, Kwong-Yu Wong, and Flor Paz provided valuable research assistance. The views expressed in this paper are those of the authors and do not necessarily reflect the views of the World Bank. All errors are our own.

I. Introduction

In recent decades, low- and middle-income countries have experienced large gains in school enrollment and attendance (United Nations, 2015). However, learning levels have remained persistently low (World Bank, 2018). At the same time, links between school management practices and learning outcomes suggest that school-level interventions focused on management may help to improve student learning (Anand et al.,2023; Azevedo et al, 2022; Bloom et al., 2015; Lemos et al., 2021; Fryer, 2017; Grissom et al., 2021). School management programs are commonly found worldwide,[2] yet relatively little is known about the effects of community-based school management practices. Such programs aim to increase interactions between community members—such as parents—and schools, with the goal of providing the latter with tools to improve school governance. In contrast to centralized governance, community-based governance seeks to empower local agents—including local leaders, teachers, and parents—to employ local knowledge and inputs in making decisions that directly affect schools. Consequently, proponents of school-based management policies argue that they can improve the provision of and benefits from schools in poorer settings (World Bank, 2004).

In India, since 2009, the Right to Free and Compulsory Education Act has mandated that each public school have a School Management Committees (SMC), made up of parents, educators, and community members. These SMCs are tasked with monitoring various aspects of school operations and are responsible for outlining and implementing an annual School Improvement Plan (SIP). The SIP includes class-wise enrollment estimates, the need for additional teachers, and the development of essential physical infrastructure.

The effectiveness of SMCs remains relatively unexplored. In this paper, we seek to fill this gap by studying an education intervention that was implemented by a non-profit organization in Rajasthan, India. The intervention involved a multifaceted educational program with the aim to improve enrollment and learning, especially for vulnerable children who had dropped out or never attended school. The program included multiple components, including programs to support and strengthen SMCs, campaigns to enroll drop-out or never-enrolled girls, and supplemental teaching in which volunteers were trained to lead playful learning activities among students. We focus on

[2] Muralidharan and Singh (2020) document World Bank-funded school management programs in 84 countries. Recent studies have highlighted some of their effects, with a prominent focus on personnel training (Beg et al.,2021; de Barros et al.,2019; Kraft and Christian, 2022) and teacher value-added (Grissom et al., 2021; Chetty et al., 2014).

the impacts of the SMC component, in which local volunteers provided timely training to SMC members and continuous support for formulating and implementing SIPs.[3]

The program was implemented for a period of seven months during the 2012-13 school year.[4] To evaluate the program, we implemented a cluster-randomized experiment across 229 primary schools in 98 villages. The random assignment was done across villages with 49 villages in the treatment group and 49 in the control, resulting in 117 treatment schools and 112 control schools. Data on SMC activities, school-level infrastructures, and the number of teachers were collected for two academic years, 2012-13 and 2013-14, so that we can assess the program's impacts immediately after the intervention and one year after its conclusion.

We find an increase in SMC activities. Schools assigned to the treatment group had 17.6% more SMC meetings, a 32.5% increase in SIPs prepared, and a 37.8% increase in SIPs completed during the intervention. After the program ends, SMCs in the treatment group continued to be active in the following school year, as the average number of completed plans remains 37% higher than in control schools.

Second, we look at effects on school infrastructure and the number of teachers hired. We find a 12.4 percentage point increase (25 percent) in the presence of a kitchen in the school immediately after the intervention, as compared to the control group average of 50 percent. Although the treatment effect on kitchen infrastructure does not persist into the second year, this is because there was little additional room for improvement in the second year. School kitchens are essential for delivering cooked meals to students under the Mid-Day Meal program, with SMCs mandated to oversee its implementation.[5] We do not observe significant effects on other measures of school infrastructure, including drinking water, boundary wall, or girl's toilet. We find large, significant increases in the number of teachers hired immediately following the program (13.7 percent) and one year later (18.4 percent). The heightened competence of SMCs to assess the number of teacher needed, coupled with the enrollment drive as part of the integrated interventions, potentially contribute to these positive outcomes.

[3] Delavallade, Griffith, and Thornton (2021) evaluate the impact of the program on student enrollment and learning.
[4] The Indian school calendar typically begins in May or June and ends in March.
[5] The Mid-Day Meal program is one of the world's largest school-feeding programs, serving an estimated 104.5 million children in 1.16 million schools in India in 2013-14 (http://mdm.nic.in/).

Additionally, we leverage the random treatment assignment as an instrumental variable for the SMC activities, and the IV analysis suggest the positive gains on the number of teachers hired and kitchen installation may at least be partially due to increased SMC—that is, community-based management—activities.[6]

Our findings contribute to a growing literature documenting the effects of community and parental participation programs on school management and learning outcomes. The closest work is Muralidharan and Singh (2020), which evaluates a comprehensive program for enhancing school management across multiple implementations. This program introduced a school assessment rating with SMC effectiveness as an indicator, assisted with school development plans, and provided follow up visits. The program yielded no impact on school functioning or learning outcomes. Instead, it increased required administrative tasks, leading to a disconnect between the program objectives and implementation. Also in India, Banerjee, et al. (2010) find that offering parents information on the roles and responsibilities of school committees and training the community to administer a test for children did not have an impact on community involvement or teacher effort in India. Similarly, in Gambia, Blimpo (2015) find that comprehensive school management training—when coupled with a large grant—has no additional effect on school attendance or learning outcomes, despite significant changes in teaching and management practices. In contrast, Duflo, Dupas and Kremer (2015) find that giving school committees resources to hire local teachers led to higher test scores in Kenya.[7]

The paper is organized as follows. In Section II, we describe the institutional background, highlighting the role of SMCs nationwide in Indian school governance. Section III describes the intervention, experimental design, and empirical strategy. Section IV presents reduced-form results of the program on school management, infrastructure, and number of teachers. Section V gives instrumental variables results on the effects of SMC activities on infrastructure and teachers. Section VI concludes.

[6] Since the SMC intervention was bundled with other interventions directly aimed at improving learning outcomes, we do not make claims that the SMC component of this intervention itself led to the learning gains found in prior work (see Delavallade, Griffith, and Thornton, 2021),

[7] Additionally, a number of studies have found heterogeneity in the impact of the performance of similar programs in Madagascar (Glewwe and Maïga, 2011), Mexico (Gertler, Patrinos and Rodriguez-Oreggia; 2012), Uganda (Barr el al., 2012), Gambia (Blimpo et al., 2015), Indonesia (Pradhan et al., 2014), Niger (Beasley and Huillery, 2017), and Sir Lanka (Aturupane el al., 2022).

II. Background on School Management Committees

School Management

School management varies worldwide. For instance, in the US, each state is divided into multiple school districts, with a superintendent and/or school board overseeing the schools in each district. The public education administration in India follows a more centralized and hierarchical structure in which The Ministry of Education formulates policies and frameworks at the central level, while each state has its own Department of Education led by a State Minister. Within states, District Education Offices are responsible for overseeing schools in their respective districts (Muralidharan and Singh, 2020).

At the same time, community-based approaches to school management have gained traction as a policy approach to improve school management in many developing countries. The World Bank has funded school management improvement programs in 84 countries (Muralidharan and Singh, 2020). For example, Indonesia implemented school-based management in 2003, granting authority to principals, teachers, and community members in making academic decisions (Pradhan et al, 2014).

School Management Committees in India

As part of the Right to Free and Compulsory Education Act (RTE) in 2009, SMCs in India were mandated nationwide in all elementary government and government-aided schools to serve as a bottom-up mechanism for monitoring and improving school functioning. SMCs are composed of elected representatives, including parents, teachers, local authorities, and community members. Three-fourths of the membership is mandated to be parents or guardians, a minimum of half must be women, and there must be "approportionate representation" of Scheduled Castes/Scheduled Tribes, as stated in the law's text. SMCs are required to hold meetings at least once in every month, with a quorum set at one third of the total members. Our data –described below – suggests that, during the 2011-12 academic year—prior to the intervention—SMCs met on average 5.5 times per year (see Table A1).

SMCs monitor various aspects of the school's operations, including teacher attendance, building repairs, and the Mid-Day Meal (MDM) program.[8] SMCs are also responsible for preparing SIPs. These plans include class-wise enrollment estimates, an estimate of the number of additional teachers needed, and plans for the development of physical infrastructure such as separate girls' toilets and kitchen sheds. The SIP also outlines the financial needs of the school for each year.[9] On average, schools in our sample proposed 9.6 SIPs, of which 7.1 were completed (see Table A1).

Despite the fact that SMCs meet during the year and create (and report completing) improvement plans, the effectiveness of these committees on improving outcomes may be limited if there is low technical capacity, or if the plans they make would have been completed anyway. SMC members receive only limited training provided by the state which involve official trainings that occur once a year generally involving only three to four SMC members from each school (Accountability Initiative, 2014). We provide evidence of the effects of an intervention that targets SMC capacity as part of a multifaceted educational program. The intervention we study – described further below – offers timely and comprehensive training to all SMC members and assisting them in developing and implementing SIPs.

III. Intervention and Research Design

Intervention

The intervention we study was conducted in the state of Rajasthan, located in northern India, with a population of 68.5 million in 2011. Three-quarters (75%) of the population resides in rural areas. Rajasthan has a literacy rate of 67%, which is below national average of 74%. About 60.2% of the children aged 6 to 14 attend public schools, while 35.1% are enrolled in private schools (ASER, 2011).

The program we study is part of a larger, multi-faceted, bundled, intervention developed and implemented by an Indian NGO, through a cooperation agreement with the state Education

[8] As per Section 39 of the National Food Security Act, 2013.

[9] SIPs also list which officials responsible for executing each specific task outlined in the improvement plan and for verifying that the task has been completed. Once the plan is finalized, it is signed by SMC members and submitted to the Block Elementary Education Officer (BEEO) before the end of the respective financial year. The improvement targets for school operations are set for the school to achieve incrementally.

Ministry. The main goals of the program were to increase school enrollment and enhance learning outcomes, with a focus on vulnerable children, especially dropouts, never enrolled, and girls in lower primary school (grades one through five).

The school management component of the intervention involves active engagement with SMCs and community volunteers in each village. Local volunteers, trained by NGO staff, worked closely with six SMC members per school throughout the school year. SMC members received training and support to build capacity, foster parent engagement, formulate and implement annual SIPs, and sensitize the broader community to girls' education issues.

Aside from SMC capacity-building, the full program comprised two additional interventions designed to promote participation and learning. First, enrollment drives were conducted at the beginning of the school year to enroll and retain girls in school. Second, supplemental teaching was provided in three subjects —English, Hindi, and math— throughout the year to enhance students' learning process. For more detailed information on these two components and their effects at the individual level, refer to Delavallade, Griffith, and Thornton (2021).

Experimental Design

Our study was conducted in 98 villages within four administrative blocks. Villages were chosen based on the presence of at least one government primary school. Prior to treatment assignment, villages were stratified into 23 groups by administrative block, access to electricity, and the number of eligible primary schools within the village.

Random assignment was carried out across villages, with 49 villages in the treatment group and 49 in the control, resulting in 117 treatment schools and 112 control schools. Schools in treatment villages received all the bundled intervention discussed above, while schools in control villages received no additional programming from the NGO during the 2012-13 school year.

Data and Outcome Measures

To measure SMC activities, we collected data on three outcomes: the number of SMC meetings held, the number of SIPs prepared, and the number of SIPs implemented at each school. Our SMC activity data span two academic years. In the first year (2012-13), we collected data monthly from July 2012 to January 2013, resulting in a seven months of observations per school. In the second year (2013-14), we collected this data for most months between May 2013 and March 2014.

We also analyze outcomes on the number of teachers working at a school and variables indicating school infrastructure, all at the school level. For the former, we collected data on the number of teachers by gender in each school. For the latter, we collect data on the availability of drinking water, the presence of kitchens, boundary walls, and presence of a girls' toilets. These data were collected by the NGO staff prior to the intervention in 2011 (baseline), immediately after the program's completion in January 2013, and about one year later in March 2014.

Data on SMC activities are only available for 177 of the 229 schools in our sample at baseline – we only use these data for descriptive statistics on baseline SMC activities.[10] Kitchen measurements are missing for 104 schools out of 229 schools during the 2012-13 school year[11]; we discuss in Appendix A that these missing kitchen measurements do not qualitatively impact our results. Two control schools dropped out of data collection in the second year in 2014, causing a decrease in the number of observations from 229 to 227.

An ex-post power calculations suggest that our study can detect a minimum effect size (with an assumed power of 80%) ranging from 0.12 to 0.15 for SMC activity outcomes and 0.13 for teacher counts. In comparison to the actual effect size, we are adequately powered to assert statistical significance for these results. The minimum effect size for school infrastructure outcomes varies from 0.02 to 0.2, indicating that our study may be slightly underpowered when evaluating certain school infrastructures outcomes.

Summary Statistics and Balance

In Table 1, we present descriptive statistics and balance tests of the pre-intervention school characteristics, for the 2011-2012 school year. Schools in the control group have, on average, 45.5 enrolled students, out of whom approximately 45% are male. The teacher-pupil ratio is 0.10 in

[10] Baseline SMC data is available for 91% of control schools (103 out of 112), 63% of treatment schools (74 out of 117).

[11] Kitchen measurement for the 2012-2013 school year is missing for all schools within 8 out of 23 strata, which is 48% of control schools (54 out of 112) and 43% of treatment schools (50 out of 117).

control schools. Almost all control schools (more than 80 percent) have access to clean drinking water, while less than 40 percent are schools with upper primary grades.

Table 1 - Baseline Characteristics of Schools

	Control (1)	Difference (T-C) (2)	P-value (test of equality) (3)
Panel A: School Type			
Upper Primary School (UPS)	0.393	0.017	0.810
	(0.491)	(0.072)	
Panel B: Infrastructure			
Drinking Water	0.786	-0.059	0.489
	(0.412)	(-0.085)	
Kitchen	0.786	0.018	0.807
	(0.412)	(0.072)	
Boundary wall	0.643	0.024	0.779
	(0.481)	(0.085)	
Girls Toilet	0.866	-0.003	0.954
	(0.342)	(0.048)	
Electricity	0.312	-0.022	0.774
	(0.466)	(0.076)	
Panel C: Teachers			
Number of Teachers	3.250	-0.139	0.703
	(2.179)	(0.364)	
Panel D: Enrollment			
Number of Students Enrolled	45.509	-1.364	0.720
	(29.905)	(3.792)	
Percent Enrolled (Girls)	0.550	-0.018	0.392
	(0.177)	(0.021)	
Teacher/Student Ratio	0.092	-0.007	0.540
	(0.088)	(0.011)	
Observations	112	117	229
Joint Test (p-value)			0.930

Notes: 229 baseline sample schools (117 in Control, 112 in Treatment) are included. Column 1 presents the school-level average for control groups. Column 2 presents coefficient of OLS regression of the indicated variable on treatment, and Column 3 reports the p-values for test of difference in means between Treatment and Control. Joint test tests the null hypothesis that all differences (T-C) are 0. Robust standard errors in parentheses, clustered by village.

In Table 1, Column 2, we present the regression coefficient testing the difference in means between baseline variables in the treatment and control schools. The magnitudes of the differences observed between treatment and control schools are relatively small; for example, the difference in number of students enrolled is 1.364 and represents approximately 3% of the control mean. We do not find statistically significant differences between treatment and control schools across any measures of school infrastructure, teacher counts, or enrollment.

For the schools with non-missing baseline SMC data, there was an average of 5.5 SMC meetings held in control schools in the year prior to the intervention, 9.6 prepared SIPs, and 7.1 completed plans. Among those with non-missing data, we find no statistically significant differences between treatment and control schools in terms of various types of SMC activities (Appendix Table A1).

Empirical Strategy

To measure the impact of the program, we estimate Equation (1) as follows:

$$(1)\ Y_{sj} = \beta_0 + \ \beta_1 T_j + \gamma' X_{sj} + \epsilon_{sj}$$

for school *s* in village *j*. T_j is an indicator for village *j* being assigned to the treatment arm.

We include two specifications for all reduced form regressions, with and without a vector of controls, X_{sj}, where X_{sj} contains baseline enrollment variables (number of girls, number of boys, average student ages), baseline indicators of whether a school has a kitchen, drinking water, boundary wall, girls' toilet, and randomization strata fixed effects (23 strata). We cluster standard errors by village—the unit of randomization—in all specifications.

The dependent variables are all measured at the school level. Here, Y_{sj}, captures one of three measurements of SMC activities: the number of meetings held, the number of SIPs prepared, and the number of SIPs completed. We also measure the effects of treatment on school infrastructure in which the dependent variables are indicators of whether the school has a kitchen, drinking water, a boundary wall, or girls' toilet, and the number of teachers measured in 2012-13 or 2013-14 school years (post-treatment).

IV. Results

This section presents the reduced form effects of the intervention on school-level SMC activities, infrastructure, and the number of teachers per school.

Impact on SMC activities

We first show the program's effects on SMC activities. These effects are estimated according to Equation (1) and presented in Table 2. Where noted, we control for baseline enrollment, baseline infrastructure, and strata fixed effects. During the intervention in the 2012-13 school year, treatment schools held an additional 0.79 committee meetings on average, a significant increase of 17.7 percent from an average of 4.28 meetings (Column 2, p-value=0.04). In addition, school committees prepared and completed 2.33 and 1.85 more improvement plans, respectively (Columns 4, 6). These results suggest that the program effectively increased the number of meetings and planning among SMCs in the short term[12].

To evaluate the persistence of the effects, we also examine SMC activities during the 2013-14 school years, slightly over a year after the intervention. Panel B shows that, from May 2013 to March 2014, treatment schools held an average of 0.47 additional committee meetings, and SMCs in treatment schools prepared 1.57 more improvement plans, a large but not statistically significant effect. SMCs in the treatment group completed 2.21 more improvement plans in 2013 (Column 6, p-value=0.026), indicating that the program had a lasting effect on implementing SIPs.

[12] Appendix Figure A1 presents a monthly breakdown of the results. Notably, the effect on SMC meetings remained consistent over time, whereas the number of improvement plans prepared and completed slightly decreased towards the end of 2012.

Table 2 - Effect of Treatment on SMC activities

Dependent Variable:	No. of SMC meeting		No.of SIP proposed		No.of SIP completed	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: 2012 - 13 school year						
Treatment	0.655**	0.796**	1.512	2.330**	1.171	1.853**
	(0.323)	(0.383)	(1.106)	(1.118)	(0.899)	(0.887)
Observations	229	229	229	229	229	229
R-squared	0.024	0.153	0.013	0.140	0.012	0.163
Control group mean	4.277	4.277	6.812	6.812	4.795	4.795
Strata FE	N	Y	N	Y	N	Y
Baseline Enrollment Controls	N	Y	N	Y	N	Y
Baseline Infrastructure Controls	N	Y	N	Y	N	Y
Panel B: 2013- 14 school year						
Treatment	0.510	0.471	1.685	1.572	1.931	2.213**
	(0.308)	(0.298)	(1.739)	(1.271)	(1.295)	(0.979)
Observations	227	227	227	227	227	227
R-squared	0.017	0.212	0.012	0.311	0.026	0.301
Control group mean	4.482	4.482	9.118	9.118	5.727	5.727
Strata FE	N	Y	N	Y	N	Y
Baseline Enrollment Controls	N	Y	N	Y	N	Y
Baseline Infrastructure Controls	N	Y	N	Y	N	Y

Notes: Dependent variables are cumulative SMC activities at the school level from July 2012 to January 2013 (for Panel A) and from May 2013 to March 2014 (for Panel B). The baseline enrollment controls include the number of girls, number of boys, and average age of students enrolled at baseline (in grades 3-5, in 2011). School infrastructure controls are indicator variables for whether the school had a kitchen, a border wall, running water, and girls' toilet at baseline. Robust standard errors in parentheses, clustered by village. *** p<0.01, ** p<0.05, * p<0.1.

Impact on School Infrastructure

Table 3 presents the reduced form treatment effects on school infrastructure, immediately after the intervention in 2013 (Panel A) and one year after in 2014 (Panel B). The impact of treatment on school infrastructure yields mixed results. Specifically, the installation of kitchen facilities showed a substantial effect, with treatment schools increasing the likelihood of having a kitchen installed by 12.4 percentage points. This effect is substantively large, representing approximately 25% of the control group mean of 50 percent (Panel A, Column 4). We note that the estimate is not statistically different from zero.

The estimate for school boundary walls suggests a moderate but imprecisely measured effect, with a 3.9 percentage points (or seven percent) increase (Panel A, Column 6). The program did not improve access to drinking water or gender-specific infrastructure as measured by girls' toilets, possibly because over 70 percent of the schools had these facilities at baseline. As measured in March 2014 (Panel B), the positive effects on infrastructures were small and not statistically significant, which suggests that the effects on infrastructure improvements may have diminished over time. We note that the control group means tend to be increasing over time, and therefore the effect of treatment may have been to speed up these improvements by one year in some schools.

Impact on the Number of Teachers

In addition to improving school infrastructure, another crucial part of the SMC's responsibility is outlining the needs for hiring and retaining teachers. We test the program's impacts on the total number of teachers as well as male and female teachers.

As shown in Table 4, the program successfully increased the number of total teachers in both the 2012-13 and 2013-14 school years. On average, treatment schools have 0.51 more teachers after the intervention, a 13.7 percent increase compared to control schools (Panel A, Column 2, p-value = 0.029). This effect is driven primarily by a large effect of 0.43 more male teachers, representing 14 percent of the average in control (Column 4). We estimate an insignificant effect on number of female teachers (0.08), but we note that this quite small effect represents 10 percent of the average female teacher count in control schools.

Table 3 - Effect of Treatment on School Infrastructure

Dependent Variable:	Drinking Water		Kitchen		Boundary Wall		Girls Toilet	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: 2012-13 school year								
Treatment	-0.081	-0.058	0.132	0.124	0.045	0.039	-0.026	-0.023
	(0.073)	(0.048)	(0.101)	(0.091)	(0.078)	(0.064)	(0.017)	(0.016)
Observations	229	229	229	229	229	229	229	229
R-squared	0.014	0.394	0.018	0.405	0.002	0.324	0.013	0.084
Control group mean	0.902	0.902	0.500	0.500	0.554	0.554	1.000	1.000
Strata FE	N	Y	N	Y	N	Y	N	Y
Baseline Enrollment Controls	N	Y	N	Y	N	Y	N	Y
Baseline Infrastructure Controls	N	Y	N	Y	N	Y	N	Y
Panel B: 2013-14 school year								
Treatment	0.041	0.100	-0.015	0.022	0.020	0.034	0.003	-0.001
	(0.094)	(0.080)	(0.072)	(0.067)	(0.070)	(0.070)	(0.026)	(0.022)
Observations	227	227	227	227	227	227	227	227
R-squared	0.002	0.311	0.000	0.166	0.000	0.305	0.000	0.202
Control group mean	0.745	0.745	0.818	0.818	0.664	0.664	0.955	0.955
Strata FE	N	Y	N	Y	N	Y	N	Y
Baseline Enrollment Controls	N	Y	N	Y	N	Y	N	Y
Baseline Infrastructure Controls	N	Y	N	Y	N	Y	N	Y

Notes: Dependent variables are measures of school-level infrastructure collected in January 2013 (for Panel A) or in March 2014 (for Panel B). Baseline enrollment controls include the number of girls, number of boys, and average age of students enrolled at baseline (in grades 3-5, in 2011). School infrastructure controls are indicator variables for whether the school had a kitchen, a border wall, running water, and girls' toilet at baseline. Robust standard errors in parentheses, clustered by village. *** p<0.01, ** p<0.05, * p<0.1.

Further, these effects of the program on the number of teachers are quite persistent, as shown in Panel B. During the 2013-14 school year—after the intervention was no longer running—we measure 0.68 more teachers on average in treated schools, a large (18 percent) and highly statistically significant result (Column 2). This effect is again driven mostly by an effect of 0.59 additional male teachers (Column 4).

These results indicate that the program was effective at increasing teacher counts, especially for male teachers, in both the short and medium term. Here we stress that these estimated effects are reduced-form estimates of the effect of the entire, bundled intervention. The active student enrollment drive, which was a key component of the program (see Delavallade, Griffith and Thornton, 2021 for details on the full intervention), may have increased total student enrollment and contributed to this effect. Therefore, we cannot state definitively that this effect is driven by the SMC-focused part of the intervention.[13]

V. Further Results

IV Approach

In this section, we link the SMC activities with the school-level outcomes using an instrumental variables approach. To estimate the effect of SMC meetings and SIPs on school infrastructure, we employ a two-stage least squares strategy using the random treatment assignment as an instrumental variable for the SMC activities. In this context, Equation (2) comprises the first stage, while Equation (3) gives the second-stage equation.

(2) $SMC_{sj} = \pi_0 + \pi_1 T_j + \gamma' X_{sj} + \epsilon_{sj}$

(3) $y_{sj} = \beta_0 + \beta_1 \widehat{SMC_{sj}} + \delta' X_{sj} + \epsilon_{sj}$

[13] We present further results on the effects of the program on enrollment measured at the school level. These results are presented in Appendix Tables A6-A7 and discussed in Appendix B. We note the same caveats for these results, which may be driven by a combination of the bundled interventions.

Table 4 - Effect of Treatment on Teacher Counts

Dependent Variable:	Total Teachers		Male Teachers		Female Teachers	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: 2012 - 13 school year						
Treatment	0.225	0.513**	0.372	0.431**	-0.147	0.083
	(0.403)	(0.232)	(0.316)	(0.186)	(0.259)	(0.160)
Observations	229	229	229	229	229	229
R-squared	0.002	0.524	0.008	0.537	0.003	0.373
Control group mean	3.732	3.732	2.902	2.902	0.830	0.830
Strata FE	N	Y	N	Y	N	Y
Baseline Enrollment Controls	N	Y	N	Y	N	Y
Baseline Infrastructure Controls	N	Y	N	Y	N	Y
Panel B: 2013- 14 school year						
Treatment	0.422	0.675***	0.479	0.587***	-0.056	0.088
	(0.408)	(0.210)	(0.323)	(0.188)	(0.242)	(0.154)
Observations	227	227	227	227	227	227
R-squared	0.008	0.546	0.013	0.500	0.000	0.411
Control group mean	3.655	3.655	2.855	2.855	0.800	0.800
Strata FE	N	Y	N	Y	N	Y
Baseline Enrollment Controls	N	Y	N	Y	N	Y
Baseline Infrastructure Controls	N	Y	N	Y	N	Y

Notes: Dependent variables are measures of total number of teachers collected in January 2013 (for Panel A) or in March 2014 (for Panel B). Baseline enrollment controls include the number of girls, number of boys, and average age of students enrolled at baseline (in grades 3-5, in 2011). School infrastructure controls are indicator variables for whether the school had a kitchen, a border wall, running water, and girls' toilet at baseline. Robust standard errors in parentheses, clustered by village. *** p<0.01, ** p<0.05, * p<0.1.

Since we only have one instrument (T_j), we estimate versions of Equation (3) with SMC_{sj} separately defined as number of meetings, number of SIPs prepared, and number of SIPs completed. Note that our instrumental variable strategy relies on treatment as the bundled intervention of SMC support as well as other interventions as described in Section 3. These other interventions could potentially affect the outcomes of interest, and our IV strategy may be affected in such cases. While we caution against drawing causal inferences, these descriptive findings shed light on the program's effectiveness through the involvement of SMCs. Accordingly, we interpret these results with that caveat in mind.

Effect of SMC Activities on School Infrastructure and Teachers

Table 5 presents our 2SLS estimates of the effects of completed SIPs on school infrastructure. We find that completing one additional SIP is associated with a 6.7 percentage point increase in the likelihood of having a school kitchen at the end of the 2012-13 school year (Column 2), an effect that is substantively meaningful (13 percent of the control group mean) but statistically insignificant. We do not find evidence of effects on other school infrastructure measures (Columns 1, 2-4). Similar patterns are observed when examining the effects of other SMC activities, such as the number of meetings and proposed SIPs (Appendix Table A2, A3).

In contrast, we show evidence that the SMC activities do lead to more teachers (Columns 5-7). Our estimates suggest that one additional SIP completed significantly increases the total number of teachers by 0.28 (Panel A, Column 5), primarily driven by male teachers (Column 6). The effects are smaller but remain statistically significant one year after the program: each additional completed SIP leads to 0.17 additional teachers and 0.15 additional male teachers. Finally, we note that the effects of SMC activities on teacher counts are qualitatively identical if we alternatively define SMC activities by number of meetings held (Appendix Table A2, Columns 5-7) or number of SIPs proposed (Appendix Table A3, Columns 5-7).

Table 5 - Effect of SIP completed on Infrastructure and Teachers Counts (2SLS)

	Infrastructure				Number of Teachers		
Dependent Variable:	Drinking Water	Kitchen	Boundary Wall	Girls Toilet	Total Teachers	Male Teachers	Female Teachers
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: 2012 - 13 school year							
No.of SIP completed	-0.031	0.067	0.021	-0.012	0.277*	0.232*	0.045
	(0.029)	(0.058)	(0.035)	(0.009)	(0.152)	(0.140)	(0.076)
Observations	229	229	229	229	229	229	229
Control group mean	0.902	0.500	0.554	1.000	3.732	2.902	0.830
Panel B: 2013- 14 school year							
No.of SIP completed	0.025	0.006	0.009	-0.000	0.168**	0.146**	0.022
	(0.021)	(0.016)	(0.016)	(0.005)	(0.077)	(0.067)	(0.037)
Observations	227	227	227	227	227	227	227
Control group mean	0.745	0.818	0.664	0.955	3.655	2.855	0.800

Notes: Results are estimates from 2SLS regressions using treatment as an instrument for SMC activities. Dependent variables are measures of school-level infrastructure and number of teachers, collected in January 2013 (for Panel A) or March 2014 (for Panel B). Independent variable is total number of SIP completed during school year (2012-13 for Panel A, 2013-14 for Panel B). Baseline enrollment and school infrastructure controls included in all specifications. Baseline enrollment controls include the number of girls, number of boys, and average age of students enrolled at baseline (in grades 3-5, in 2011). School infrastructure controls are indicator variables for whether the school had a kitchen, a border wall, running water, and girls' toilet at baseline. Robust standard errors in parentheses, clustered by village. *** p<0.01, ** p<0.05, * p<0.1.

VI. Conclusion

In this paper, we present the results of an intervention conducted in rural Rajasthan, India. One of the program objectives was to build school management capacity and increase engagement among vulnerable communities.

The program successfully increased the number of school meetings and the number of SIPs created and completed in the first year of implementation. The effects of the program on the number of completed plans continues to the following year, which suggests that SMCs in treated schools become more effective in the long run. We also find limited reduced-form effects on school infrastructure as well as a large and significant effect on the number of teachers, an effect driven primarily by the presence of more male teachers in treated schools.

Several critical factors contribute to the favorable outcomes we observe. First, our intervention has empowered SMCs to prepare and implement school improvement plans without imposing additional administrative burden. Unlike the program in Muralidharan and Singh (2020), schools are not assessed based on the quantity or appearance of SMC activities. Our capacity-building efforts assisted SMCs directly to estimate the infrastructure and teacher requirements, akin to the approach in Duflo, Dupas, and Kremer (2015). Second, our SMCs support is part of a comprehensive program wherein treated schools also receive interventions targeting enrollment and learning. This integration of interventions potentially reinforces the positive impacts on the number of teachers, as discussed by Aturupane et al (2022).

Studies have shown that successful school-based management improves both participation and learning (J- PAL Policy Bulletin, 2017). Therefore, our findings that the program under study led to increased SMC activities has important implications further down the causal chain. Finally, these findings are particularly important since bottom-up school management practices are commonly mandated by governments (as in India) and/or receive substantial funding from funding organizations (see Muralidharan and Singh, 2020).

References

Accountability Initiative. 2014. “School Management Committees: Successes, Challenges and Opportunities.” Center for Policy Research.

ASER. 2011. “Annual Status of Education Report.” ASER Centre.

Anand, Gautam, Aishwarya Atluri, Lee Crawfurd, Todd Pugatch, and Ketki Sheth. 2023. “Improving School Management in Low and Middle Income Countries: A Systematic Review.” *IZA Discussion Papers*.

Aturupane, Harsha, Paul Glewwe, Tomoko Utsumi, Suzanne Wisniewski, and Mari Shojo. 2022. “The Impact of Sri Lanka’s School-Based Management Programme on Teachers’ Pedagogical Practices and Student Learning: Evidence from a Randomised Controlled Trial.” Journal of Development Effectiveness 14 (4): 285–305.

Azevedo, Joao Pedro, Amer Hasan, Diana Goldemberg, Syedah Aroob Iqbal, and Koen Geven. 2021. “Simulating the Potential Impacts of COVID-19 School Closures on Schooling and Learning Outcomes: A Set of Global Estimates.” *The World Bank Research Observer*.

Bando, Rosangela. 2010. “The Effect of School Based Management on Parent Behavior and the Quality of Education in Mexico.” University of California, Berkeley.

Banerjee, Abhijit V, Rukmini Banerji, Esther Duflo, Rachel Glennerster, and Stuti Khemani. 2010. “Pitfalls of Participatory Programs: Evidence from a Randomized Evaluation in Education in India.” *American Economic Journal: Economic Policy* 2 (1): 1–30.

Baron, Reuben M., and David A. Kenny. 1986. “The Moderator–Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations.” *Journal of Personality and Social Psychology* 51: 1173–82.

Barr, Abigail, Frederick Mugisha, Pieter Serneels, and Andrew Zeitlin. 2012. “Information and Collective Action in the Community Monitoring of Schools: Field and Lab Experimental Evidence from Uganda.” Unpublished manuscript.

Beasley, Elizabeth, and Elise Huillery. 2017. "Willing but Unable? Short-term Experimental Evidence on Parent Empowerment and School Quality." World Bank Economic Review 31(2): 531-552.

Beg, Sabrin, Anne Fitzpatrick, and Adrienne M Lucas. 2021. "Improving Public Sector Service Delivery: The Importance of Management." Unpublished manuscript

Blimpo, Moussa P., David K. Evans, and Nathalie Lahire. 2015. *Parental Human Capital and Effective School Management: Evidence from the Gambia*. World Bank Policy Research Working Paper 7238.

Bloom, Nicholas, Renata Lemos, Raffaella Sadun, and John Van Reenen. 2015. "Does Management Matter in Schools?" *The Economic Journal* 125 (584): 647–74.

Chetty, Raj, John N. Friedman, and Jonah E. Rockoff. 2014. "Measuring the Impacts of Teachers II: Teacher Value-Added and Student Outcomes in Adulthood." *American Economic Review* 104 (9): 2633–79.

Delavallade, Clara, Alan Griffith, and Rebecca Thornton. 2021. "Effects of a Multi-Faceted Education Program on Enrollment, Learning and Gender Equity: Evidence from India." *The World Bank Economic Review* 35 (4): 950–68.

de Barros, Ricardo Paes, Mirela de Carvalho, Samuel Franco, Beatriz Garcia, Ricardo Henriques, and Laura Machado. 2019. "Assessment of the Impact of The Jovem De Futuro Program on Learning." Technical Report.

Duflo, Esther, Pascaline Dupas, and Michael Kremer. 2015. "School Governance, Teacher Incentives, and Pupil–Teacher Ratios: Experimental Evidence from Kenyan Primary Schools." *Journal of Public Economics* 123 (C): 92–110.

Evans, David K, and Fei Yuan. 2022. "What We Learn about Girls' Education from Interventions That Do Not Focus on Girls." *The World Bank Economic Review* 36 (1): 244–67.

Fryer, Roland G. 2017. “Management and Student Achievement: Evidence from a Randomized Field Experiment.” *NBER Working Paper Series*.

Gertler, Paul J., Harry Anthony Patrinos, and Marta Rubio-Codina. 2012. “Empowering Parents to Improve Education: Evidence from Rural Mexico.” *Journal of Development Economics* 99 (1): 68–79.

Gertler, Paul, Harry Anthony Patrinos, and Eduardo Rodríguez-Oreggia. 2012. “Parental Empowerment In Mexico: Randomized Experiment Of The ‘Apoyos A La Gestion Escolar (Age)’ In Rural Primary Schools In Mexico.”

Glewwe, Paul, Michael Kremer, and Sylvie Moulin. 2009. “Many Children Left Behind? Textbooks and Test Scores in Kenya.” *American Economic Journal: Applied Economics* 1 (1): 112–35.

Glewwe, Paul, Michael Kremer, Sylvie Moulin, and Eric Zitzewitz. 2004. “Retrospective vs. Prospective Analyses of School Inputs: The Case of Flip Charts in Kenya.” *Journal of Development Economics* 74 (1): 251–68.

Glewwe, Paul, and Eugenie W. H. Maïga. 2011. “The Impacts of School Management Reforms in Madagascar: Do the Impacts Vary by Teacher Type?” *Journal of Development Effectiveness* 3 (4): 435–69.

Grissom, Jason A., and Lara Condon. 2021. “Leading Schools and Districts in Times of Crisis.” *Educational Researcher* 50 (5): 315–24.

Grissom, Jason, Anna Egalite, and Constance Lindsay. 2021. “How Principals Affect Students and Schools.” New York: The Wallace Foundation.

J-PAL Policy Bulletin. 2017 “Roll Call: Getting Children into School.” Cambridge, MA.

Kraft, Matthew A., and Alvin Christian. 2022. “Can Teacher Evaluation Systems Produce High-Quality Feedback? An Administrator Training Field Experiment.” *American Educational Research Journal* 59 (3): 500–537.

Lemos, Renata, Karthik Muralidharan, and Daniela Scur. 2021. “Personnel Management and SchoolProductivity: Evidence from India.” *RISE Working Paper Series,* February.

Muralidharan, Karthik, and Abhijeet Singh. 2020. “Improving Public Sector Management at Scale? Experimental Evidence on School Governance India.” *National Bureau of Economic Research*, November.

PAISA. 2011. “PAISA District Studies:Towards a New Frontier for Governing Elementary Education Finances in India.” Center for Policy Research.

Pradhan, Menno, Daniel Suryadarma, Amanda Beatty, Maisy Wong, Arya Gaduh, Armida Alisjahbana, and Rima Prama Artha. 2014. “Improving Educational Quality through Enhancing Community Participation: Results from a Randomized Field Experiment in Indonesia.” *American Economic Journal: Applied Economics* 6 (2): 105–26.

Rodríguez, Catherine, Fabio Sánchez, and Armando Armenta. 2010. “Do Interventions at School Level Improve Educational Outcomes? Evidence from a Rural Program in Colombia.” *World Development* 38 (3): 415–28.

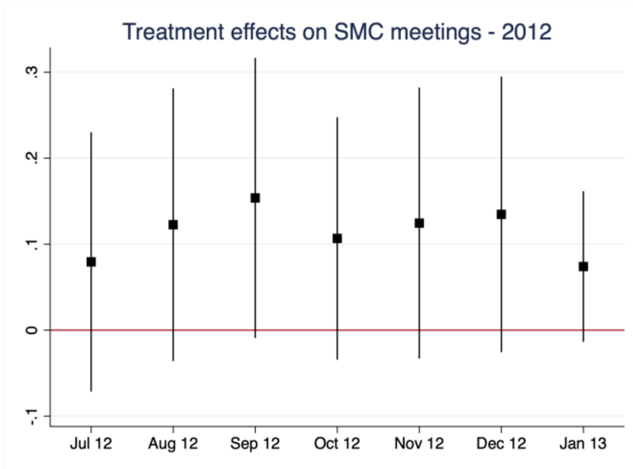
United Nations. 2015. “The Millennium Development Goals Report.” New York: United Nations.

World Bank. 2004. “World Development Report 2004: Making Services Work for Poor People.” Washington, DC.

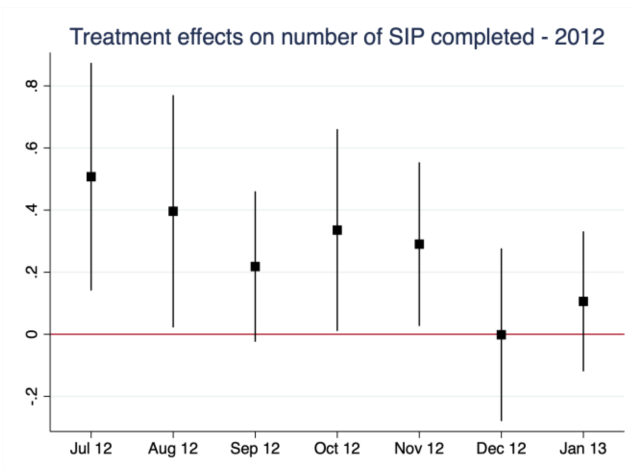
———. 2018. “World Development Report: Learning to Realize Education’s Promise.” Washington, DC.

Figure A1 -- Treatment Effects by Month

Panel A: SMC Meetings



Panel B: SIP Completed



Panel C: SIP Proposed

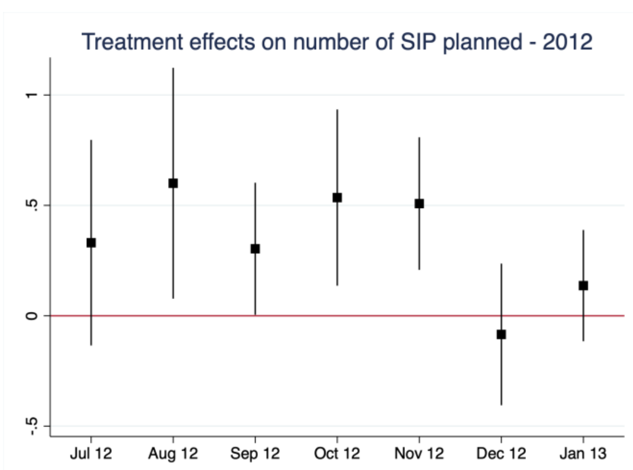


Table A1 - Baseline SMC activities

	Control	Difference (T-C)	P-value (test of equality)
	(1)	(2)	(3)
No.of SMC meeting	5.515	0.202	0.713
	(3.093)	(0.547)	
No.of SIP planned	9.641	0.481	0.792
	(10.925)	(1.822)	
No.of SIP completed	7.146	0.746	0.62
	(9.604)	(1.501)	
Observations	103	74	177

Notes: Baseline SMC activities information was available for only 177 (of 229) schools. Column 1 presents the school-level average for control groups. Column 2 presents coefficient of OLS regression of the indicated variable on treatment, and Column 3 reports the p-values for test of difference in means between Treatment and Control. Robust standard errors in parentheses, clustered by village.

Table A2 - Effect of SMC meetings on Infrastructure and Teachers Counts (2SLS)

	Infrastructure				Number of Teachers		
Dependent Variable:	Drinking Water	Kitchen	Boundary Wall	Girls Toilet	Total Teachers	Male Teachers	Female Teachers
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: 2012 - 13 school year							
No.of SMC meeting	-0.072	0.155	0.050	-0.029*	0.645*	0.541*	0.104
	(0.054)	(0.144)	(0.074)	(0.017)	(0.337)	(0.298)	(0.183)
Observations	229	229	229	229	229	229	229
Control group mean	0.902	0.500	0.554	1.000	3.732	2.902	0.830
Panel B: 2013- 14 school year							
No.of SMC meeting	0.077	0.017	0.026	-0.001	0.522*	0.453**	0.068
	(0.072)	(0.051)	(0.050)	(0.016)	(0.268)	(0.231)	(0.116)
Observations	227	227	227	227	227	227	227
Control group mean	0.745	0.818	0.664	0.955	3.655	2.855	0.800

Notes: Results are estimates from 2SLS regressions using treatment as an instrument variable for SMC activities. Dependent variables are measures of school-level infrastructure and number of teachers, collected in January 2013 (for Panel A) or March 2014 (for Panel B). Independent variable is total number of SIP completed during school year (2012-13 for Panel A, 2013-14 for Panel B). Baseline enrollment and school infrastructure controls included in all specifications. Baseline enrollment controls include the number of girls, number of boys, and average age of students enrolled at baseline (in grades 3-5, in 2011). School infrastructure controls are indicator variables for whether the school had a kitchen, a border wall, running water, and girls' toilet at baseline. Robust standard errors in parentheses, clustered by village. *** p<0.01, ** p<0.05, * p<0.1.

Table A3 - Effect of SIP Proposed on Infrastructure and Teachers Counts (2SLS)

	Infrastructure				Number of Teachers		
Dependent Variable:	Drinking Water	Kitchen	Boundary Wall	Girls Toilet	Total	Male	Female
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: 2012 - 13 school year							
No.of SIP proposed	-0.025	0.053	0.017	-0.010	0.220*	0.185*	0.035
	(0.024)	(0.045)	(0.027)	(0.008)	(0.122)	(0.108)	(0.062)
Observations	229	229	229	229	229	229	229
Control group mean	0.902	0.500	0.554	1.000	3.732	2.902	0.830
Panel B: 2013- 14 school year							
No.of SIP proposed	0.026	0.006	0.009	-0.000	0.177*	0.154*	0.023
	(0.023)	(0.017)	(0.017)	(0.005)	(0.096)	(0.082)	(0.040)
Observations	227	227	227	227	227	227	227
Control group mean	0.745	0.818	0.664	0.955	3.655	2.855	0.800

Notes: Results are estimates from 2SLS regressions using treatment as an instrument variable for SMC activities. Dependent variables are measures of school-level infrastructure and number of teachers, collected in January 2013 (for Panel A) or March 2014 (for Panel B). Independent variable is total number of SIP completed during school year (2012-13 for Panel A, 2013-14 for Panel B). Baseline enrollment and school infrastructure controls included in all specifications. Baseline enrollment controls include the number of girls, number of boys, and average age of students enrolled at baseline (in grades 3-5, in 2011). School infrastructure controls are indicator variables for whether the school had a kitchen, a border wall, running water, and girls' toilet at baseline. Robust standard errors in parentheses, clustered by village. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Appendix A – Missing Data on Kitchen Measurement

Among the infrastructure measurements considered, kitchen measurements were missing for 104 schools out of 229 schools during the 2012-13 school year. Notably, all schools within 8 out of 23 strata lacked this data. First, we examine if kitchen status at the baseline impacts the availability of kitchen status during the 2012-13 school year, and do not find significant differences. Table A4 reports the regression results of equation (A1):

(A1) $missing_i = \beta_1 Treat_i + \beta_2\ baseline\ kitchen_i + \beta_3 Treat\ \times\ baseline\ kitchen_i + \epsilon_i$

where $missing\ data_i$ equals 1 if a school is missing kitchen measurement for the 2012-13 school year. $baseline\ kitchen_i$ represents the kitchen status at the baseline.

Table A4: Robustness Test for Missing Kitchen Data

	(1)	(2)
Treatment	0.022	0.051
	(0.232)	(0.140)
Baseline Kitchen	-0.023	-0.039
	(0.128)	(0.079)
Treatment × Baseline Kitchen	-0.095	-0.090
	(0.219)	(0.157)
Observations	229	229
R-squared	0.008	0.573
Strata FE	N	Y

Notes: Dependent variable is an indicator variable that equals 1 if a school is missing kitchen measurement in January 2013. Robust standard errors in parentheses, clustered by village. *** p<0.01, ** p<0.05, * p<0.1.

Next, we compare the treatment effects on school kitchens using both a partial sample and a full sample. The partial sample consisted of 125 schools with available kitchen measurements, while the full sample include all 229 schools. For the full sample, missing kitchen measurements were imputed using the corresponding baseline kitchen status, assuming that schools with a functioning kitchen at the baseline did not close it during the intervention.

Table A5 shows that the treatment effect is larger and statistically significant when using the partial sample (compare columns 1-2 to columns 3-4). Specifically, our intervention increased the probability of schools having a kitchen shed at the end of the 2012-13 school year by 20 percentage points, which is an 80% increase compared to the control group mean (column 2).

Table A5: Comparing Treatment Effects on School Kitchen

	Partial sample		Full sample	
	(1)	(2)	(3)	(4)
Treatment	0.296**	0.200*	0.132	0.124
	(0.121)	(0.107)	(0.101)	(0.091)
Observations	125	125	229	229
R-squared	0.091	0.452	0.018	0.405
Control group mean	0.241	0.241	0.500	0.500
Strata FE	N	Y	N	Y
Baseline Enrollment Controls	N	Y	N	Y
Baseline Infrastructure Controls	N	Y	N	Y

Notes: Dependent variable is an indicator for the school having a kitchen at the end of the 2013-14 school year, collected in January 2013. Partial sample in columns 1-2 includes 125 schools with available kitchen measurements, while the full sample in columns 3-4 includes all 229 schools. Baseline enrollment controls include the number of girls, number of boys, and average age of students enrolled at baseline (in grades 3-5, in 2011). School infrastructure controls are indicator variables for whether the school had a kitchen, a border wall, running water, and girls' toilet at baseline. Where missing, kitchen measurements in full sample are imputed using the corresponding baseline kitchen status. Robust standard errors in parentheses, clustered by village. *** p<0.01, ** p<0.05, * p<0.1.

Appendix B - Effects on School-level Enrollment

We further explore how the program affects school-level enrollment. It is important to note that the SMC intervention is part of a bundled intervention that includes an enrollment drive (see Delavallade, Griffith, and Thornton, 2021). While we caution against drawing causal inferences, these descriptive findings shed light on the program's effectiveness.

Table A6 suggests that the program positively impacted school-level enrollment, particularly for girls. In 2012-13, treatment schools retained an average of 8.1 more total students, of whom 3.25 were girls (Panel A, Column 2, 6). While this is an 8 percent increase, the effect is not statistically significant. In 2013-14, we see larger and statistically significant effects, with an additional 14.26 total students enrolled in treatment schools, representing a 17 percent increase compared to control schools (Panel B, Column 2). Among these additional enrolled students, 7.98 were girls and 6.28 were boys (Panel B, Column 4,6).

Table A6: Effect of Treatment on Enrollment

Dependent Variable:	Total Enrollment		Enrollment of Boys		Enrollment of Girls	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: 2012 - 13 school year						
Treatment	2.542	8.101	3.244	4.845	-0.702	3.256
	(8.368)	(4.916)	(4.832)	(2.982)	(4.478)	(3.041)
Observations	229	229	229	229	229	229
R-squared	0.000	0.760	0.002	0.665	0.000	0.732
Control group mean	94.911	94.911	43.482	43.482	51.429	51.429
Strata FE	N	Y	N	Y	N	Y
Baseline Enrollment Controls	N	Y	N	Y	N	Y
Baseline Infrastructure Controls	N	Y	N	Y	N	Y
Panel B: 2013- 14 school year						
Treatment	9.944	14.261***	2.746	6.281*	7.198*	7.980***
	(7.856)	(4.796)	(4.343)	(3.345)	(4.253)	(2.301)
Observations	227	227	227	227	227	227
R-squared	0.006	0.744	0.002	0.689	0.010	0.697
Control group mean	81.936	81.936	43.682	43.682	38.255	38.255
Strata FE	N	Y	N	Y	N	Y
Baseline Enrollment Controls	N	Y	N	Y	N	Y
Baseline Infrastructure Controls	N	Y	N	Y	N	Y

Notes: Dependent variables are measures of enrollment collected in January 2013 (for Panel A) or in March 2014 (for Panel B). Baseline enrollment controls include the number of girls, number of boys, and average age of students enrolled at baseline (in grades 3-5, in 2011). School infrastructure controls are indicator variables for whether the school had a kitchen, a border wall, running water, and girls' toilet at baseline. Robust standard errors in parentheses, clustered by village. *** p<0.01, ** p<0.05, * p<0.1.

Enrollment is the first outcome where we observe a more substantial impact on girls than boys. This difference may be attributed to the targeted enrollment drive that specifically aimed to bring in girls who had dropped out or never enrolled before. These results are consistent with the findings on grade-level enrollment in Delavallade, Griffith and Thornton (2021). The positive impact on boys' enrollment suggests potential spillover benefits of the program.

In addition, we are interested in assessing the contribution of SMC activities to the observed positive impact on enrollment. To do so, we employed the same 2SLS approach and estimated the relationship between SMC activities and enrollment at the school level in Table A7. Our results show that completing one additional SIP is associated with an increase of 3.55 total students enrolled and 1.98 girls enrolled in the treatment schools in the 2013-14 school year (Panel B, Columns 1,3). Proposing a SIP leads to a similar increase in enrollment (Panel B, Columns 1,3). Holding one SMC meeting is associated with the largest increase in the total enrollment, an increase of 11 students (Panel B, Column 1). These findings suggest regular communication and collaboration between school officials and community members could effectively promote enrollment.

Table A7 - Effect of SMC activities on School-level Enrollment (2SLS)

Dependent Variable:	Total Enrollment	Enrollment of Boys	Enrollment of Girls
	(1)	(2)	(3)
Panel A: 2012 - 13 school year			
No.of SMC meeting	10.180	6.089*	4.091
	(6.282)	(3.455)	(3.919)
No.of SIP proposed	3.477	2.079*	1.397
	(2.189)	(1.259)	(1.318)
No.of SIP completed	4.373	2.615	1.757
	(2.903)	(1.662)	(1.708)
Control group mean	94.911	43.482	51.429
Panel B: 2013- 14 school year			
No.of SMC meeting	11.019**	4.853	6.166**
	(5.571)	(3.104)	(2.923)
No.of SIP proposed	3.733**	1.644	2.089**
	(1.842)	(1.062)	(0.927)
No.of SIP completed	3.550**	1.564	1.986***
	(1.562)	(0.955)	(0.749)
Control group mean	81.936	43.682	38.255

Notes: Each coefficient is from a separate 2SLS regression, using treatment as an instrument for number of SMC meetings, number of SIP proposed, and number of SIP completed separately. Dependent variables are measures of school-level enrollment collected at end of 2012-13 school year (for Panel A) or end of 2013-14 school year (for Panel B). Independent variable is measure of SMC activities (number of meetings, SIP proposed, SIP completed) during school year (2012-13 for Panel A, 2013-14 for Panel B). Baseline enrollment and school infrastructure controls included in all specifications. Baseline enrollment controls include the number of girls, number of boys, and average age of students enrolled at baseline (in grades 3-5, in 2011). School infrastructure controls are indicator variables for whether the school had a kitchen, a border wall, running water, and girls' toilet at baseline. Robust standard errors in parentheses, clustered by village. N=229 for all specifications in Panel A, N=227 for all specifications in Panel B. *** p<0.01, ** p<0.05, * p<0.1.