



Udbhav Programme Baseline Evaluation EXECUTIVE SUMMARY

July 2015

I. Introduction

The Udbhav programme (meaning 'source' or 'creation' in Sanskrit) forms a key strand in the work of Kusuma in enhancing children's life chances through improved access to quality secondary education. The main objective of the initiative is to promote the professional development of Science, English and Mathematics teachers in secondary schools in Uttar Pradesh and Odisha in order to improve student attainment and completion rates.

The Udbhav programme has been developed in the context of concerns about the quality of secondary education and student outcomes in India and the potential impact on India's competitiveness in global markets. Following the Right to Education Act (2009) which has achieved near universal enrolment at the primary level, the Government of India launched the Rashtriya Madhyamik Shiksha Abhiyan (RMSA) policy which aims to strengthen access to, and the quality of, secondary education. However, a survey by ASER (2012) shows that most children leave primary schools without having mastered basic literacy and numeracy skills.

A decline in student learning levels at the primary level may be the result of increased participation by more disadvantaged students (Banerjee et al, 2013). This results in significant knock-on effects at secondary level when many schools struggle to cope with the lag in student's basic knowledge and skills. There may also be problems with the quality of teaching, supply of teachers, pedagogy and curriculum design in secondary schools (Banerjee et al, 2013). Evaluations of the Kusuma Schools Partnership Initiative, and the Udbhav programme in particular, should help to answer a key question: what makes a positive difference to the quality and effectiveness of secondary education delivered in government schools?

This report summarises the findings of a baseline evaluation of the Udbhav programme undertaken by EduLever¹ with the support of Dr Radhika Iyengar and her team at the University of Columbia. The fieldwork for the evaluation was completed between October 2014 and January 2015.

¹EduLever is a consultancy based in India that specializes in education, including vocational education.

1.1 The Udbhav programme

This baseline evaluation of the Udbhav programme was undertaken in its third year of operation. Previously, in year one, the programme was delivered in collaboration with the Open University and IgnusErg² to all government secondary schools in the Hardoi district (n=92), with a focus on teaching and learning in Science and English.

In year two, the Kusuma Foundation (KF) delivered the programme and IgnusErg provided academic leadership. Teaching and learning materials were developed and a District Resource Group (DRG)³ of experienced teachers was established to deliver training to teachers and provide mentoring support. During this second year, an intensive level of support was provided to 25 schools in the Kusuma Schools Partnership Initiative (KSPI) and a 'light touch' level of support was offered to all other (n=67) government schools in the Hardoi district.

In year three, the Kusuma Foundation continued to deliver the Udbhav programme in Hardoi. The programme was also launched in Sambalpur where it was delivered by Agraneer Jana Kalyan Anusthan (AJKA)⁴. In Sambalpur, intensive support was delivered to 25 KSPI schools. 'Light touch' support was provided to 103 government schools. A further 25 government schools were selected to serve as controls and received no support.

The intensive level of support comprised:

- development of written teaching and learning materials in English, Science and Maths tailored to the needs of students in Classes 9 and 10;
- training for teachers in an interactive model of teaching and the use of subject-specific teaching materials;
- mentoring support for teachers delivered by a District Resource Group; and
- improving access to relevant audio-visual/digital materials to support teaching and students' independent learning.

The 'light touch' level of support comprised:

- training to teachers in interactive teaching methods (but not subject-specific training);
- delivery of one set of subject-specific teaching materials per 'light touch' school;
- at least one visit from a DRG member for Maths, Science and English; and
- access to subject-specific teaching materials at Kusuma Resource Centres in each district.

The Udbhav programme is underpinned by pedagogic principles that promote activity-based learning appropriate for young adolescents, student engagement in learning, and strategies for teaching subject-specific content (e.g. mathematical equations and scientific experiments).

2. Baseline Evaluation

2.1 Research questions

The baseline evaluation of the Udbhav programme addresses the following research questions:

1. To what extent does the implemented model of teacher training and mentoring programme lead to change in classroom practices?
2. To what extent do implementation factors (e.g. skilled delivery of training and mentoring) have an impact on teacher take-up of recommended teaching practices?
3. Does the selected pedagogical model for teacher training support improved learning among students?
4. What are the implications of the findings for policy and practice?

2.2 Research methods

To answer these research questions, a longitudinal and mixed-method research design was developed that comprised:

- Learning assessments of students in Classes 9 and 10 in English, Maths and Science
- Observations of teaching practice
- Focus groups and individual interviews with students, teachers and other key stakeholders

The evaluation was conducted in a total of 100 schools: 50 KSPI schools (25 in Sambalpur and 25 in Hardoi) and 50 comparison schools (25 'light touch' schools in Hardoi and 25 control schools in Sambalpur).

² Ignus ERG is a specialist third sector education agency.

³ DRG members are experienced teachers selected from the local population who offer mentoring support to teachers and deliver Udbhav training programmes.

⁴ AJKA is a voluntary organization based in Odisha that specializes in remedial education.

Learning Assessments

An assessment paper was developed in English, Maths and Science, taking into account Udbhav learning materials and the State curriculum framework for Uttar Pradesh and Odisha. Assessment papers were prepared in Hindi (for students in Hardoi) and in Oriya (for students in Sambalpur).

A total of 12,388 students from Classes 9 and 10 took part in learning assessments (7,744 in Hardoi and 4,644 in Sambalpur). These figures represent approximately 62% and 67% of students enrolled in KSPI and comparison schools in Hardoi and Sambalpur respectively.⁵ Girls and boys were almost equally represented in the sample.

Classroom Observations

For classroom observations, teaching practice in the following domains was assessed: (i) *lesson preparation*, (ii) *student participation*, and (iii) *facilitation ability*. A score of 1-5 was assigned for each domain for each teacher. 133 lessons were observed in Hardoi (69 in KSPI schools and 64 in 'light touch' schools) and 122 lessons in Sambalpur (60 in KSPI schools and 62 in control schools).

Interviews and focus groups

100 student interviews were conducted in Hardoi and 97 in Sambalpur. 100 teachers were also interviewed (50 teachers in Hardoi and 50 in Sambalpur). 24 focus groups were also conducted: four with teachers and eight with students in each district.

Interviews were conducted with key stakeholders, including the Kusuma staff (2), DRG members (5), representatives of Ignus ERG (3), government officials at the district level (2), and a representative of AJKA (1) to explore their perceptions about the implementation and impact of the Udbhav programme.

Analysis

An 'Explanatory Sequential Mixed Methods Design' (Creswell, 2013) was adopted in which qualitative data was explored to explain or illuminate quantitative findings. Student scores obtained from the learning assessments were analysed according to key variables, including district and level of intervention (i.e. intensive, 'light touch' or control), student age and gender. Teacher observation scores were analysed according to the key domains in the teacher observation tool, based on a five-point Likert scale. Since the objective of the Udbhav programme is to '*promote the professional development of Science, English and Mathematics teachers in secondary schools, in order to improve student attainment and completion rates*', correlations between student outcome scores, teacher quality (measured by teacher observation scores) and degree of programme intervention (KSPI compared with 'light touch' and control schools) were investigated. Subsequently, interview and focus group data was explored to identify key themes that might further explain correlations in the quantitative data.

3. Key findings

Findings for each district (Hardoi and Sambalpur) were analysed to answer the following two related questions:

- (1) *To what extent does the implemented model of teacher training, and associated mentoring programme, lead to change in classroom practices?*
- (2) *To what extent do implementation factors (e.g. skilled delivery of training and mentoring) have an impact on teacher take-up of recommended teaching practices?*

There are a number of challenges associated with assessing the impact of the Udbhav programme on teaching practice. In Hardoi, Udbhav training courses are delivered alongside government-sponsored RMSA training courses. There are therefore difficulties in disentangling the impact of Udbhav training programmes from training provided by the government as part of RMSA. In Sambalpur, teachers in KSPI and control school attend RMSA training courses, but only KSPI teachers attended training provided under the Udbhav programme. There is therefore more potential for identifying effects in terms of the additional training provided. The provision of in-school mentoring support is also a distinctive feature of the Udbhav programme compared with RMSA training courses. Mentoring support therefore provides added value that might be expected to manifest in higher teacher take-up of more interactive teaching methods.

⁵ There is a substantial gap between the number of students enrolled and the number attending due to student absenteeism and inflation of enrolment figures by schools. All students in Classes 9 and 10 who were present on the day of testing were included.

Observations of teaching practice

Classroom observations assessed the quality of teaching practice on a scale of 1 to 5 in three key domains: lesson preparation (e.g. preparation of lesson plans and teaching resources), student participation (e.g. use of group work, Q&As) and facilitation ability (e.g. introducing new topics, maintaining discipline). An average score was calculated for individual teachers which was then aggregated to produce a score for individual schools. The 5 top and lowest performing schools in the KSPI, 'light touch' and control school samples were then identified.

In Hardoi, the five top-performing KSPI schools achieved higher average scores for lesson preparation, student participation and facilitation ability compared with 'light touch' schools. Among the lowest performing schools, 'light touch' schools performed slightly better than KSPI schools. The 5 lowest-performing KSPI schools scored similar or lower scores than their 'light touch' counterparts on these parameters.

In Sambalpur, the top five performing KSPI schools achieved higher scores for lesson preparation and student participation compared with the five top-performing control schools. There was little difference in scores in relation to facilitation skills. Among schools with the lowest average scores, KSPI schools scored better than control schools across all three domains.

In relation to the *observation scores of individual teachers*, participation in the Udbhav programme is a common thread among the top performing teachers in Hardoi and Sambalpur. Of 10 teachers who scored highest on the classroom observations in both districts, 8 had attended an Udbhav training course, and the majority (7 in Hardoi and 8 in Sambalpur) are KSPI teachers. However, participation in Udbhav training appears to have had no or limited impact on teachers with the lowest scores. In Hardoi, 50% of the lowest performing teachers had attended Udbhav training and 50% had not. In Sambalpur, 7 out of 10 of teachers with the lowest scores were located in control schools.

Common examples of good and poor teaching practice in Hardoi and Sambalpur are shown in the following table:

Table 1: Examples of good and poor teaching practice

Examples of good teaching practice	Examples of poor teaching practice
<ul style="list-style-type: none">• Games are played while introducing a new topic• Students are encouraged to speak up and participate in lessons• The teacher encourages students to solve questions• The teacher praises students who solve problems correctly but also tries alternative methods to help students who do not understand.• The teacher has prepared a written lesson plan• Students are engaged and discussing a topic in groups	<ul style="list-style-type: none">• The teacher mostly dictates to the students• There is some attempt to explain the topic but students are clearly not able to understand• The teacher starts the class by writing formulas on the board. The teacher then writes questions and applies the formulas• Little eye contact is made with students• Backbenchers are engaged in their own activity• Girl students are not able to answer questions and are not getting any attention

Impact of Udbhav training and mentoring on teaching practice

Two key factors in evaluating the Udbhav training programme are the constraints experienced by teachers in applying new skills and knowledge to their teaching practice and the extent to which Udbhav matches teacher's expressed needs. Accordingly, teachers were asked about their satisfaction with Udbhav training and mentoring provided, as well as what helped and hindered the translation of Udbhav methods and resources into practice.

In Sambalpur and Hardoi districts teachers reported a wide range of examples to illustrate the successful translation of Udbhav teaching methods into their classroom practice, including increased use of group discussions, a higher level of student participation in lessons, more use of peer support to support slower learners, and more imaginative use of local resources in lessons. Even though the Udbhav programme had only recently been introduced in Sambalpur, almost half of teachers interviewed who had attended Udbhav training (n=23) reported that they had successfully applied the recommended teaching methods in their classrooms. Teachers reported a range of positive benefits, such as enhanced student engagement in lessons, improved student self-esteem, and greater willingness of students to support each other.

Teachers also identified a range of barriers to implementing new teaching methods in their classrooms. In both districts, overcrowded classrooms, multi-grade classes, the time-consuming nature of group activities, and the need to complete the syllabus before the end of the academic year were identified as key constraints.

Teachers in Hardoi were more mixed in their views about the helpfulness of Udbhav teaching and learning materials than teachers in Sambalpur, most of whom expressed positive views. Some teachers felt that Udbhav materials cover basic concepts well but lack sufficient detail for secondary-level education.

Teachers in Hardoi were also more mixed in their satisfaction with the mentoring support delivered by DRG members compared with teachers in Sambalpur. Of 22 teachers interviewed in Hardoi who had received DRG support, the majority (15) found the support provided helpful, and in Sambalpur, a large majority (18 out of 20) found their input helpful. Teachers reported a range of positive benefits, including improved motivation, opportunities to learn new teaching methods from demonstration lessons delivered by DRG members, and learning from DRG feedback on their teaching practice. Teachers made a number of suggestions for improving mentoring support, including wider use of demonstration lessons given by DRG members and more concrete tips for improving classroom instruction.

During stakeholder interviews, KF staff and DRG members claimed that students were more engaged in learning as a result of Udbhav training courses. Students' accounts were examined to see if evidence could be identified to support this claim. In both districts, a majority of KSPI students interviewed (64% and 66% in Hardoi and Sambalpur respectively) said that they were actively engaged in classroom activities compared with a small minority of student in 'light touch' (10%) and control schools (36%).

(3) Does the selected pedagogical model for teacher training support improved learning among students?

To answer this question, evidence for correlations between the level of intervention and student scores in English, Science and Maths for Classes 9 and 10 in both the districts were investigated.

Student scores

In Hardoi, results show that average scores are lower in KSPI schools for all subjects compared with 'light touch' schools. Overall, students in class 9 have performed better in all subjects compared with students in Class 10. Student scores are higher for Science than for English or Maths (see Table 2 below):

Table 2: Average Scores (%) of students by school type, class and subject

School Type	Class	English	Science	Maths	Total
KSPI	9	26.50	34.47	24.34	28.44
	10	21.85	29.59	20.89	24.11
	Total	24.36	32.23	22.75	26.45
Light Touch	9	27.85	37.53	27.99	31.13
	10	24.77	32.81	24.33	27.30
	Total	26.35	35.24	26.21	29.27

In Sambalpur, there is little difference in student scores for KSPI and control schools. As in Hardoi, Class 9 students have performed better in all subjects compared with students in Class 10. Scores are higher for Science than for Maths or English, as shown in the table below.

School Type	Class	English	Science	Maths	Total
KSPI	9	29.54	34.50	28.99	31.01
	10	28.40	29.22	25.19	27.60
	Total	28.98	31.88	27.10	29.32
Control	9	29.88	34.86	29.09	31.28
	10	26.98	29.50	23.98	26.82
	Total	28.37	32.07	26.43	28.96

Relationship between student performance and classroom practice

Student assessment and teacher observation scores were examined to identify evidence for correlation. Results show that, for KSPI schools, there is low or no correlation between student test scores and classroom observation scores for each of the three main domains (ie. lesson preparation, student participation, and facilitation ability). For light touch schools, there is a low positive correlation between student performance and teacher scores from classroom observations. In Sambalpur, the results also show a low positive correlation between test performance and classroom observation scores for KSPI and control schools. The correlation is strongest for student participation.

Given that teacher observation scores appear to have low or no relationship to student scores, other factors were considered that might be expected to have an impact on test results. Findings show that in both districts, students who took private tuition have performed better than those who have not. For example, in the KSPI school with the highest average score in Hardoi, over 75% students have private tuition. Schools with the highest average scores also have a higher number of Class 9 students, which contributes to their better performance, since class 9 students have scored higher than Class 10 students in all subjects. In 4 KSPI schools with the lowest average student scores, 70% of students scored below 25%. These four schools have a significant impact on the overall scores for KSPI schools in the Hardoi sample.

Turning to individual scores, 5 students (three female, two male) in Hardoi schools scored above 75%. Of these, three attend one of the top-five performing KSPI schools. All are taking private tuition. Only one student from Sambalpur scored above 75% (from a control school). Data on students who scored 50%-75% was then examined. 4 out of the top 5 schools with the highest number of students to score in this bracket are KSPI schools. However, three of the five bottom performing schools were also KSPI schools.

In interviews, teachers identified a range of external factors perceived to have an impact on student attendance and therefore attainment, such as involvement in agricultural or other paid work, household chores or cultural activities, and a lack of parental support. Factors perceived as having an impact on student scores that are internal to the education system, include the practice of automatic progression, a lack of time for providing remedial inputs to bring students up to the required learning level, and the need to complete the syllabus.

4. Conclusions

Attributing impact

There are difficulties in directly attributing variation in student scores and teacher performance to the Udbhav programme. Teacher professional development training courses are also provided under RMSA to KSPI and comparison schools. In Hardoi, Udbhav is delivered in tandem with RMSA provision. In Sambalpur, Udbhav training forms an extension to RMSA training. The extent to which the Udbhav programme is distinctively different, either in terms of intensity or content, is therefore key to assessing impact. Other components of KSPI interventions, such as remedial education, may also have an impact on teaching practice and student performance.

Additionally, the composition of KSPI and comparison school (i.e. 'light touch' and control) samples is also an important factor to take into account when evaluating impact of the Udbhav programme. In Hardoi, a higher number of single-teacher and poorly performing schools were selected for inclusion in the KSPI sample compared with the sample of comparison schools. In Sambalpur, schools were randomised to control and intervention groups. Differences in student scores or teacher performance in this district may be more justifiably attributed to Kusuma interventions in this district.

Improved teaching practice

That said, there is promising evidence that the Udbhav programme has a positive impact on teaching practice. Overall, *teacher quality* (measured on the three key domains of lesson preparation, student participation, and facilitation skills) was higher in KSPI schools compared with comparison schools in both districts. The reverse was true among schools in Hardoi with the lowest scores: the 5 lowest-performing KSPI schools scored similar or lower scores than their 'light touch' counterparts. In Sambalpur, the lowest scoring KSPI schools scored better than control schools across all three domains.

More top-scoring teachers were also located in KSPI schools than 'light touch' or control schools. However, findings also suggest that teachers with low performance scores (whether in KSPI or comparison schools) are more resistant to professional development interventions.

In interviews, teachers and other stakeholders cite examples of *students becoming more actively* involved in classroom activities as a result of the Udbhav programme. Evidence from interviews with students gives strong support for this view: a far higher proportion of students in KSPI schools said they were actively involved in lessons, compared with their peers in 'light touch' and control schools.

Student assessments

In relation to the *results of student assessments* in English, Maths and Science, student scores are lower in KSPI schools compared with 'light touch' schools in Hardoi whereas in Sambalpur, student scores are similar for KSPI schools compared with control schools.

In both districts, students in KSPI and comparison schools (light touch and control) have performed better in Science than in Maths and English. In both districts, Class 9 students performed better than Class 10 students KSPI schools with the highest average student scores share the following characteristics:

- a higher proportion of male students
- a majority of students take private tuition
- a higher number of Class 9 students, all whom scored higher than students in Class 10.

There was no or low positive correlation between teacher performance and student test scores.

Various factors were identified as having an impact on student learning outcomes irrespective of the teaching methods utilised or participation in teacher professional development. Absence due to student engagement in agricultural work, other paid work or unpaid domestic work, and a lack of parental support, were identified as key constraints to improving student performance. In schools, the practice of automatic progression, a lack of time for providing remedial inputs to bring students up to the required learning level, and the need to complete the syllabus were identified as significant barriers.

Provisos

A number of factors may have had an influence on the data collected. Personal bias may have influenced classroom observation scores. Observations performed by more than one researcher on multiple occasions would help to strengthen the quality of the data and reduce the impact of subjective opinion. In addition, different methods may be needed to explore students' views and opinions in subsequent surveys. Many students were shy and nervous in interviews. Alternative methods may help students to feel more comfortable about articulating their views. Finally, although strenuous efforts were made to reduce cheating, it is possible that this had an impact on student assessment results, particularly in Hardoi.

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