



Impact of Secondary School Remedial Programme

EXECUTIVE SUMMARY

June 2017

This report analyses baseline and endline test results from the Secondary School Readiness Programme (SSRP) delivered by Kusuma Foundation (KF) in 25 government secondary schools that form the Kusuma Schools Partnership Initiative (KSPI) in Sambalpur and Hardoi districts in 2016-17.

Executive summary

The evaluation of the SSRP delivered found that:

- Students experienced marked improvements between baseline and endline marks
 - o In Sambalpur, the average gain in test scores is highest in Odia (9.7% points) and lowest in science (1.2% points)
 - o In Hardoi, the average gain is highest in Hindi (13.3% points) and lowest in environmental studies (EVS) (3.03% points)
- While improvements in marks translate mostly into upward movements across learning levels, there are also students who either move down or remain at the same learning level.
- Average attendance rate across phases is around 60% in Sambalpur and 75% in Hardoi, but there exists substantial heterogeneity across schools
 - o In Sambalpur, average school-level attendance rates range between 92% and 16%
 - o In Hardoi, the average attendance rates range between 98% and 53%
- There is a positive correlation between test score gains and attendance across all three phases
 - o The strongest association is found for the Supported Learning Phase (SLP)¹
 - o The association is robust for mathematics across all phases and weakest for science
- The assignment of students into the Foundation Camp (FC)¹ and SLP depending on baseline performance is not perfectly implemented. 91% (98%) of the students surveyed attended both phases in Sambalpur (Hardoi)
- Experimental research is needed to provide causal evidence for the program effects and shed light on the mechanisms through which SSRP affects student performance

I. Background and implementation

I.1. Background

The Secondary School Readiness Programme (SSRP) was developed by the Kusuma Foundation and the Kusuma Trust UK to address the learning lag that is common among students as they transition from primary to secondary education in India. The programme was designed to help students in Classes 9 and 10 to attain learning levels appropriate to these grades and thereby improve their performance in Class 10 Board examinations

In 2015-16, the SSRP was piloted in 50 government secondary schools (25 in Hardoi district, in Uttar Pradesh, and 25 in Sambalpur district, in Odisha). Following early signs of positive impacts, the Kusuma Trust UK commissioned an independent consultant to analyse pre- and post-intervention scores on tests in English, mathematics, science, social science, environmental studies (EVS) and Hindi/Oriya. The Kusuma Foundation also commissioned independent consultants to prepare pre-and post-intervention test papers that mapped questions against the curriculum for these subjects.

I.2. Programme model

Baseline and end-line tests

Prior to the delivery of the SSRP, students sit baseline tests in English, mathematics, environmental studies, science, social science and Hindi or Oriya.

Each test paper comprises questions that are linked to one of three learning levels, as follows:

- Level 1 questions are equivalent to the learning level of a student in Class 3
- Level 2 questions are equivalent to the learning level of students in Classes 4-5
- Level 3 questions are equivalent to the learning level of student in Classes 6-8.
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Post-intervention tests are similarly constructed to measure gains (if any) in learning levels relative to baseline scores. Students who score 75% or above in EVS (which includes questions at learning levels 1-2 only) are invited to sit the science and social science test papers (which includes questions at learning level 3 only). In other words, the EVS test paper serves as a filter for sitting the science and social science test papers. All students sit the English, mathematics and Hindi or Oriya test papers (which contain questions at learning levels 1 to 3).

Phases of the SSRP

If the model is implemented as intended, test results should be used to select students for participation in one or more phases of the SSRP, which comprises three phases:

1. **A Foundation Camp (FC):** for students who score at or below Class 5 standard in pre-intervention mathematics, English, Hindi/ Oriya and EVS test papers.
2. **A Supported Learning Phase (SLP):** for students assessed in pre-intervention tests as at Class 6-8 standard for mathematics, English and science.
3. **A Consolidation Camp (CC):** at the end of the programme for *all* students with a focus on mathematics, English and science.

I.3 Programme implementation

In 2016-17, all students who were present in KSPI schools on a 3-day period in August 2016 (in Hardoi) and October 2016 (in Sambalpur) completed SSRP test papers as per the model set out in I.2 above.

Training

In Hardoi, the SSRP was delivered by Kusuma Volunteer Teachers (KVTs), who received training on the aims of the SSRP, assessment tools and related methods for assessing student learning levels. Participating teachers received an SSRP implementation guide, teacher handbook and a set of Teacher Support Units (TSUs). In Sambalpur, the SSRP was delivered by 'Community Volunteers'.

Programme changes

The SSRP was originally targeted at students in Classes 9 and 10. However, changes were made to how the programme was implemented in the field, as follows:

Hardoi:

- Some students who had not participated in baseline tests were selected for participation in the SSRP on the basis of teacher perceptions of student learning levels (i.e. not as a result of baseline test scores)
- Schools, parents and the District Education Officer (DEO) demanded that the SSRP target students in Class 9 only.
- Student self-selection in the SSRP was common regardless of Class or performance in baseline tests

Sambalpur

- Students who did not participate in baseline tests but scored below 40% in Class 8 exams were selected to participate in the SSRP
- The programme was targeted at Class 9 students only

Compared with the delivery of the SSRP in Hardoi, the programme in Sambalpur was of relatively short duration and the length of time varied between schools. For example, following the Foundation Camp, the Supported Learning Phase was delivered over 45 days in Hardoi compared with 12-26 days in Sambalpur.¹

2. Descriptive statistics

2.1. Age and gender

This section describes the age and gender structure of the student sample across program schools in Sambalpur and Hardoi. The sample includes all students who participated in the endline survey.

The age and gender structure is comparable across both program sites. The majority of students in the sample are 14-15 years old, corresponding to the class 9 students the program targeted. Over 90% of the students in the sample aged between 13 and 16 years.

There is also substantial variation in age: the age range of participants in Sambalpur ranges from 9 to 19. In Hardoi, the range is 10 to 19. The gender composition is roughly equal across both sites.

Table 1. Total Sample by Age and Gender

Age (years)	Sambalpur				Hardoi			
	Male	Female	No Data	Total	Male	Female	No Data	Total
9	1			1	0			0
10	1			1	3		1	4
12	1	2		3	112	87	3	202
13	43	59	3	105	347	403	4	754
14	737	860	44	1641	737	826	13	1576
15	175	104	7	286	717	653	12	1382
16	33	12		45	298	171	1	470
17	4	3		7	54	31	2	87
18	1			1	21	13	1	35
19	2			2	6	2	0	8
No Data	26	13	8	47	61	87	8	156
Total	1024	1054	62	2140	2370	2286	45	4701

¹ The Consolidation Camp was implemented over 6-7 days in both districts.

2.2. Movements in test scores

Table 2 shows the average marks by subject before and after SSRP for both Sambalpur and Hardoi. Overall, there is a marked improvement in the student test scores between baseline and endline. In mathematics, for example, the average test score increased from 36.2 to 41.5 in Sambalpur (an increase by 5.3% points) and from 35.7 to 43.3 in Hardoi (an increase by 7.6% points). In Sambalpur, the increase in scores is highest for Odia (9.8% points) and lowest for science (1.2% points). Test scores in EVS in Sambalpur declined, on average, by 1.9% points.² The patterns are similar in Hardoi, with the largest increase in Hindi (13.4% points) and the lowest increase in EVS (3.3% points).

Table 2. Average marks by subject, before and after SSRP

	Sambalpur				Hardoi			
	Baseline	Endline	% points	N	Baseline	Endline	% points	N
Math	36.20	41.52	5.32	1054	35.74	43.34	7.59	485
Odia/Hindi	62.48	72.25	9.77	1045	65.39	78.74	13.35	1044
English	22.10	24.96	2.86	902	20.37	29.34	10.43	858
EVS	54.98	53.08	-1.90	894	56.21	59.24	3.03	1134
Social Science	17.16	21.19	4.03	136	14.32	22.10	7.78	148
Science	22.87	24.07	1.20	134	16.74	24.68	7.94	154

2.3. Movements across learning levels

To understand how these changes in test scores translate into tangible pass rates, Figure 1 summarizes the changes across learning levels. The threshold for at each level is passing set at 75% of the test score. The tables represent *transition matrices*, indicating the share of students who moved from a given level at baseline to another level at endline.

Movements across learning levels in Sambalpur

For Sambalpur (Figure 1a), all students who failed to pass the first level in *Odia* at baseline still struggled to pass the same level at endline. Around half (51.6%) of the students who passed only level 1 at the baseline *Odia* test remained at level 1, while the other half moved to higher learning levels: 40.5% moved from level 1 to level 2, and 7.9% moved from level 1 to level 3. 45.5% of the students who were classified at level 2 at baseline remained at the same learning level. 24.8% fell back to level 1, while 29.7% moved up to level 3 at baseline. For students classified already at the highest level at baseline, 62.5% remain at the same level, with only 12.5% falling back to level 1 and 25% dropping to level 2.

For *English*, 77% of the students who failed to pass even the first level at baseline moved up to pass level 1. Similarly, the majority (74.6%) of students who were at level 1 at baseline remained at the same learning level. Only 17.2% moved up to level 2. Half of the level 2 English students remained at level 3. A third of the English students at level 2 moved down to level 1, and 15% of the students improved to level 3. 15.4% of the level 3 English students move down to level 1, and 40% move down to level 2. 41.5% stay at the same learning level. Reassuringly, as with *Odia*, there are very few students experiencing large decreases in learning levels, with only 3.1% of the students moving from passing level 3 at baseline to not passing level 1.

For *mathematics*, the majority of students (78.5%) who failed to pass the first level at baseline continue to struggle passing it at endline. 34.7% of the students passing level 1 at baseline failed to pass it at endline. 21% of the students who were at level 1 in mathematics at baseline remain at the same level at endline. 39.7% of the level 1 students improve to learning level 2, and the remainder (8%) moves up to level 3. 68% of the level 2 students remain at the

² A potential reason for the lack of improvements is that EVS, while tested across baseline and endline, was less prominently covered in the curriculum across all three phases.

same level at endline. 10.4% of the level 2 students move down to level 1, and the remainder (8%) moves up to level 3. For level 3, 43.8% of the students remain at the same level at endline, with the same share of students moving down to level 2. No student moved to level 1.

For *mathematics*, the majority of students (78.5%) who failed to pass the first level at baseline continue to struggle passing it at endline. 34.7% of the students passing level 1 at baseline failed to pass it at endline. 21% of the students who were at level 1 in mathematics at baseline remain at the same level at endline. 39.7% of the level 1 students improve to learning level 2, and the remainder (8%) moves up to level 3. 68% of the level 2 students remain at the same level at endline. 10.4% of the level 2 students move down to level 1, and the remainder (8%) moves up to level 3. For level 3, 43.8% of the students remain at the same level at endline, with the same share of students moving down to level 2. No student moved to level 1.

The large majority of students (81.9%) who fail to pass even level 1 in *EVS* typically continue to fail to pass it at endline. Those who pass level 1 either fail to pass it at endline (50.7%) or move up to pass level 2 (41.6%). Only 7.8% of those who passed level 1 at baseline remain at the same level. For those who pass level 2, 64.9% remain at the same level at endline. 28.6% drop to not passing even level 1, with only 6.5% moving down from level 2 to level 1.

Improvements in *science* – which starts at level 2 – were less pronounced. 85.8% of the students who were classified at level 2 stayed at that level, with only 14.2% improving to level 3. Most science students who passed level 3 moved down to level 2 at endline (64.3%). Similar patterns emerge for Social Science: only 20.9% of the students who failed to pass level 3 at baseline moved to level 3 at endline.

Figure 1a. Movements in learning levels across subjects in Sambalpur

Sambalpur

Movements in performance: Odia

From \ To	Lv 0	Lv 1	Lv 2	Lv 3
Lv 0	100.0%	0.0%	0.0%	0.0%
Lv 1	0.0%	51.6%	40.5%	7.9%
Lv 2	0.0%	24.8%	45.5%	29.7%
Lv 3	0.0%	12.5%	25.0%	62.5%

Movements in performance: EVS

From \ To	Lv 0	Lv 1	Lv 2
Lv 0	81.9%	6.3%	11.8%
Lv 1	50.7%	7.8%	41.6%
Lv 2	28.6%	6.5%	64.9%

Movements in performance: English

From \ To	Lv 0	Lv 1	Lv 2	Lv 3
Lv 0	18.3%	77.0%	4.8%	0.0%
Lv 1	7.0%	74.6%	17.2%	1.3%
Lv 2	2.6%	32.0%	50.3%	15.0%
Lv 3	3.1%	15.4%	40.0%	41.5%

Movements in performance: Science

From \ To	Lv 2	Lv 3
Lv 2	85.8%	14.2%
Lv 3	64.3%	35.7%

Movements in performance: Mathematics

From \ To	Lv 0	Lv 1	Lv 2	Lv 3
Lv 0	78.5%	9.0%	11.6%	0.9%
Lv 1	34.7%	21.5%	39.7%	4.1%
Lv 2	13.2%	10.4%	68.4%	8.0%
Lv 3	12.5%	0.0%	43.8%	43.8%

Movements in performance: Soc Science

From \ To	Lv 2	Lv 3
Lv 2	79.1%	20.9%
Lv 3	50.0%	50.0%

Movements across learning levels in Hardoi

Movement patterns across learning grades look roughly similar in Hardoi (Figure 1b). 27.8% of the students who failed to pass the first level in *Hindi* at baseline still struggled to pass the same level at endline. 44.2% of the students who did not pass the first level in Hindi improved to pass level 1 Hindi at endline. 15.9% improved to progress to level 2. Around a third (32.3%) of the students who passed only level 1 at the baseline Hindi test remained at level 1, while the other half moved to higher learning levels: 41.4% moved from level 1 to level 2, and 22.2% moved from level 1 to level 3. Only 4% of the students who passed level 1 Hindi at baseline did not pass the same level at endline. 40.1% of the students who were classified at level 2 at baseline remained at the same learning level. 22.3% fell back to level 1, while 22.2% moved up to level 3 at endline. For students classified already at the highest level at baseline, 31.5% remain at the same level, with 26.7% falling back to level 1 and a third dropping to level 2.

Progress is less pronounced for *English*: 54.9% of the students who failed to pass even the first level at baseline moved up to pass level 1. Similarly, the majority (51.3%) of students who were at level 1 at baseline remained in the same learning level. Only 29.2% moved up to level 2. Nearly a half of the level 2 English students remained in level 3. Only about 26% of the English students at level 2 moved down to level 1, and 24% of the students improved to level 3. 20% of the level 3 English students move down to level 1, and 51.4% move down to level 2. 28.6% stay at the same learning level. Reassuringly, as with Hindi, there are very few students experiencing large decreases in learning levels, with no student moving from passing level 3 at baseline to not passing level 1.

For *mathematics*, the majority of students (60.5%) who failed to pass the first level at baseline continue to struggle passing it at endline. 25.8% of the students passing level 1 at baseline failed to pass it at endline. 27% of the students who were at level 1 in mathematics at baseline remain at the same level at endline. 46.1% of the level 1 students improve to learning level 2, and a minority (1.1%) moves up to level 3. 73.4% of the level 2 students remain at the same level at endline. 12.5% (14.1%) of the level 2 students move down to level 1 (not passing level 1). No student moved from level 2 to level 3. For level 3, no student remained at the same level at endline, with all students moving down to level 2. No student moved to level 1 or below.

In *EVS*, 52.8% of the students who failed to pass level 1 at baseline still struggled to pass it at endline. Students who passed level 1 at baseline either fell back (37.7%) or progressed to level 2 (47%), with only 15.2% remaining at level 1. 65.9% of the level 2 students at baseline remained at level 2. 26.1% dropped to not passing level 1, and only 8% dropped to not passing level 2 at endline.

There is relatively little mobility in *science and social science*: all students who passed level 3 at baseline in science continued to pass level 3 at endline. 73.2% of those who did not pass level 3 remained at the same level. No student passed level 3 at baseline for Social Science, but 30.4% of the students subsequently improved to pass at endline.

Figure 1b. Movements in test scores across subjects in Hardoi

Hardoi

Movements in performance: Hindi

From \ To	Lv 0	Lv 1	Lv 2	Lv 3
Lv 0	27.8%	44.2%	15.9%	11.8%
Lv 1	4.0%	32.3%	41.4%	22.2%
Lv 2	1.4%	22.3%	40.1%	35.9%
Lv 3	7.8%	26.7%	33.9%	31.5%

Movements in performance: EVS

From \ To	Lv 0	Lv 1	Lv 2
Lv 0	52.8%	13.5%	33.6%
Lv 1	37.7%	15.2%	47.0%
Lv 2	26.1%	8.0%	65.9%

Movements in performance: English

From \ To	Lv 0	Lv 1	Lv 2	Lv 3
Lv 0	19.1%	54.9%	18.5%	7.5%
Lv 1	11.3%	51.3%	29.2%	8.2%
Lv 2	3.7%	25.6%	46.7%	24.1%
Lv 3	0.0%	20.0%	51.4%	28.6%

Movements in performance: Science

From \ To	Lv 2	Lv 3
Lv 2	73.2%	26.8%
Lv 3	0.0%	100.0%

Movements in performance: Mathematics

From \ To	Lv 0	Lv 1	Lv 2	Lv 3
Lv 0	60.5%	19.2%	20.1%	0.3%
Lv 1	25.8%	27.0%	46.1%	1.1%
Lv 2	14.1%	12.5%	73.4%	0.0%
Lv 3	0.0%	0.0%	100.0%	0.0%

Movements in performance: Soc Science

From \ To	Lv 2	Lv 3
Lv 2	65.9%	30.4%
Lv 3	0.0%	0.0%

Cross-cutting pattern

Figures 1a and 1b also highlight common patterns across both program sites. With the exception of the languages Hindi and Odia, the movement patterns look remarkably similar across both sites. The figure also highlights variation in the “upward mobility” of students between baseline and endline. At the same time, a degree of “downward mobility” remains, with students moving down in their learning levels. This downward mobility is most pronounced in Science and Social Science, where the bulk of the students move from level 3 to level 2 across both sites.

While changes in learning levels may in part be driven by SSRP, a comparison of test scores before and after the intervention will not allow us to causally attribute these gains to SSRP. Indeed, changes in test scores between baseline and endline can reflect a host of factors: the difficulty of the endline test may differ from the baseline test; students may have also become accustomed to the style of testing, thus improving over time. Students may have also improved over time as the school year progressed.

3. Correlating test score changes and attendance

To further investigate the potential drivers of test score changes, this section now relates changes in individual test scores to differences in attendance rates across students.

An important caveat in this context is that such a correlation exercise will still not enable us to draw conclusions on the causal relationship between schooling performance and attendance. Differences in attendance rates may be driven by other factors that impact test scores. Students who score higher at baseline, for example, may be motivated to attend SSRP more frequently but may also perform better in exams. In this case, an observed positive relationship between test scores and attendance will be spurious, providing an upward biased estimate of the program effect.

We partially alleviate concerns over omitted variables such as differential ability by controlling for the baseline test score, gender, age and school of the student in a regression analysis. Intuitively, we then compare differences in endline test scores to differences in attendance rates among students with the same baseline test score, age, gender and school of attendance.

Figure 2 illustrates the intuition behind the analysis based on mathematics scores.³ Comparing differences in mathematics scores to differences in overall attendance rates across all three sessions (FC, SLP and CC), there is a strong positive relationship: students who have attended a larger proportion of all three phases experience, on average, larger gains in the endline math score. The height of the bar indicates the gain in math scores going from no attendance (0%) to full attendance (100%).

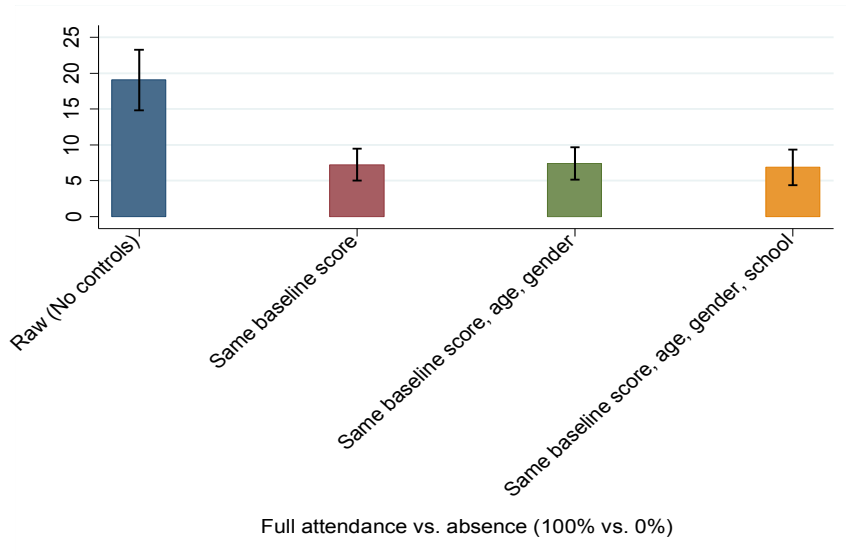
Since it may be the higher ability students who are both motivated to attend more sessions and who tend to score higher, the second bar in Figure 2 now holds constant the baseline test score, thus comparing differences in endline math scores and attendance rates among students with the *same* baseline score. As expected, accounting for initial differences in baseline scores reduces the partial correlation between endline mathematics scores and attendance rates by more than a half. The relationship however remains statistically significant – the error bars do not include zero, allowing us to reject with 95% confidence that there is no relationship between test scores and attendance.

The third and fourth bars hold constant further dimensions to enable a comparison among students with more similar observable differences. The third bar reports the partial correlation between endline math scores and attendance rates among students with the same baseline scores, age and gender. In addition, the fourth bar confines the comparison to students within the same school. Confining the comparison to students within the same school is potentially very important as schools were given autonomy over the three phases of the SSRP: the duration of each phase, quality of management, motivation of teaching assistants may therefore differ across schools. Comparing only among students within the same school removes all these potential school-level confounders.

The strength of the relationship does not change substantially. Once accounting for differences in baseline test scores, differences in age, gender and school of attendance, the observed test score gains are not systematically associated with attendance rates and endline math scores.

³ The intuition and results are similar using other scores.

Figure 2. Correlation between math scores and overall SSRP attendance



While the comparison among students with similar observables - same baseline scores, age, gender and school – provides evidence for a positive association between endline scores and attendance, it is still important to note that differences in attendance rates may nonetheless be driven by (unobservable) margins in which these students differ.

3.1. Correlation results by subject and phase

Correlation results for Sambalpur

With these caveats aside, this subsection reports the partial correlations between test scores and attendance by subject and phase (FC, SLP and CC). Throughout the subsequent analysis, we control for differences between students in baseline scores, age, gender and the students’ school of attendance.

Figure 3 compares differences in test scores to differences in attendance rates in the foundation camp (FC) in Sambalpur. The correlation between test scores and attendance is strongest for mathematics and Odia. The relationship, however, is only statistically significant for mathematics. For Odia, English, EVS, social science and science, the error bars include zero and we cannot reject that there is no correlation between test scores and FC attendance for these subjects. The larger error bars for Social Science and Science reflect the greater uncertainty of the estimates arising from smaller sample sizes.

Figure 3. Correlation between test scores by subject and FC attendance

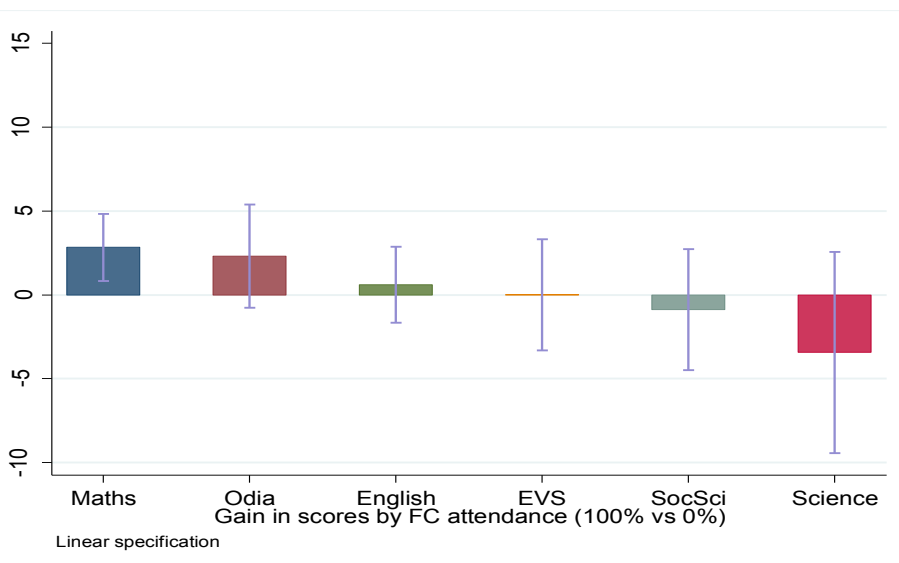


Figure 4 reproduces the same analysis for SLP attendance in Sambalpur. There is a positive and statistically significant relationship between endline scores in mathematics, Odia, English and EVS. The relationship is strongest for Odia. As before, the relationship is statistically insignificant for social science and science.

Figure 4. Correlation between test scores by subject and SLP attendance

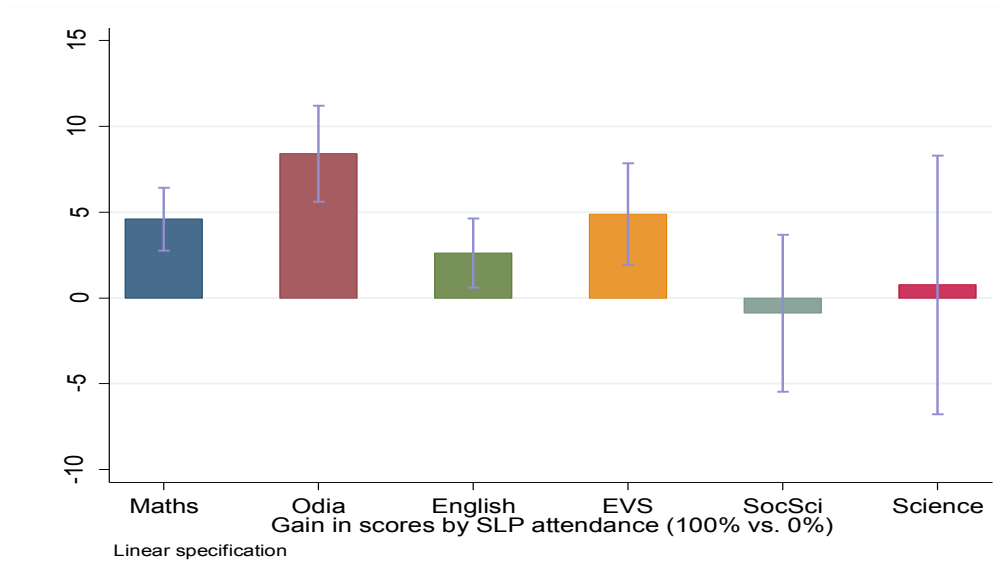


Figure 5. Correlation between test scores by subject and CC attendance

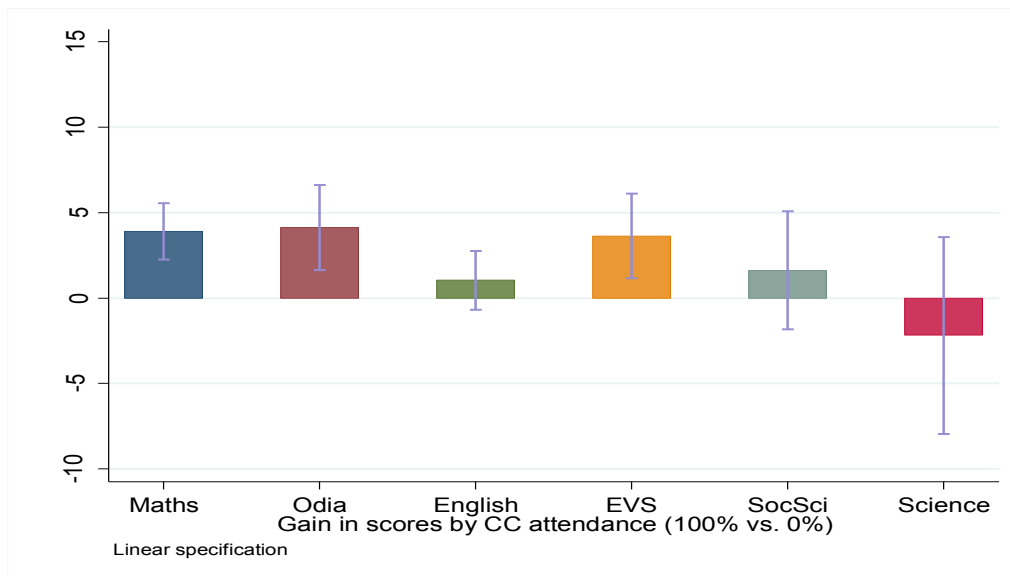


Figure 5 presents the correlations between test scores by subject and CC attendance in Sambalpur. There is a positive and statistically significant relationship between endline mathematics, Odia and EVS scores. The relationship is statistically insignificant for social science and science.

Correlation results for Hardoi

This section reports the same analysis conducted for Hardoi. Figure 6 relates differences in test scores to differences in attendance rates for the Foundation Camp in Hardoi. In contrast to Sambalpur, there is no statistically significant correlation between differences in attendance rates and differences in math score gains. Instead, there is a positive and statistically significant impact on EVS scores. There is no statistically significant association between attendance and the remaining test scores. Again, the error bars are larger for the science and social science marks due to the smaller sample sizes: although the association appears strong, it is too imprecisely estimated to allow us to rule out a zero association.

Figure 6. Correlation between test scores by subject and FC attendance

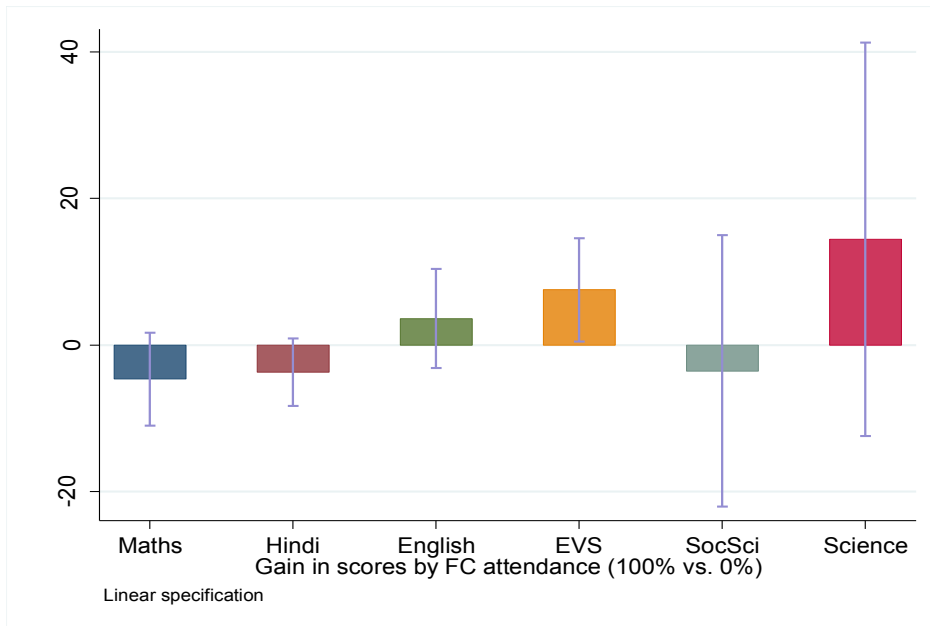
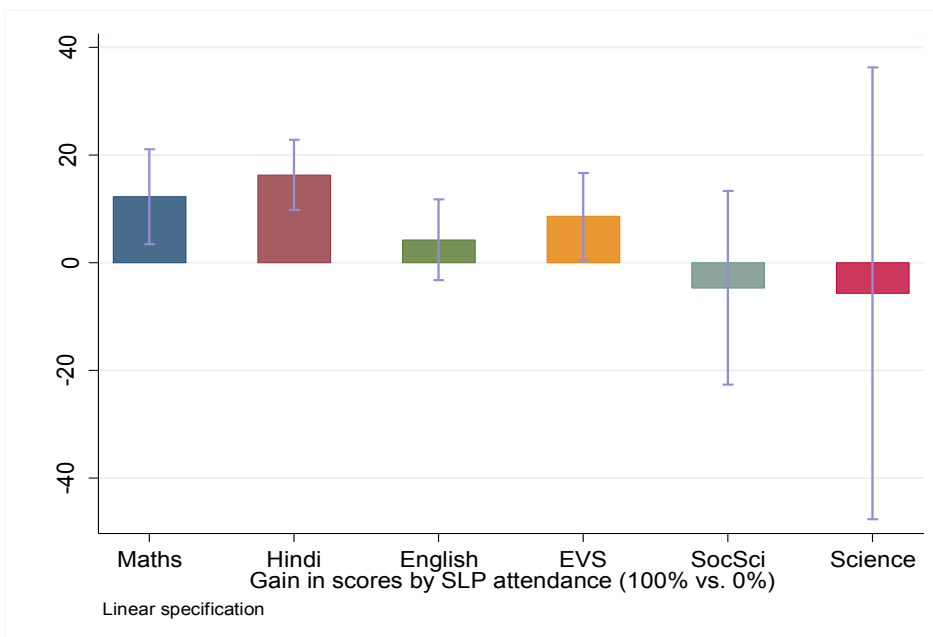


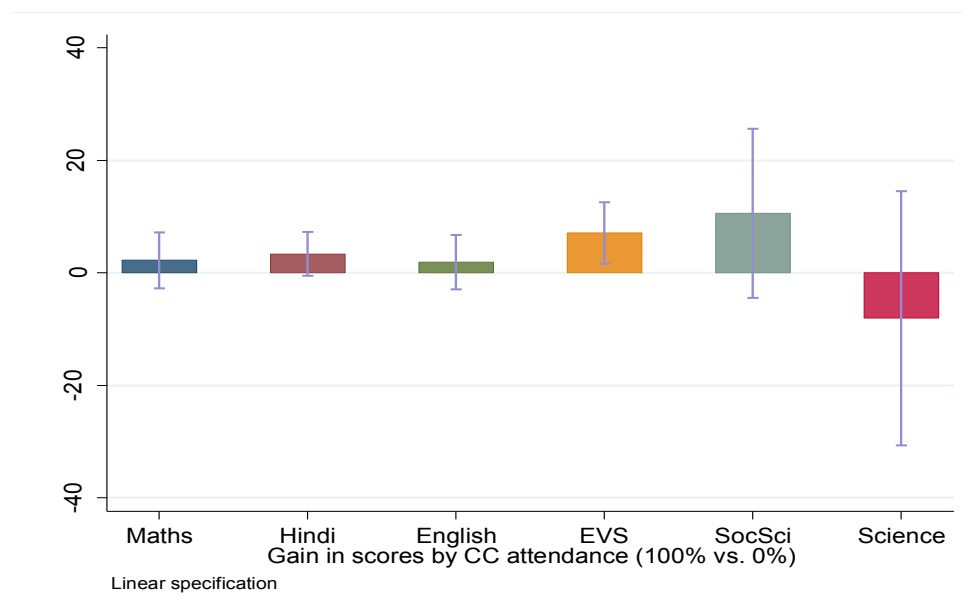
Figure 7 reproduces the same analysis for SLP attendance in Hardoi. This pattern is comparable to the results in Sambalpur. There is a positive and statistically significant relationship between endline scores in mathematics, Hindi, and EVS. The relationship is strongest for Hindi. As before, there is no statistically significant relationship for social science and science.

Figure 7. Correlation between test scores by subject and SLP attendance



Finally, Figure 8 presents the correlations between test scores by subject and CC attendance in Hardoi. In contrast to the results in Sambalpur, we find no statistically significant associations between attendance and endline maths scores and Hindi. Similar to Sambalpur, however, there is a statistically significant association between attendance and EVS. As before, the relationship is statistically insignificant for social science and science.

Figure 8. Correlation between test scores by subject and CC attendance



Cross-cutting pattern

Table 3 summarizes the correlations across both program sites, only reporting the sign for statistically significant associations. As the table indicates, there is a consistently positive and statistically significant association between attendance and mathematics in Sambalpur. In terms of statistical significance, attendance in SLP has the strongest association with gains in scores across subjects.

The results are most comparable for Odia/Hindi and EVS: in these cases, we observe positive and statistically significant associations with attendance in SLP and CC. Overall, however, it is difficult to provide clear-cut explanations for why results differ across Sambalpur and Hardoi. Many potential factors exist: the programs were administered differentially, with those in Hardoi of comparatively longer duration; and differences across both program sites may also affect the external validity of these correlations.

Table 2. Summary of test score-attendance correlations

	Sambalpur			Hardoi		
	FC	SLP	CC	FC	SLP	CC
Mathematics	+	+	+			+
Odia / Hindi		+	+		+	+
English		+				
EVS		+	+		+	+
Social Science						
Science						

4. Attendance: heterogeneity and dynamics

The positive association between test scores and attendance raises policy relevant questions: where do differences in attendance come from? This section explores three sources of differences in attendance rates: (i) across phases (FC, SLP, CC) (ii) across schools (iii) within-schools.

4.1. Difference across phases (FC, SLP, CC)

By design, SSRP attendance rates – if correctly implemented – vary across phases. Specifically, SSRP introduces tracking by separating students into attending either the FC or SLP. Students who score at level 1 and 2 (equivalent to at or below class 5 standard) in mathematics, English, Odia and EVS are allocated to FC, while students who score at level 3 (class 6-8 standard) are assigned to SLP.

Table 3. Attendance and participation across phases

	Sambalpur		Hardoi	
	Avg. attendance rate	% students ever participated	Avg. attendance rate	% students ever participated
FC	63%	93%	79%	99%
SLP	64%	94%	74%	99%
CC	61%	85%	76%	99%

In practice, however, the programme was not always administered to its intended set of students. The test score eligibility criteria was not strictly adhered to, and students were allowed to self-select into the SSRP. In Sambalpur, for example, while students should either attend FC or SLP, almost all students attended both courses: 93% attended FC and 94% attended SLP. 91% of the students attended both. Although all students were to attend the CC, the actual share of students participating is only 85%. The pattern is similar in Hardoi: 98% of the students attended both FC and SLP. The overall attendance rates, as measured both by average attendance across the duration of the course and the share of those who attended at least once, is higher in Hardoi, with attendance rates nearly 10% points higher on average.

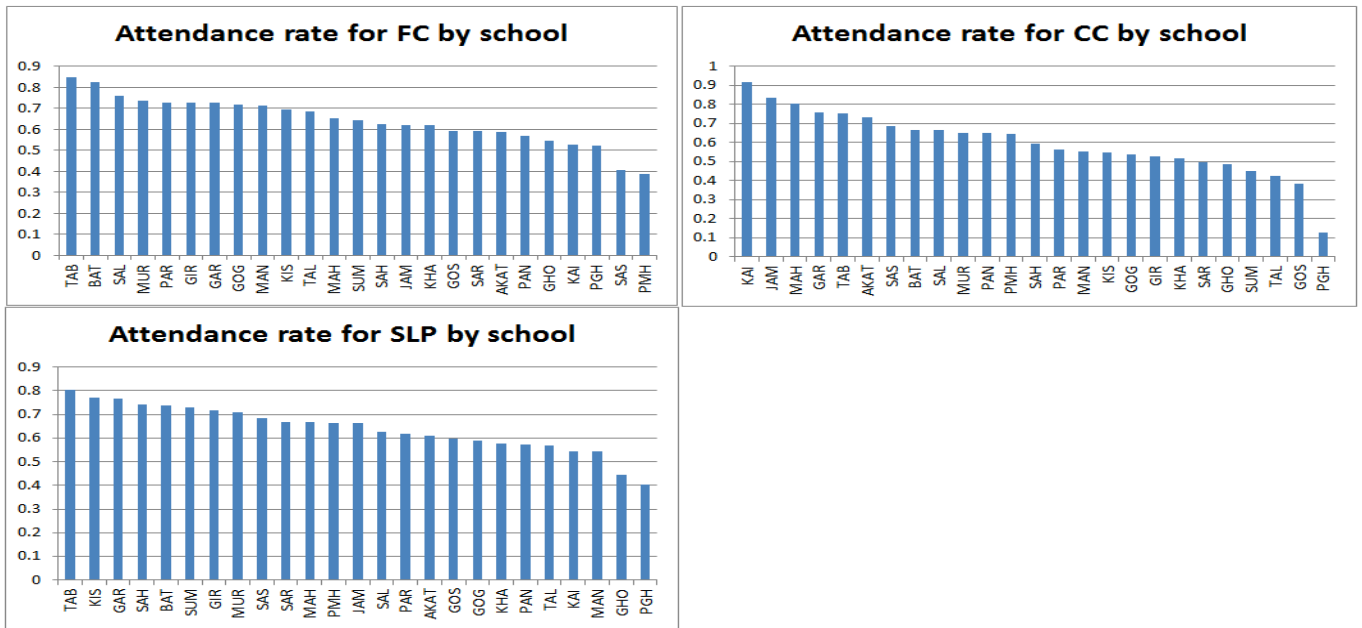
4.2. School-level heterogeneity

Attendance rates across schools in Sambalpur

There also exists substantial heterogeneity in average attendance rates across schools. As Figure 9 shows, attendance rates for the FC range from 85% (School code: TAB) to 39% (School code: PMH).⁴ The figure also shows the attendance rates for SLP by school. The range of variation is similar: the school with the highest attendance rate is once again TAB (80%), while the school with the lowest attendance rate is 40%. Finally, the third panel shows the attendance rates for the CC, with attendance rates ranging between 92% (School code: KAI) and 16% (School code: PGH). Attendance rates across all phases are correlated: the correlation coefficient between FC and SLP attendance is 0.42, and the correlation between CC and SLP is 0.43. The correlation is lowest for FC and CC (0.10).

⁴ The school codes are found in the appendix.

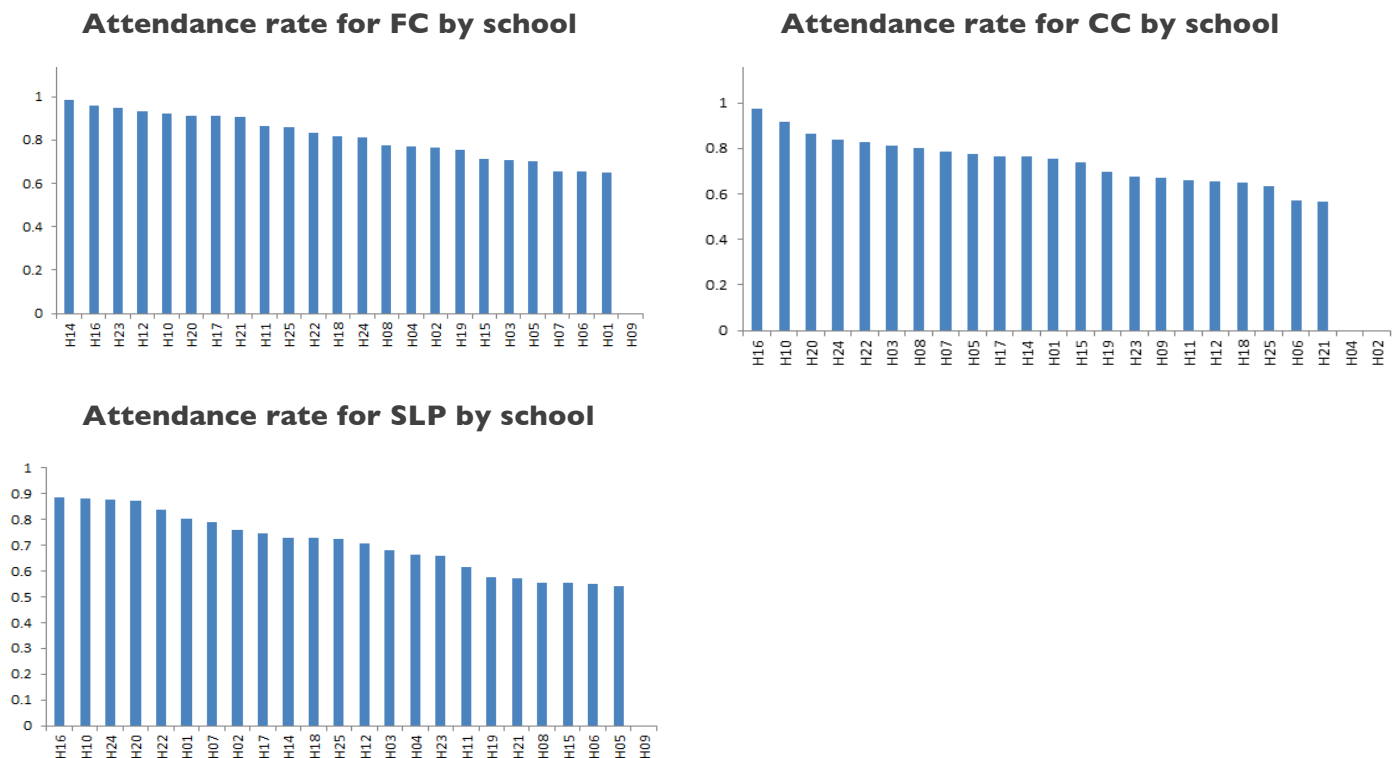
Figure 9. Attendance rate by phase and school in Sambalpur



Attendance rates across schools in Hardoi

The observed heterogeneity is smaller in Hardoi, though there still exists substantial differences in attendance rates across schools. As Figure 10 shows, attendance rates for the FC range from over 98% (School code: H14) to 64% (School code: H1).⁵ Figure 10 also shows the attendance rates for SLP by school. The range of variation is similar: the school with the highest attendance rate is H16 (88%), while the school with the lowest attendance rate is 53%. Finally, we report the attendance rates for the CC, with attendance rates ranging between 97% (School code: H16) and 56% (School code: H21). Attendance rates across all phases are correlated: the correlation coefficient between FC and SLP attendance is 0.35, and the correlation between CC and SLP is 0.65. The correlation is lowest for FC and CC (0.14). The correlation patterns across attendance for FC, SLP and CC are comparable across both program sites.

Figure 10. Attendance rate by phase and school in Hardoi



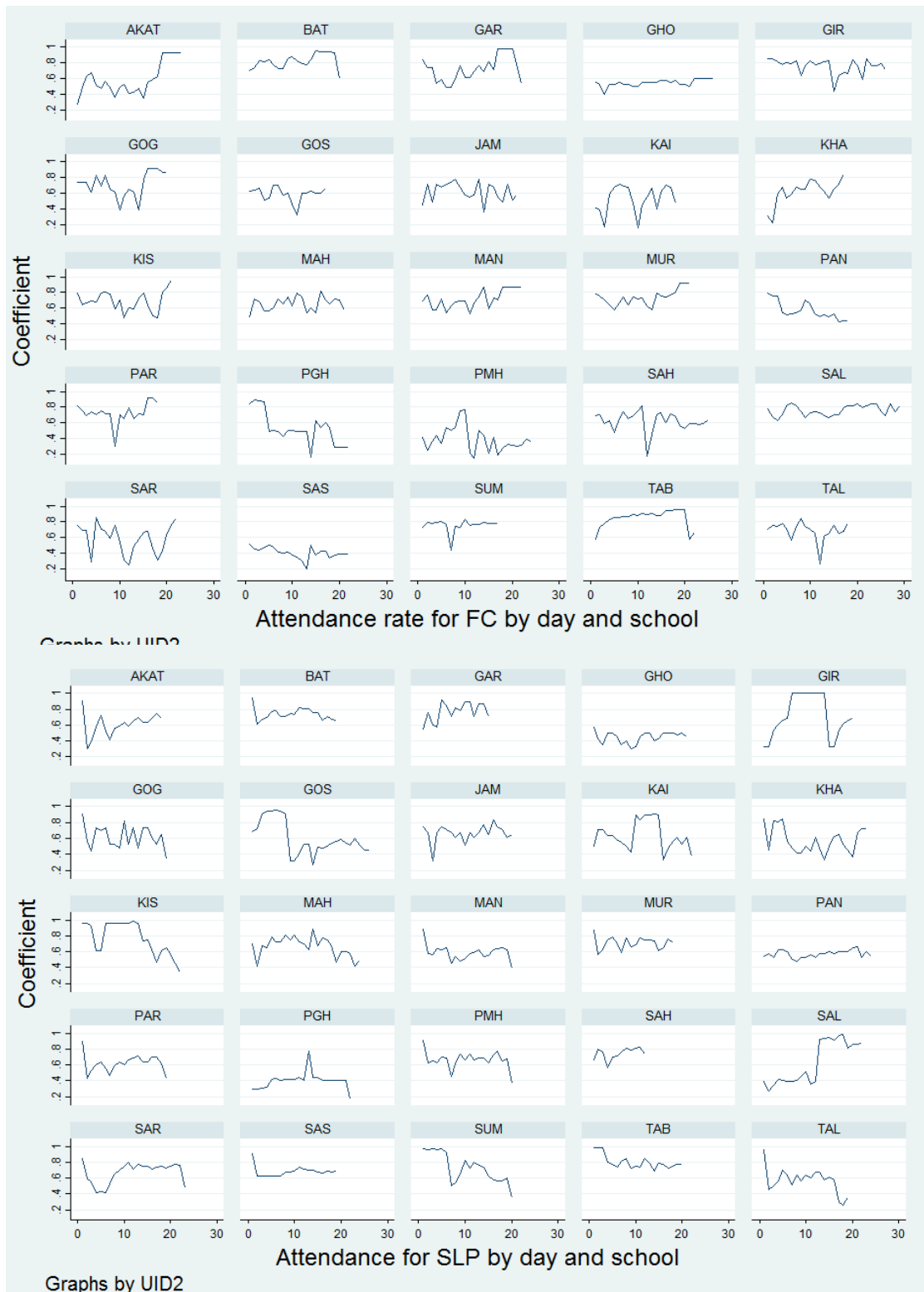
4.3. Within-school dynamics

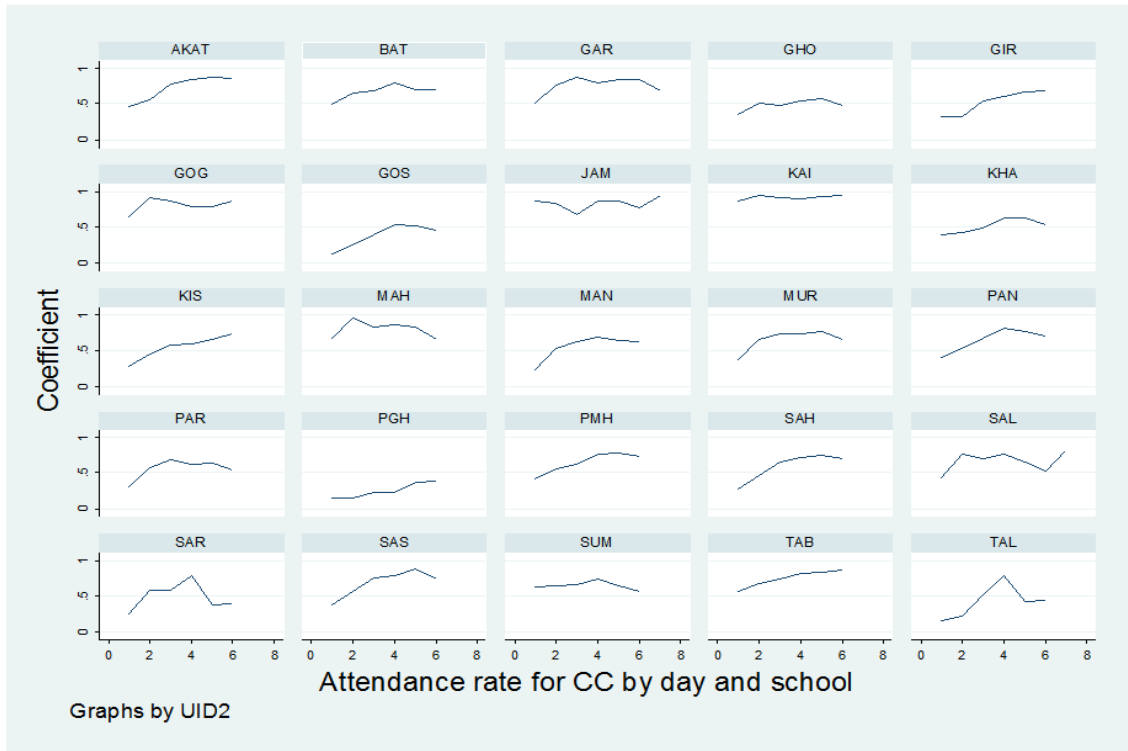
There is also substantial heterogeneity over time. The rich daily attendance data collected enables the computation of average attendance rates over time for each phase and school.

Attendance dynamics in Sambalpur

Figure 11 plots attendance rates over time and reveals substantial heterogeneity. While attendance rates remain stable over time (e.g. GHO school for FC), attendance rates in other schools surge towards the end of the phase (e.g. AKAT for FC). In other cases, attendance rates drop sharply towards the end (e.g. TAB in FC).

Figure 11. Attendance over time by phase and school

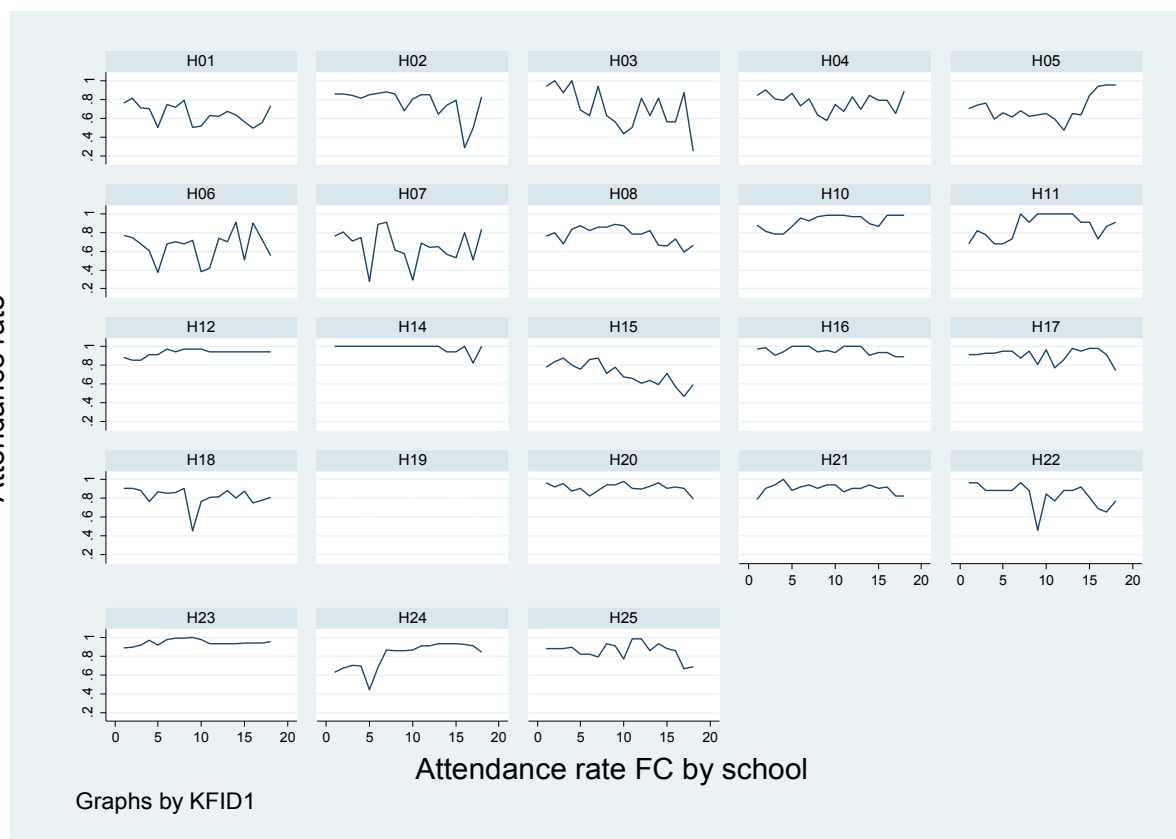


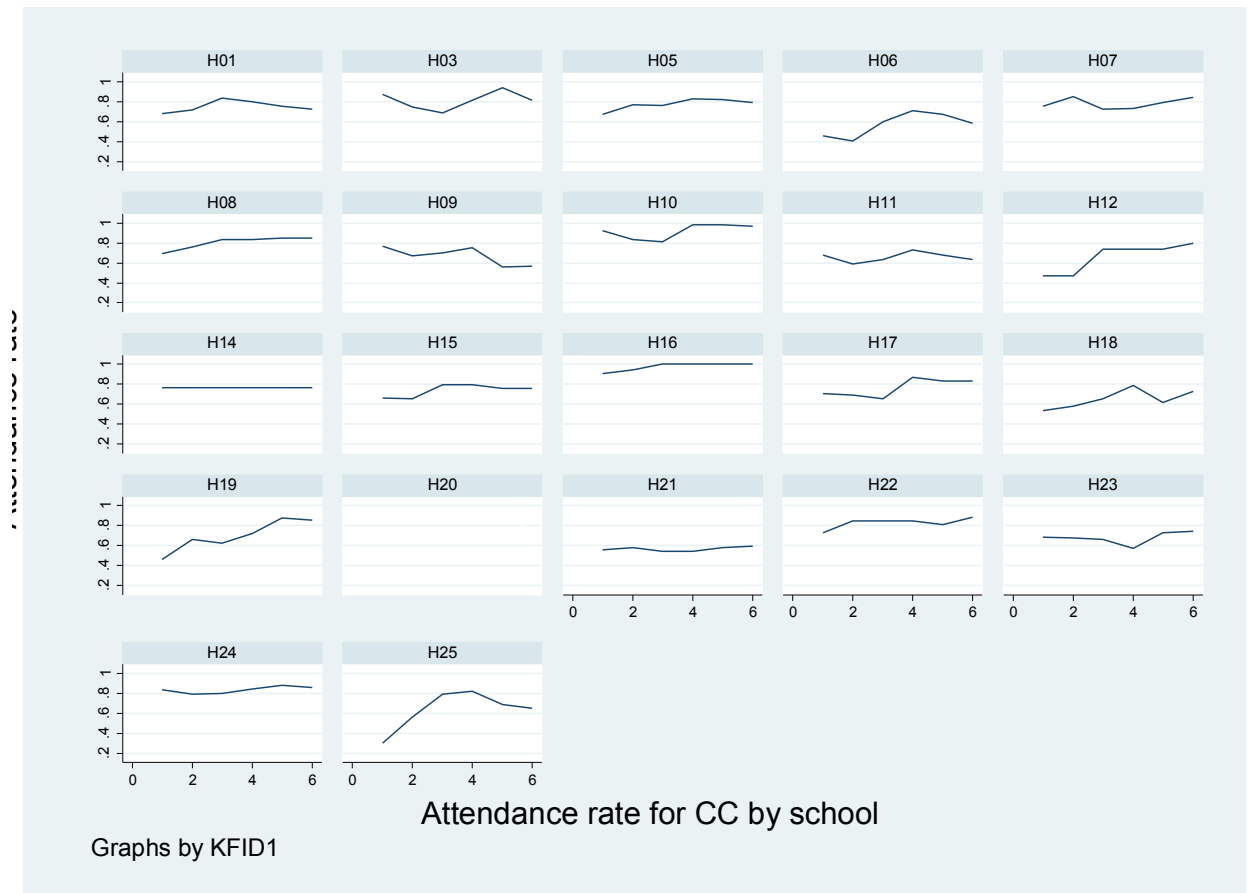
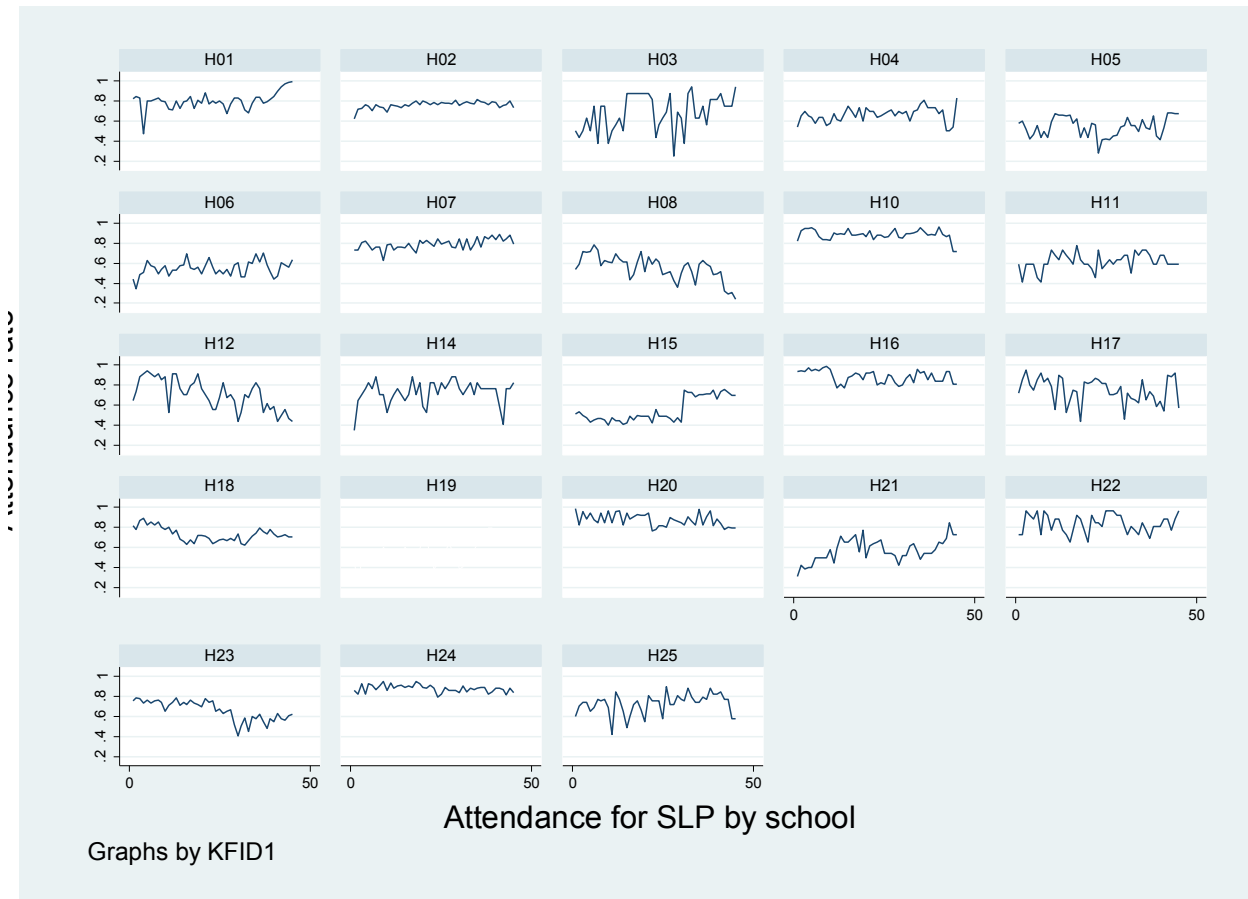


Attendance dynamics in Hardoi

Figure 12 plots attendance rates over time for Hardoi.¹ While attendance rates remain stable and at high levels over time (e.g. schools H12, H14, H16 for FC), attendance rates in other schools surge towards the end of the phase (e.g. H5 for FC). In other cases, attendance rates drop sharply towards the end (e.g. H3 in FC). While there may be many reasons for the heterogeneous dynamics across schools – ranging from measurement errors in recording to adverse weather or festivals – understanding these differences in attendance may nonetheless be important for improving the effectiveness of SSRP.

Figure 12. Attendance over time by phase and school





5. Conclusion and recommendations

The results of the SSRP evaluation can be summarised in three key findings:

- The comparison of test scores before and after SSRP suggest large gains in test scores on average. The average however also masks heterogeneity: while most students saw improvements in their learning level, learning levels also declined for a subset of students.
- The heterogeneity in learning gains correlates with attendance rates across the three phases of SSRP. In Sambalpur, the association is strongest for mathematics. The association is similar across both program sites for languages (Odia/Hindi) and EVS.
- There exist substantial differences in attendance rates across both program sites: average attendance rates in Hardoi are on average 10% points higher.

The analysis also points to four key dimensions that may help improve the effectiveness of the program:

- There is substantial scope for improving the adherence to the program protocol during implementation. Improving the assignment of students into phases corresponding to their learning level may increase the effectiveness of the programme.
- Harmonizing the implementation of SSRP across both sites will enhance the comparability of the evaluation. Specifically, there still exist substantial differences in the duration of the courses as well as the delivery (whether by Kusuma Teacher Volunteers or Community Volunteers)
- The observed correlation between test score gains and attendance suggests that improving the attendance rates may be conducive to gains in learning. Understanding the substantial variation in attendance (i) across program sites (ii) across schools and (iii) within school over time may help identify relevant policies that help increase attendance.
- Experimental research is needed to go beyond correlations and (i) provide causal evidence for the program effects and (ii) shed light on the mechanisms through which SSRP affects student performance.

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