

Systemic Transformation of School Education- The SATH-E Experience



The Fundamental Principles



नीति आयोग

National Institution for Transforming India
Government of India

Message from Vice-Chairman, NITI Aayog



"A quality education is the foundation of sustainable development, and therefore of the Sustainable Development Goals (SDG)", maintains the UN SDG initiative. It aims to ensure inclusive and equitable quality education for all by 2030. India has a major role to play in achieving this goal.

We have come a long way in ensuring near universal access in primary school education and are striving towards facilitating high quality education to all. In this background, NITI Aayog's initiative of Sustainable Action for Transforming Human Capital in Education (Project SATH-E) is a guiding star in achieving SDG 4 for India.

The SATH-E project is an exemplary co-operative and competitive federalism initiative. The State Governments of Jharkhand, Madhya Pradesh and Odisha and the Government of India came together to ensure high quality education to all school going children in these States. Resting on the pillars of education systems diagnostic, evidence-based planning and mission mode implementation, Project SATH-E has shown how to improve learning outcomes at a large scale.

This report captures the challenges pertaining to ensuring quality school education in the Indian context and shares the bold and path-breaking reforms undertaken by the partner State Governments to overcome these challenges. I am confident that, if replicable in other States, these reforms would become instrumental in achieving the SDG 4 goals of quality education for all in the country in the coming years.

I also hope that this report along with the implementation tool kits will inspire other States to undertake large scale educational reform projects to improve the quality of education. The novel interventions may be used as a ready-reckoner and customized by various States while they design interventions to suit their unique contexts.

I would like to congratulate the Education vertical at NITI Aayog for taking efforts in synthesizing the learning from the SATH-E project in the form of an informative and inspiring document.

Dr. Rajiv Kumar
Vice Chairman, NITI Aayog

Message from Dr. V. K. Paul, Member (Education), NITI Aayog



India, which is developing at an enormous scale and pace, needs to make sure that the pillars of development are set on a firm foundation. Education happens to be one of the foremost enablers of such a development agenda.

A few decades back, the major issue in the education system happened to be access to primary education. The Government of India took several breakthrough initiatives to mitigate this, thanks to which we stand at a near universal access to Primary Education today. While this is a huge achievement for the Nation, it also comes with the realization that it is just the beginning. We now need to tackle a more complex set of issues, revolving around the quality of education, upgradation of institutions and setting up robust governance mechanisms.

NITI Aayog launched Project SATH-Education: Sustainable Action for Transforming Human capital in Education, not only to help States tackle these problems, but also to demonstrate the possibilities and challenges in making these systemic shifts for other States to follow. The States of Jharkhand, Madhya Pradesh and Odisha, which were onboarded to the Project through a rigorous selection process, have already embarked on a transformation journey.

In collaboration with the Hon'ble Education Ministries, the Chief Secretaries and Principal Secretaries of all these partner States, and our knowledge partners, Boston Consulting Group (BCG) and Piramal Foundation for Educational Leadership (PFEL) – we have been able to successfully implement a number of path-breaking reforms around Quality enhancements, Governance and Digital education.

Through this Report, we would like to share our experiences, findings, and recommendations with the broader set of stakeholders. It is ensured that while each of the sections are rich with context specific experiences, the insights have been distilled on a generic level – so that the administrators can apply them in their respective contexts.

I hope that this Report helps other States and Union Territories to launch similar reformative programs on ground. I am positive that through such concerted efforts, we'd soon transition to a Nation with universal access to quality education.

Dr V.K. Paul
Member (Education), NITI Aayog



Foreword

The Government of India, through its flagship initiatives like the Right to Education Act and Sarva Shiksha Abhiyan, has significantly improved access to school education. India has made tremendous progress and today, enrolment at the primary level is almost universal. The time has now come to shift our focus from providing inputs towards attaining outcomes. An improvement in learning outcomes will set India on the path towards attaining quality education, in alignment with our vision for Sustainable Development.

NITI Aayog has been at the vanguard of the movement to shift the focus towards a learning outcome centered systems approach through our various initiatives such as the School Education Quality Index (SEQI), the Aspirational Districts Program as well as the Sustainable Action for Transforming Human Capital in Education (Project SATH-E).

In the last decade, despite several efforts to improve the quality of school education through innovative interventions in assessments, teacher & leadership training and curriculum, improvements in learning outcomes have been limited and slow. To address this, NITI Aayog, with our mandate to promote cooperative federalism, launched Project SATH-E in 2017 – a unique initiative to drive transformation in school education in the States of Jharkhand, Madhya Pradesh, and Odisha. Several other States in India have also embarked on a similar transformation journey including (but not limited to) Rajasthan, Haryana, Himachal Pradesh and Andhra Pradesh.

In collaboration with our knowledge partners - Boston Consulting Group and Piramal Foundation, SATH-E champions a systemic approach to transform, which prioritizes simultaneous academic and governance reforms. In the first one and a half years of Project SATH-E, the States have championed bold and path-breaking reforms like school consolidation, teacher rationalization and large-scale learning enhancement programs. We envision that true transformation of our school systems will involve an 8-10 year roadmap, and will need to happen in multiple phases, which build on each other. Early and measurable improvement in learning outcomes and an optimal educational delivery structure is already visible.

This report, along with the detailed implementation toolkits and the independent study to measure the health of the education system, form a comprehensive compendium that documents, consolidates and showcases the learnings from these States on their unique journey towards transforming their education landscape. I sincerely hope that this compilation inspires other States/UTs to launch their own reform agendas and drive meaningful impact on the ground, thus taking our nation forward towards a new paradigm of school education.

Amitabh Kant
CEO, NITI Aayog



Acknowledgement

The Right to Education Act, 2009 suggests that access, equity and quality should be of paramount consideration in imparting education to each child. We have seen schools being established in the remotest hamlets of the country bringing equity to the hitherto excluded children from the ambit of formal education. Today we look at near universalization of primary school education in the country with gender parity. However, we are also informed through various governmental and non-governmental reports that the student learning achievements have stagnated at a sub-optimal level.

The Sustainable Action for Transforming Human Capital in Education (Project SATH-E) is a step towards breaking out of this State of stagnated student learning achievement and putting the students on the path of sustained learning. I am deeply grateful to the Chief Secretaries and Principal Secretaries of School Education of our partner States- Jharkhand, Madhya Pradesh and Odisha for their proactive engagement in designing the State roadmaps and implementing various reform initiatives. It is in this spirit of cooperative federalism that we have together been able to improve students' learning outcomes scores in all the three States.

I would like to acknowledge the sincere efforts of our knowledge partners, Boston Consulting Group (BCG) and Piramal Foundation (PFEL), who have been instrumental in the efficient execution of Project SATH-E. I am equally thankful to the teams of Michael & Susan Dell Foundation (MSDF) and Samagra Governance and Educational Administrators of various other States for their insights and contributions in this collaborative to formulate a Theory of Change for systemic transformation of School Education.

This report has been a result of the relentless efforts of my team at the Education Vertical comprising of Shri Harshit Mishra, Deputy Adviser (Education) and Shri Piyush Prakash, Senior Associate (Education), Ms. Khyati Menezes, Young Professional (Education), and Ms. Pushpamitra Das, Young Professional (Education) who have drafted and prepared the report. I would also like to acknowledge the sincere efforts and guidance provided by Shri. Alok Kumar, former Adviser (Education), NITI Aayog.

I am very grateful for the constant support and guidance from our Hon'ble Vice Chairman Dr. Rajiv Kumar and our Hon'ble CEO Shri Amitabh Kant because of which we have been able to consolidate our learning from Project SATH-E into fundamental principles and novel approaches which has the potential to guide States in designing their interventions suited to their context.

Dr. Prem Singh
Adviser, NITI Aayog

Glossary

Abbreviations	Expansion
ABEO	Assistant Block Education Officer
ABL	Activity-Based Learning
ABRCCs	Assistant Block Resource Centre Coordinators
ADC	Additional District Commissioner
ADE	Assessment Design Expert
ADEO	Assistant District Education Officer
ADPO	Assistant District Public Prosecution Officer
AMS	Academic Monitoring System
ASER	Annual Status of Education Report
BCG	Boston Consulting Group
BEEO	Block Elementary Education Officers
BEO	Block Education Officers
BRCCs	Block Resource Centre Coordinators
BRP	Block Resource Persons
CBEO	Chief Block Education Officer
CCE	Continuous and Comprehensive Evaluation
CHTs	Cluster Head Teachers
CMGGAs	Chief Minister's Good Governance Associates
CMO	Chief Minister's Office
CRP	Cluster Resource Persons
CSSL	Centre for Science of Student Learning
DC	District Commissioner
DEE	Director of Elementary Education

DEEO	District Elementary Education Officers
DIET	District Institute of Education & Training
DIKSHA	Digital Infrastructure for Knowledge Sharing
DKRG	District Key Resource Group
DoIT	Department of Information Technology & Communication
DPC	District Planning Committee
DSE	District Superintendent of Education
DU	Dakshata Unnayan
EI	Education Initiatives
ELTI	English Language Training Institute responsible for English curriculum and training
E-MIS	Education Management Information System
EPES	Ek Parisar Ek Shala
eVV	e Vidya Vahini
FLN	Foundational Literacy and Numeracy
FRS	Future Ready Schools
GDP	Gross Domestic Product
GIS	Geographic Information System
GP	Gram Panchayat
HQ	Headquarters
ICT	Information and Communication Technology
JCERT	Jharkhand Council of Educational Research and Training
JEPC	Jharkhand Education Project Council
JPAL	Abdul Latif Jameel Poverty Action Lab
LEP	Learning Enhancement Programme
LO	Learning Outcome
LOF	Learning Outcomes Framework
LTF	Learning Tracking Format
MDM	Mid-day Meals
MGML	Multi Grade Multi Level
MHRD	Ministry of Human Resource and Development
MIS	Management Information System

MoE	Ministry of Education
MSDF	Michael and Susan Dell Foundation
NAS	National Achievement Survey
NCERT	National Council of Educational Research and Training
NCF	National Curriculum Framework
NCSL	National Centre for School Leadership
NCTE	National Council for Teacher Education
NEP	National Education Policy
NGO	Non-governmental Organizations
NIC	National Informatics Centre
NIEPA	National Institute of Educational Planning and Administration
NIPUN	National Initiative for Proficiency in Reading with Understanding and Numeracy
NISHTHA	National Initiative for School Heads and Teachers Holistic Advancement
NITI	National Institute for Transforming India
OMR	Optical Mark Recognition
OSMA	Odisha School Monitoring App
PACT	Parents and Coaches Together
PEEO	Panchayat Elementary Education Officer
PFEL	Piramal Foundation for Education Leadership
PISA	Programme for International Student Assessment
PMU	Project Monitoring Unit
PTR	Pupil-Teacher Ratio
RCT	Randomized Controlled Trial
RFP	Request for Proposal
RMSA	Rashtriya Madhyamik Shiksha Abhiyan
RTE	Right to Education
SARD	Society for All Round Development
SATH-E	Sustainable Action for Transforming Human Capital-Education
SATs	Summative Assessment Tests
SCERT	State Council of Educational Research and Training
SDG	Sustainable Development Goals

SDM	Sub-divisional Magistrate
SE	Subject Expert
SEQI	School Education Quality Index
SIEMAT	State Institute for Educational Management and Training of administrative officers
SLOs	School LEP Owners
SLSCC	State Level School Consolidation Committee
SMC	School Management Committee
SPD	State Project Director
SRC	State Resource Centre for Adult Education
SSA	Sarva Shiksha Abhiyan
TaRL	Teaching at the Right Level
TLM	Teaching Learning Materials
TNA	Training Needs Assessment
TPA	Third Party Assessors
UDISE	Unified District Information System for Education
UN	United Nations
UNICEF	United Nations Children's Education Fund
VFS	Virtual Field Support

Contents

Message from Vice-Chairman, NITI Aayog	4
Message from Dr. V. K. Paul, Member (Education), NITI Aayog	5
Foreword	6
Acknowledgement	7
Glossary	8
Executive Summary	13
Chapter 1: Background and Context	15
Chapter 2: Systemic Transformation of Education	20
Chapter 3: Systemic Transformation of Education – The Interventions	26
Chapter 4: Conclusion, way forward and toolkits	52
1. Competency Framework	57
2. Toolkit for Assessment Reforms	67
3. Learning Enhancement Program	85
4. School Optimization	110
5. Administrative Efficiencies Through Tech and Data Systems	139
6. Organizational Restructuring	158
7. Communication streamlining	167
8. Recruitment and Rationalization of Teachers	179
9. Teacher Training and Mentoring	188
10. Academic Monitoring and Dashboard Reviews	199
11. Competition Framework	216



Executive Summary

Although we have managed to achieve near-universal primary school access across most Indian States, our country is facing a severe learning crisis. National and international assessments (NAS, ASER, PISA) universally find that children in public schools are significantly behind grade-level expectations, and that learning levels are not only low, but are falling.

Our joint effort through the SATH-E (Sustainable Action for Transforming Human Capital – Education) project in three States, and the learnings from work done in four additional States, show that current public education systems are broken at a fundamental level across multiple areas and need significant revamp.

Firstly, we have sub-optimal delivery structures (a massive footprint of small, sub-scale, inadequately resourced schools) which means that key ingredients for quality (such as 1:1 teacher:class ratio, strong school-level leadership, adequate monitoring and coaching by mid-management level officials) are missing.

Secondly, across States, we see weak organization structures and a lack of clarity in **roles/ responsibilities** for most positions. Typically, the organization structure is poorly defined with gaps and overlaps in key functions, and most positions lack well-documented roles and responsibilities. This is coupled with limited **accountability and ineffective processes** in the system.

Without addressing some of these fundamental issues, solutions that address other parts of the problem (such as academic interventions to change pedagogy/ curriculum, or capacity building efforts for teachers and school leaders) can only play an incremental role, but they will not lead to significant change.

The transformation needs to be viewed as a long-term journey that must be sustained over many years. An 8-to-10-year timeframe is required to create schools that truly enable children to become competitive and productive members of the global economy.

Furthermore, change must be owned and driven by the State, including the political leadership. They need to set a vision for change and identify the key interventions to drive towards this vision. At scale, these interventions need to be designed such that they can be implemented with State funding.

Specifically, the proposed interventions are founded on five pillars (i) focus on academic reforms (ii) strengthening human capacity (iii) strengthening administrative systems (iv) driving accountability and (v) creating a shared vision for change.

The report begins with a background to the education sector and presents a theory of change defining the key elements and principles for systemic transformation, to address existing challenges. Further, interventions under the five pillars are detailed with examples of best practices, success-stories and case-studies from NITI Aayog's SATH-E States–Jharkhand, Madhya Pradesh and Odisha—as well as other States which have undertaken a similar transformative journey such as Andhra Pradesh, Haryana, Himachal Pradesh and Rajasthan.

Through this report, we want to showcase a new approach to transforming public school education in India – one that incorporates the above pillars and creates a platform for States to drive genuine transformation in their schools. Ultimately, the authors hope that this novel approach can be customized by States across the country to ensure the delivery of quality education in government schools and the issue of poor learning outcomes becomes one in history.

The report also includes 11 implementation toolkits that delve into the details of how each reform initiative was designed and implemented in State-specific contexts.





Chapter 1:

BACKGROUND AND CONTEXT

Background And Context

India has the largest school footprint in the world with about 15 lakh schools having total enrolment of over 26 crore students¹. A decade since the implementation of the Right to Education (RTE) Act, we have reaped strong success in providing near-universal access to education with over 96%² enrollment maintained for students in age group 6-10 years.

However, findings from surveys measuring student learning outcomes consistently reflect that universal access has not translated into improved quality of education. Annual Status of Education Report (ASER) 2019 analysis showed that over 60% Grade I students struggle to do an oral word problem involving 1-digit addition. Further, only 50%³ children in Grade III can read Grade I level text, implying that nearly half of all students in Grade III are at least two years behind their grade-level. The National Achievement Survey (NAS) also cautions that average scores across several grades and subjects are as low as 40-50%.

National Education Policy (NEP) 2020 recognizes Foundational Literacy & Numeracy or FLN (i.e., the ability to read & write, and perform basic numeric operations), as an indispensable prerequisite for all future schooling and lifelong learning. Moreover, various governmental, as well as non-governmental surveys, indicate that the country is currently in a learning crisis with over 5 crore elementary grade students lacking foundational literacy and numeracy. As students progress grades with weak foundational skills, learning gaps only widen with each passing year.

Aggravating the situation further, since early 2020 student learning losses have severed significantly due to COVID-led school closures and inequitable access to at-home learning. The impact is found to be especially pronounced for economically weaker students who are predominantly dependent upon government schools and typically lack access to a smartphone – the primary tool for access to at-home learning. The 2020 ASER Survey uses parental education as a proxy for their affluence and reports that only 45% children with low parental education are likely to have a smartphone as compared with 79% students whose parents are educated.

Central and State Governments have largely recognized this learning crisis and have taken action at multiple levels. Central institutions such as MoE, NIEPA and NCERT have led policy changes (such as the RTE Act) and established frameworks and tools (such as NCF, NCERT, Textbooks, DIKSHA, and UDISE+) to guide States towards improved student learning outcomes. Allocation of Union budget to the education sector stood at Rs 93,224 crore in 2021-22, the 8th highest allocation among all Ministries.

¹ UDISE 2019-2020

² ASER, 2018

³ ASER 2019

NEP 2020 further re-affirmed the need to increase this allocation to at least 6% of total GDP as compared to the current ~3%. At the State-level, States like Delhi, Rajasthan, Karnataka, Andhra Pradesh, Madhya Pradesh, Maharashtra and Tamil Nadu have taken the lead in designing and implementing their own interventions in areas like pedagogy, organizational strengthening, governance and capacity building and these interventions have catalyzed change on the ground. NGO(s) and various foundations have led innovation in the sector through government partnerships.

However, despite these efforts, results have unfortunately been rather limited. While there is a lot of sporadic good news in the form of best practice stories, positive RCT findings for some interventions, and encouraging change in some pockets, there is less evidence of broad-based improvement at scale. This is because reform efforts are often disjointed and do not work in conjunction with each other. Most of these efforts tackle only specific parts of the problem but fail to take cognizance of other related challenges within the system. Innovation is often limited in scope and not designed for scale – several programs that work in ‘pilots’ fail to show the same impact when scaled.

An in-depth study of the education sector revealed multitude of interconnected challenges:

1. Academic Challenges



- **Focus on rote-based versus competency-based learning**

Currently, the focus of schools is largely on completion of syllabus and learning for exams. There is a need to shift from rote-based learning to competency and learning outcome-based learning, especially for Grades 1-3 where foundational learning is taking place. NEP 2020 emphasizes the need for this shift not just in the curriculum and pedagogy but also in the design of assessments.

- **Weak remedial programs that are not designed to cater to varied learning levels**

Students in an average classroom are at diverse learning levels with several of them behind the current grade level. A one-size-fits-all teaching model furthers this gap and cascades the learning losses with each successive year. There is thus a need to undertake rigorous remedial programs designed specially to cater to the needs of students whose learning levels are below-grade level. It is also critical to direct efforts towards ensuring all students master grade-level competencies at the foundational level (grades 1-3), through focused FLN efforts as recommended by NEP.

- **Weak assessments and no means to track real-time & granular learning data**

Traditionally, assessments in States have been taking place in an ad hoc and dispersed manner. There are several assessments, yet there is unavailability of consistent and high-quality data with the purpose of various assessments being unclear (e.g., whether to drive accountability or only as a formative input for teacher etc.). Standardized assessments with high quality paper design are often missing, making it difficult to effectively measure and track student performance at a system level and draw inputs to customize teaching content and methodologies, training content, etc.

- **Teacher capacity constraints and inadequate trainings to address them**

Currently we are spending crores of rupees on teacher training every year, but it does not translate to improved teacher capacity or better learning for students. Data from SATH States itself has shown that teachers' capacity is very weak – not just on pedagogy but also on content topics, particularly in middle and secondary grades. Many teachers are themselves scoring <60-70% in papers of the grades that they teach. The situation is similar for upper primary teachers in English, Hindi and Math. The current training model is unable to cater to such large gaps due to duration being lesser than required, cascaded model of delivery where last mile effectiveness is very weak, one-size fits all and no customization to teachers' training needs, and no subsequent tracking of impact/ change in classroom.

2. Institutional structure and capacity issues



- **Sub-scale schools contributing to lack of resources and ineffective delivery**

Of the nearly 1.1 million government schools in India, ~400,000 have fewer than 50 students, and 110,000 have less than 20 students. These sub-scale schools suffer from a host of challenges – at most two teachers, leading to multi-grade teaching and a lack of subject-specific expertise and focus; lack of dedicated Principals as well as facilities such as playgrounds, boundary walls or libraries. From a system management perspective, it is difficult for block and district officials to visit schools and monitor important indicators when there are very large number of schools. Monitoring/ accountability efforts by block and district officials are very hard to execute and track.

- **Large scale teacher vacancies**

The challenge of sub-scale schools is coupled with large-scale teacher vacancies across States. There is a shortage of one million teachers across the country⁴, and this challenge is exacerbated by the concentration of teachers in urban locations. Over 17% of teaching positions in government schools are currently vacant with highest absolute vacancies in Bihar (2.7 lakh), followed by Uttar Pradesh (2.1 lakh), and highest percentage vacancies in Sikkim (57.5%), followed by Jharkhand, Bihar and Uttar Pradesh. There is also a large demand supply mismatch in some States⁵, which implies that it would take several years to fill vacancies based on current capacity. In addition, several States need to address issues with teacher cadres – exploring long-term solutions to the contract/para teacher cadres as these teachers typically have lower qualifications and commitment.

- **High share of teacher time spent on administrative tasks**

As per a report by the National Institute of Educational Planning and Administration (NIEPA) only ~19% of a teacher's annual school hours are spent on teaching activities with remaining time spent on non-teaching activities such as election duties, data collection, mid-day meal distribution, district/ block education office paperwork and inefficient HR processes like transfers, leave applications, etc. thus diverting the teacher's academic focus. This is largely due to limited capacity in the administrative staff which is almost always solved for by the allocation of teacher's' time.

⁴ Educational Statistics at a Glance 2018

⁵ Source: Pulse July 2014 Report, Details of institutions recognized by NCTE 2013

- **Inappropriately structured education departments with large vacancies**

The organization structures of the education department across States typically have overlaps in functions and responsibilities across different parts of the department, missing functions within the department, poorly planned team sizes and workload balancing across individuals. Additionally, a key issue is the lack of separation of academic and administrative responsibilities at either the State or the field, resulting in a limited focus on and management of academics. In addition to poorly defined structures, roles and responsibilities are not clearly defined, leading to day-to-day operational management challenges.

Further, there are many vacancies even where posts are sanctioned. At mid-management levels, vacancies are often as high as 50-60% of the block or district offices, severely limiting their effectiveness to govern the schooling system. Additionally, there is a significant gap in people's capabilities. Several administrators have been promoted from the teaching cadre and are expected to perform tasks like salary management, legal management, etc., for which there is little to no formal training.

3. Governance and accountability related issues



- **Lack of technology enabled data systems for academic and administrative matters**

It is critical to ensure effective allocation of time and resources to drive impact – whether it is for large-scale initiatives like staff rationalization, improving learning outcomes, school footprint optimization, or day-to-day functioning including budget planning. However, data opacity often leads to a lot of these decisions being driven by ad-hoc rationale instead of facts and reason. For e.g., having objective data from school visits on available infrastructure and resources (e.g., TLMs, teacher handbooks) and quality of teaching (e.g., using materials per lesson plan to teach concepts) can better help diagnose the problem at hand and customize solutions to address the same. There is limited real time data on this. On the administrative front as well, due to data opacity budget planning for a component is often a standard 10% hike over the last year's numbers versus being based on a data-driven assessment of gaps, program progress and fund requirements.

- **Lack of accountability and performance-based reviews and incentives**

Professional growth and monetary benefits for government employees are not directly linked to performance and thus there is no real incentive for them to orient towards achieving results such as delivery of quality education, timely provision of hygienic mid-day meals, etc. Lack of a system that enables fixing of accountability based on real time performance metrics leveraging technology, and irregular review of departments with data-based evidence, both at State and district/ block levels, allows the machinery to be highly process-driven rather than result-driven.



Chapter 2:

SYSTEMIC TRANSFORMATION OF EDUCATION

Systemic Transformation of Education



As seen in the previous sections, there is vast multiplicity and interconnectedness in the challenges faced by the Indian education system today. Thus, a systemic approach is essential in designing transformative reforms. There is a need to shift from small-scale pilots to State-wide implementation at-scale and from only academic to a combination of academic, institutional and governance reforms.

The SATH-E experience, as well as an examination of reform efforts across other States, has afforded us the opportunity to derive in-depth insights about what works and what doesn't. Based on this work, a new theory of change is proposed based on three principles.

- **Principle 1: Several basic components of our education system need revamp for any other interventions to show impact**

As seen in the previous section, the education system suffers from (i) sub-optimal delivery structures (e.g., sub-scale schools, large scale teacher vacancies), and (ii) weak organization structures, governance, and limited accountability (e.g., poorly defined organizational structure, ineffective systems, process and accountability). Any reform effort first needs to fix these systemic issues - put in place the right delivery structures and create a streamlined high-performance organization with a culture of constant improvement – before it can meaningfully address other areas such as academic programs and in-school innovations and see on-ground change through them.

- **Principle 2: Transformation is multi-pronged and requires sustained efforts over many years**

Given the above scenario, these fundamental fixes related to school footprint, organization structures and governance mechanisms need to happen in parallel with any in-school interventions that directly address student learning. The scope of any reform effort, therefore, needs to be defined in a holistic manner, addressing both in-school as well as systemic factors. In addition, given the size of any State system, a consistent change agenda needs to be sustained for at least 3-5 years to yield results. The State needs to identify a small set of key initiatives, which it prioritizes and continuously focuses on during this sustained period. Of course, there will be course-correction within each initiative, but the broad set of priorities and their fundamental approach should remain consistent during this time.

• **Principle 3: Transformation needs to be anchored within the State and requires significant political will**

For change to scale across the State and to sustain, it is essential to anchor it within the State and not have it led from outside. This entails working closely with the 'system', i.e., the Department of School Education, across different levels of the hierarchy. Interventions, therefore, must be designed keeping State budgets and implementation capacity in mind. For example, any material required should come out of the State budget, teacher training will need to happen through the regular State cascade and mentoring through the Cluster Resource machinery. Any intervention needs to be designed for scale right from the get-go, keeping these factors and constraints in mind. Premised on these principles, a framework to creating systemic transformation is proposed below.

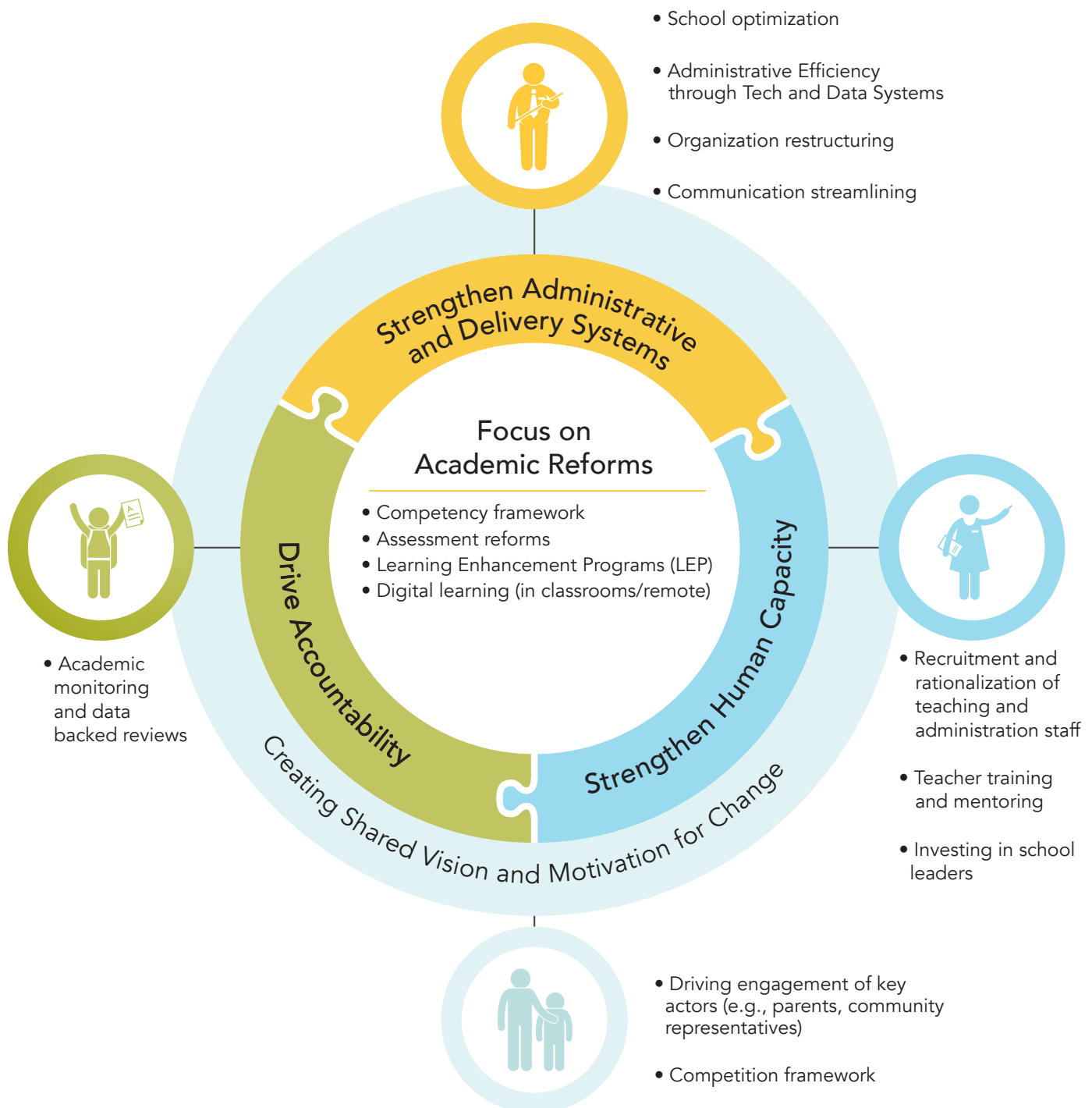


Exhibit 2.1: Framework for systemic transformation of education

1. Focus on academic reforms

Assessment results from both ASER and NAS present evidence to support that majority of the children studying in government schools across the country are below grade-level. Thus, academic reforms must be at the core of systemic interventions targeted towards improvement in student learning outcomes. Successful academic reforms involve a concerted shift on 4 elements:

- i. Institutionalizing a competency-based approach, i.e., shifting focus from 'completion of syllabus' to 'delivery of competencies'.
- ii. Creation of questions that are designed to test competencies and not learning capacity, and deployment of tech systems that enable real-time/ near real-time tracking and visualization of granular student performance data.
- iii. Implementing Learning Enhancement Programs that provide additional and specialized support to children behind grade level or with learning disabilities.
- iv. Digital learning strategies that not only address the challenges of the pandemic, but also strengthen learning through a blended model (physical and digital) to enable more effective classroom teaching especially in scenarios of teacher shortage and help extend learning hours at home.

2. Strengthen administrative and delivery systems:

Strong administrative systems are essential to support the successful implementation of transformative interventions, especially when envisioned to drive impact at a large scale. It is therefore imperative to focus on maximizing efficiency of the system and maximizing productivity of scarce resources. In the context of the school education system, concerted effort is required across four dimensions:

- i. School optimization, to move away from 11 lakh sub-scale schools to a more efficient ~6.5 lakh schools at a country level - schools which are not only financially viable but are also able to deploy resources and provide infrastructure for quality education.
- ii. Administrative efficiency through technology and data systems, necessitating the need to move away from time consuming, paper-based data collection and weak, inaccurate Management Information System (MIS) to building a robust Education Management Information System (E-MIS) with supporting technology.
- iii. Restructure organizations with integrated departments, requisite staff, and skills as opposed to understaffed departments operating in silos.
- iv. Streamline communication to ensure it is instantaneous and two-way as opposed to slow and, typically, top-down through traditional channels.

3. Strengthen human capacity

It is critical to build the capacity and establish a sense of ownership among individuals to deliver against their goals. Often, the inability to perform is not just a challenge of poor motivation or accountability but one of inadequate skills to do so in the face of changing needs and demands. Capacity to drive change needs to be built at all levels of the organization and people need to be upskilled to manage the needs of delivering against this large-scale change agenda. The following interventions can help ensure adequate resource availability and strengthen their capacity:

- i. Recruitment and rationalization of teaching staff to improve teacher availability; also, moving to tech-enabled recruitment and annual rationalization processes that consider ongoing needs (e.g., retirements necessitating new hiring). The very large extent of teacher vacancies prevalent today due to legal/ systemic challenges and process inefficiencies need to be addressed on priority. Similarly, large vacancies in staff in district/ block offices as well as headquarters need to be addressed.
- ii. Delivering frequent, need-based teacher training on subject and pedagogy through a blended, year-long delivery model as opposed to one-size-fits-all approach delivered in 1-2 in-person sessions in a year is essential. In addition, effective models for in-school mentorship of teachers and peer learning need to be developed.
- iii. Investing in model centers of excellence (or leader /exemplar schools) demonstrating highest academic and administrative quality.

4. Drive accountability

In a large-scale transformation program, it is essential to collect data on both inputs and outcomes. This helps identify what is working and what isn't, what needs to be pushed or dropped and how to prioritize and allocate resources and time. Then, this data needs to be fed back into the system to drive real change on the ground and build a strong culture of accountability. This can be driven through regular top-down reviews, creating competition and pride in delivering outcomes, rewarding good performers, and penalizing those who fail to deliver. In the education context, there is a need to move to a system where there is a strong focus on developing tools and collecting data on academic elements during school visits in alignment with defined parameters/ learning competency frameworks, data is published at a set-cadence and review meetings are held to ensure every stakeholder in the system is held accountable to achieving learning outcomes targets.

5. Creating a shared vision and motivation for change

At the start of any large-scale reform program, it is critical for the leadership to clearly articulate the vision and bring all stakeholders on board. This includes political leadership, senior department leadership (within the education department and beyond – Chief Secretary, Principal Secretaries of related departments, District Collectors and Magistrates), education administrators and teachers. The community is also a critical stakeholder, however, depending on the State and the context, this may be harder to do at the outset. A shared vision helps create a sense of ownership and purpose, both of which are critical to the culture and success of any organization.

Specific to the education context, this could involve, (i) increasing community engagement and strengthening school management committees through greater empowerment and incentives to participate (e.g., involvement in key decisions and matters of the schools), and (ii) creating a reward and recognition program for schools, teachers, officers, blocks, and districts to ensure they are motivated to achieve their targets and excel (e.g., certification programs).



Some early results

The results across the States that have undertaken systemic reforms are strongly indicative that this approach works. NITI Aayog launched Project SATH-E across three States in 2017, and positive results are already being seen. A few examples are provided below.

In **Jharkhand**, ~4,600 sub-scale schools (13% of total) have been reorganized/ consolidated into larger schools, leading to savings of INR 400 Cr, and larger, better-resourced schools. In **Odisha**, restructuring of 16 directorates in the Department has been finalized. Learning Enhancement Programs (remedial) have been launched in all three States, and State assessments are already showing steady progress. In **Madhya Pradesh**, for example, the learning level of 15-25% children was found to have increased in the two months between baseline and midline (far more than what was seen in the same duration in previous years). In addition, the State saw re-organisation/ consolidation of nearly 20,000 same-campus schools leading to 1 lakh better-resourced schools as compared to sub-optimal ~1.2 lakh schools. Another 10,000 such schools are anticipated be to optimised.

Rajasthan is one of the few States where the share of enrolment in government schools has risen over the last few years, with enrolment growing at 8% in Adarsh Schools. The State has also shown tremendous improvement in student learning and was ranked first in the last National Achievement Survey (NAS) 2017 cycle. **Haryana** was one of only two States in India that registered a learning level increase in the NAS 2014 cycle and showed an improvement in literacy and numeracy levels in third-party assessments such as ASER. The percentage of grade-level competent students in Classes I-VIII has gone up from 56% in January 2018 to 86% in June 2019, based on another third-party assessment.



Chapter 3:

SYSTEMIC TRANSFORMATION OF EDUCATION – The Interventions

Systemic Transformation of Education – The Interventions

This section lists interventions mapped to the five essential pillars of systemic transformation along with examples and success stories from the States that have undertaken systemic transformation. A detailed description of steps taken and critical factors that support the success of interventions that have hitherto been undertaken in depth is presented in the implementation toolkits, with the hope that it helps provide guidelines for other States that also want to take decisive steps towards reforming their school education systems.

Pillars	Interventions
 Focus on Academic Reforms	• Competency framework • Assessment reforms • Learning enhancement programs • Digital learning (in classrooms/ remote)
 Strengthen Administrative and Delivery Systems	• School optimization • Administrative efficiency through tech and data systems • Organization restructuring • Communication streamlining
Strengthen Human Capacity	• Recruitment and rationalization of teaching & admin staff • Teacher training and mentoring • Investing in school leaders⁶
 Drive Accountability	• Academic monitoring and data backed reviews
Create a Shared Vision and Motivation for Change	 • Driving engagement of key actors (e.g., parent community) • Competition framework

Table 3.1: List of interventions

⁶ This toolkit has not been expanded on as the work is still underway at the time of writing this report



3.1 Focus on Academic Reforms

3.1.1 Competency Framework

The goal of reforms in learning is to shift from traditional rote-based learning to holistic competency-based learning. In making this shift, two changes need to happen:

i. Curricular: Teaching should be based on a competency framework

The current model of teaching and learning is based on completion of syllabus in the prescribed textbook and so, the outcome of this learning is measured as number of chapters completed and not competencies achieved. A competency framework maps competencies to be achieved at the completion of a chapter in each subject and grade. With competency framework successfully engrained in the teaching learning cycle, learning outcomes are measured by how well a class has mastered the given competency at the completion of a chapter, thus adding significantly more value to the learning process.

ii. Integrated Curriculum: Teaching should be holistic & multi-disciplinary

The NEP 2020 States that the value of education lies not just in the cognitive development, but also in building of character and development of well-rounded individuals who are equipped with 21st century skills. Specific hours in school must be duly dedicated towards art, sports, life skill development, team activities etc. For successful uptake, it is essential to embed holistic education into the State's curriculum.

Himachal Pradesh: Seekhne ke Pratiphal focuses on 'learning outcomes' rather than syllabus completion.

Himachal Pradesh designed a learning outcome framework called Seekhne ke Pratiphal, based on NCERT's Learning Outcome Framework that released in 2017. It is a detailed class-wise, subject-wise list of learning outcomes (LOs) captured in charts. It consists of two columns highlighting suggested pedagogical processes and LOs to be mastered. This makes the framework actionable, easy to understand and use by teachers in the classroom. It was created for Classes I-VIII for English, Mathematics, Hindi, EVS, Science and Social Studies. 80-85% classrooms across 15,000+ schools in the State have the Seekhne ke Pratiphal on the wall for visibility and easy access. Of the 400 teachers surveyed in the State, 97% were aware of the learning outcomes chart and 79% rated them 4 or more on a scale of 5 for usefulness.

Madhya Pradesh: Dakshata Unnayan program based on a competency framework for remediation and leveraging activity-based methodology to improve learning outcomes

The State, in 2018, launched Dakshata Unnayan (DU) – a remediation program based on an underlying competency framework. The competency framework developed was consistent with the base framework in use for the main curriculum; and mapped to textbooks accordingly. A select set of competencies have been focused on in the DU content where remediation is required, and every chapter of the remedial student workbooks (and supporting teacher handbooks) has been linked to the learning outcome to be attained. Subsequently, the entire monitoring framework of the program has also been linked to the same LO framework where teachers record student-wise competency trackers as to whether the child has attained the target competency post remediation or not.

Additionally, activity based learning, i.e. hands-on work by students, was integrated to further engage students in the learning process and give them an opportunity to think and apply in real contexts. The DU books included structured ABL instructions. Activities require only simple materials that teachers can easily create themselves or collect from the environment (such as sticks, stones, leaves).

In a matter of few months, significant improvements have been reported by schools in the learning level of their students, especially the ones who have been regular to classrooms. 15-20% students jumped by at least one learning level across different subjects and grades.



3.1.2 Assessment Reforms

The objective of assessments is to measure students' learning levels and adapt teaching to target improvement in weak areas identified through student results. However, like the systemic flaw of measuring the success of learning in terms of syllabus completion, assessments are often designed to test memorization/ content recall.

A reform in the assessment's framework should target the transition from testing of memory to testing of command over competencies, critical thinking, and conceptual clarity through better designed question papers. Further, the entire assessment strategy and resulting annual assessment calendar for a State must be designed with clarity of purpose for various kinds of assessments done (e.g., formative assessment of learning or for the purpose of accountability etc.) and incorporating necessary implications in administration assessment approach, data collection formats if any, etc. Currently, States often have an overload of assessments but very little meaningful data and its usage, and this needs to be strategically redesigned.

- **Approach to Assessments**

Thus, there is a compelling need to first, create a simplified Assessments Framework, which provides for fewer and well-targeted assessments with clearly defined purposes (such as whether it's meant as a formative assessment by the teacher for her own use or as a measure of accountability by the State system). It is also important to ensure that while students are evaluated on all relevant skills and competencies, they are not burdened by multiple tests with variable results, leading to non-alignment on learning levels of students. Scheduling these assessments (both national-level and State-level) in an annual calendar, which is widely shared with principals, teachers, parents, students would allow for timely, and focused preparation strategies. The calendar also ensures alignment with the shared vision of frequent and periodic testing of students, in the form of both formative and summative assessments.

NEP 2020 emphasizes the importance of formative assessments that continuously test students in written and non-written formats. Given the higher frequency of these assessments, they can be designed to test a wider range of competencies in innovative activity-based/ project-based ways, and track growth in student learning levels periodically.

Summative assessments on the other hand are more rooted in academic concepts taught in classrooms as part of the syllabus. For both these assessment types, it is essential that the framework of assessment and results should be completely aligned with the competency-based format of teaching. A comprehensive exercise of mapping competencies and aligned learning outcomes with the syllabus is a crucial input for question papers design.

- **Capacity Building**

In parallel, it is equally crucial to build a robust team of assessment experts for developing, guiding, and implementing the process, starting from framework design till question paper-competency linkages alignment, to developing questions to establish test administration protocols. This team can be developed with the support of external experts who can, in the long run, train internally identified stakeholders for critical roles and move out with timely handover to well-trained State officials.

- **Design of the Assessment**

Each question or activity should be designed such that it is testing a specific competency/ Learning Outcome from the State's competency/ Learning Outcomes framework.

Further, if data is being entered into MIS systems to enable competency-based result analysis, questions should be digitally tagged to the competency tested.

Exam papers may be created preferably by well-trained in-house experts. Third party agencies may be brought on-board for a period of 2-3 years for knowledge and skill transfer. Quality of the question papers must be maintained, in terms of testing for the right skill as well as clarity for readers. Over time, State's capacity to design the right quality of assessment questions must be ramped up, both at State HQ levels as well as of teachers and select field/ DIET resources.



- **Administration of the Assessment**

The assessment may be conducted in a centralized or decentralized fashion. A rigorous monitoring mechanism is imperative to maintain the sanctity of the process and provide legitimacy to the results of the assessment, especially when the data is collected centrally and leveraged to drive reviews and any kind of incentives. Trainings and orientations of all stakeholders for the entire value chain of the process, from administration to evaluation, are crucial inputs which can make or break the success of the assessment activity.

- **Results, Data and Visualization**

Given that each question/ set of questions is testing a competency that it is tagged to, the ability of student to correctly answer those question(s) directly determines their learning level of the said competency. Thus, result of an assessment can easily be translated into student's competency-wise learning outcomes. Well-designed data-collection formats, complemented by provisions for digitizing of the collected data, can facilitate visualization of these results through easy-to-read dashboards. This would enable teachers to identify weak competencies and adapt pedagogy to improve learning outcomes in a targeted manner.

These steps are the guiding lights for any well-designed assessment to achieve its purpose.

In India's context, Board examinations is the assessment with far-ranging impact on a student's learning and professional journey. It thus requires a separate, targeted effort to enable students to perform to their maximum potential at this critical juncture.

- **Board Assessment**

NEP 2020 has encouraged States to re-evaluate the framework of board examinations in the following ways:

- Include weightage of performance in subjects of holistic development
- Re-design paper to test competencies and not memorizing capacity
- Increase flexibility by allowing inclusion of best out of 2 attempts

To guide States in transforming board exams, NCERT will prepare and share comprehensive guidelines by the academic session 2022-23. Meanwhile, States can support students and teachers in overcoming basic challenges that they continue to face in most government schools through following interventions:

- Ensure syllabus is released on time and in a manner clear to students and teachers
- Ensure availability of sufficient practice papers created on the latest board pattern; create and share question banks
- Drive academic mentors and district/ block education officers to conduct school monitoring visits and help schools set individual goals
- Provide explicit reviews and support to the lowest performing schools along with exposure to practices of best performing schools
- Facilitate availability of previous year's results for identification of weak subjects, schools and thus creation of targeted improvement strategies

Jharkhand: Spot Testing and Learning Tracking Format to assess students

Jharkhand has launched Spot Testing, a system under which Block Resource Persons (BRPs)/ Cluster Resource Persons (CRPs) assess the learning levels of 3 randomly selected students in every school during school inspections. Each student is tested across Hindi, Maths, and English, across a highly focused set of competencies, testing for foundational literacy and numeracy. As a consequence of spot testing, Jharkhand collected learning outcome data across 2 lakh children per month, in the pre-pandemic months. This is roughly 5% of all children in the State. BRP-CRPs were given direct training on assessments and the data was verified and cross-checked with a series of logical checks and field validations to ensure a high level of accuracy. Changes in the data over time are accurate to the degree of 0.5-1%. Given the scale, granularity, accuracy and frequency, it is safe to say that Jharkhand has one of the best and most detailed learning data systems in the world. Jharkhand has also instituted a Learning Tracking Format (LTF) where each teacher inputs competency level data for each student in the State. The data from Spot Testing will be used to cross-verify LTF data and ensure accuracy.

This data is already being used for a variety of decision making:

- * District and block-wise analysis of performance every month
- * Impact assessments of specific initiatives
- * Usage of learning data in district & block review to determine specific action plans
- * Identification of specific competency gaps to determine teacher training needs
- * Identification of required changes in textbooks and curriculum
- * Accountability and rewards systems



Andhra Pradesh: Creation of in-State Assessment Cell to improve quality of assessments

Till 2016, Andhra Pradesh did not conduct centralized State-level assessments. In 2016, the State set up a 14-member Assessment Cell housed in the State Council of Educational Research and Training (SCERT) to administer standardized, quality assessments at the State level. The Cell comprises an assessment cell head, 10 subject experts, 1 assessment expert, 1 test administration and program manager and 2 data researchers. Questions are now mapped to academic standards, a broader categorization than learning outcomes. Each academic standard is assigned a weight and questions are created according to these weights. Once the question paper is drafted, the Assessment Cell reviews academic standards being tested, question mapping with academic standards, and phrasing of procedural (recall based) and conceptual (skill-based) questions. This review helps with making improvements to the quality of assessments.

3.1.3 Learning Enhancement Programs

There is overwhelming evidence that India has a big divide between what a student knows and what a student is expected to know. International (PISA) and Indian surveys (ASER and NAS) repeatedly corroborate the data. We already know that less than half⁷ of the students studying in Grade 7 can solve Grade 2 comprehension or numerical based problems. Almost 70% of 4-year-olds demonstrated less than half the skills required for 'school-readiness'. As the learning gap widens, ~40% of students drop out⁸ before they reach Grade 11. Overall, despite 97% enrolment in Grade 1, only 23%⁹ complete Grade 12 – largely due to learning gaps built up over time.

Even if there are 20 out of 30 students in Grade 5 who are at Grade level 2, 3 or 4, the teacher focuses on completing Grade 5 curriculum. Anecdotal evidence suggests that children can't grasp at-grade syllabus until serious bridging is done. This necessitates the creation of an effective and scalable learning enhancement programs that can help quickly bring those students who are behind, to grade or near grade-level competence.

Remediation or Learning Enhancement Programs must be integrated into the formal schooling system as they play a critical role in improving poor student learning outcomes in our country. These programs will be sustainable and scalable only if they are executed/ monitored by State resources across levels and funded by the government.

Basis in-depth study of remediation programs implemented by various States, key design elements were identified to be extremely critical to the success of a remedial program. These are as follows:

- **Program Placement:** Building the remedial program into school hours is essential for two reasons – a) ensuring adequate student and teacher attendance for the program to have impact, and b) for the program to get focus and priority at every level, starting from teachers and parents, up to the district and State administration (and not be an 'additional' voluntary program). In addition, any program designed for additional hours is unlikely to scale without supplementary teachers/ additional funding.
- **Learning Content:** Teacher handbooks and student workbooks with specific remediation content must be printed by the State in a centralized manner. While this is accompanied by significant budget implication, it ensures a minimum level of usage and practice by students irrespective of teacher commitment or capability. In addition, the centralized design allows for strategic choices and expert input at the State level with respect to pedagogical approach, specific competencies that need to be included, pacing, etc.
- **Student Grouping:** Student should be grouped based on learning levels and a teacher should be mapped to each group of students. This allows each teacher to focus on a specific learning level, rather than having to deal with several different levels in his/ her grade. Given the current reality of most schools having only two or three teachers, it is likely that one teacher has to manage more than one group (i.e. one learning level) of students inside a classroom. In such scenarios teachers should be asked to pay primary attention to behind-grade students during the remediation periods while enabling practice/ self-learning/ peer-learning mechanisms for other students.

⁷ ASER 2019

⁸ ASER 2017

⁹ Only 1 girl out of Primary School's 100 reaches grade 12, a reflection – Article 2016

- **Remedial Timing:** Remediation can be conducted in block of time (few weeks of continuous classes) or in some continuous manner (one hour each day or in fixed days of a month etc.) or a mix of the two basis the context of each State. It is ideal to continue the program through the entire academic year to enable constant bridging of gaps.

Programs based on this strategy are being implemented in Jharkhand, Madhya Pradesh, and Odisha. These States have ensured that teachers are provided concrete guidance through scripted handbooks, and students are given customized practice workbooks. Steady gains in student learning are visible in State assessments because of this intervention.

Learning Enhancement Program in Jharkhand (Gyan Setu)



Before **Jharkhand** embarked on a Systemic transformation journey in 2017, learning outcomes in the State (as measured by NAS) were lower than the National average.

In October 2018, through Project SATH-E, Jharkhand launched the Gyan Setu program – the State’s flagship Learning Enhancement Program. Gyan Setu is based on the premise that teaching should be pitched directly at a child’s learning level. It focuses on building foundational literacy and numeracy skills among students who are yet to attain these skills. The program is currently implemented in Grades 1-9 and impacts ~40 lakh students across 35,000 schools. It is a year-round program where students practice customized workbooks for 1.5 hours every morning. To ensure the success of this program, effective teacher training and teaching resources are provided to ~1.2 lakh teachers in the State.

During its first 6 months (October 2018 to March 2019), Gyan Setu led to a 12% improvement across most competencies.

Similar Learning Enhancement Programs have also been launched in **Odisha (Ujjwal and Utthan programs)**, and in **Madhya Pradesh (Dakshata Unnayan)**. Each State has seen improvement in learning levels because of rigorous execution of these programs.

3.1.4 Digital Learning (in classrooms/ remote)

Traditionally, education has been limited to a fully classroom-based teaching and learning model. However, as COVID-19 impacted India in early 2020, school closures completely disrupted this model and teachers across the country began to innovatively reach students through digital means. This experience has led to the discovery of the potential that lies in digital means of learning and provided sufficient proof of concept to explore and integrate digital learning in much more significant ways both, in-classroom, and at-home.

• In-class Digital Learning

A host of technology interventions can be implemented in the classrooms; however, States face constraints in terms of availability of hardware or budgets for learning solutions. For investments in technology to be most effective, a State should first identify its own priorities, in terms of student learning and teacher capacity-building, create a map of the available infrastructure and planned investments over the next 3-5 years, and then proceed to design a roadmap for interventions it should undertake.

Below is an illustrative example for how this may be thought through, leading to select investments linked to specific learning objectives.

Four types of digital intervention can be leveraged in school education

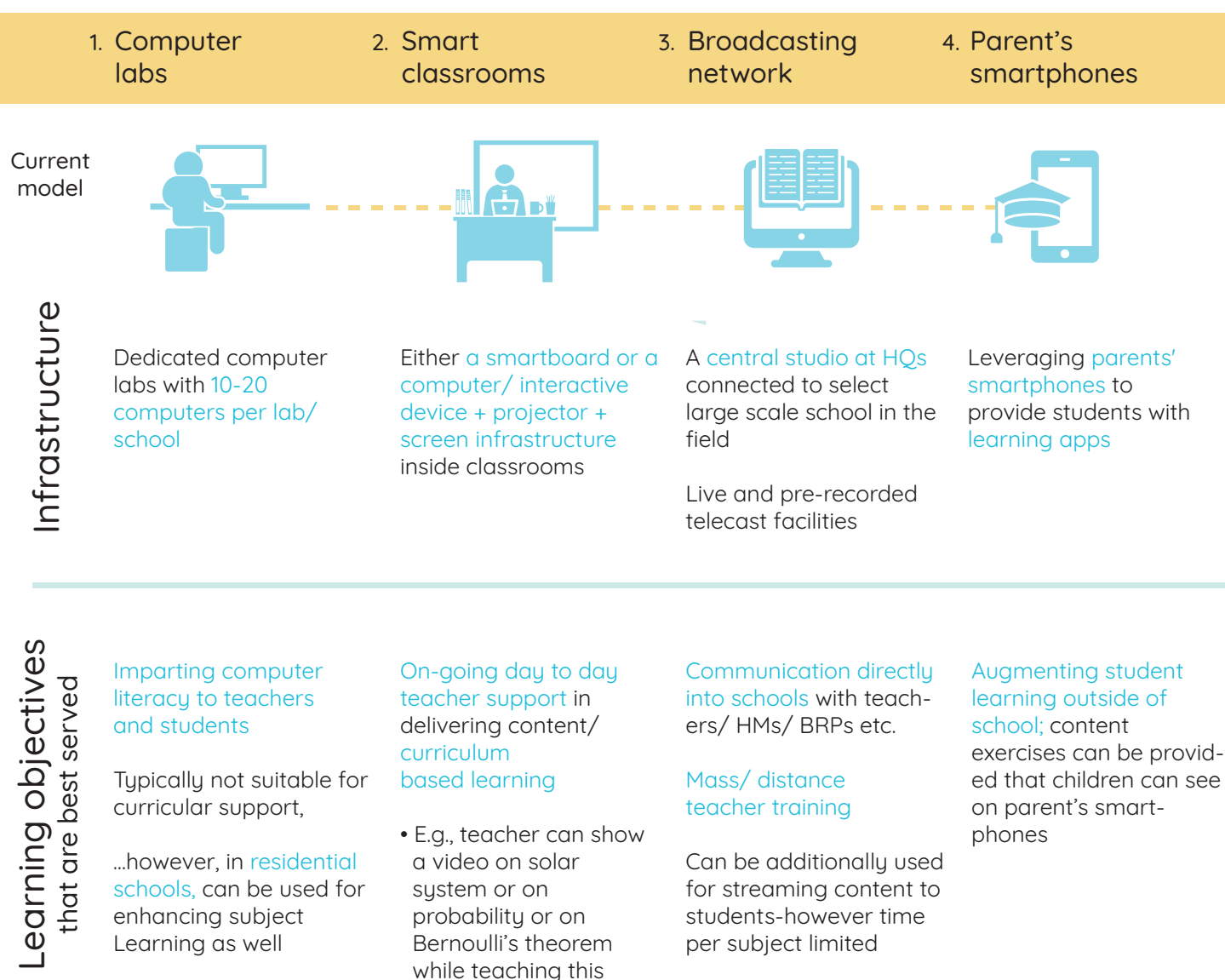


Exhibit 3.1: Types of digital interventions for school education

For the post COVID world, States are increasingly looking at blended models of learning inside classrooms. Planning the use cases/ learning objectives first (equipping computer labs with 10-20 computer systems utilising the ICT@Schools Scheme of the Government of India, or at least 1 smart-class needed for each of grades 9-12 in a well spread out set of 10% high enrolment schools of the State for in-class blended teaching, etc.) and subsequently procuring the required infrastructure to enable those objectives will be critical.

- **At-home Digital Learning**

Online learning at-home can be enabled on any internet enabled device such as a smartphone, laptop, or tablet. It can significantly strengthen the overall learning cycle in the following aspects:

- **Learning:** Short videos with high quality content can effectively supplement classroom teaching by enabling regular on-demand revision. Such videos can be sent by the State/ teachers (as evidenced during COVID) and can be personalized to enable remediation as well.
- **Assessment:** Interactive tools in the form of quizzes can be especially helpful to solidify learnings of concepts learnt in class – thus optimizing school hours.
- **Results Tracking:** Learning on digital tools enables sharing of real-time granular data on student learning level thus enabling teacher to adapt pedagogy through data-backed insights.

However, a significant bottleneck to at-home learning is limited access to an internet enabled device amongst students belonging to less income households. States have explored various strategies (e.g. mapping mentors with devices, device-sharing, crowdfunding to support devices, etc.) during COVID-19, however the concern remains.

SATH-E States' learning efforts during COVID-19



As schools shut down in March 2020 due to the COVID-19 pandemic, ~ 22 million students across the 3 States were left without any formal access to education. To enable continued learning, the States conceptualized a structured strategy for student learning, teacher professional development and parent engagement; done via a multi-modal approach. Key initiatives include:

Content curation: A massive digital library (in hindi) for all grades and subjects in collaboration with the best ed-tech organizations in the country was curated in a matter of 2 weeks from the first lockdown.

Content dissemination: The States set up WhatsApp cascades to share content uploaded on YouTube with teachers and parents/ students. Separately, content was aired on select TV channels at defined time slots everyday, along with songs and stories being aired on radio for an hour each day. Social emotional learning content was also disseminated on Saturdays.

Engagement: Periodic assessments were conducted via WhatsApp chat-bots and Google forms. Moreover, teacher-student connect was organized via regular phone calls and rigorously monitored. This was the biggest driver of student engagement.

Ensuring reach to the digitally disconnected: The States launched initiatives such as at home textbook and workbook distribution, remedial worksheets, and mentor mapping to make sure learning losses and engagement were minimized for the digitally disconnected.

3.2 Strengthen Administrative and Delivery Systems

3.2.1 School Optimization

The rapid increase in school construction since the 1990s, driven by transformative national policies such as Sarva Shiksha Abhiyan (SSA), Rashtriya Madhyamik Shiksha Abhiyan (RMSA) and the Right to Education (RTE) has resulted in significant advancement in school access and enrolment. As a result, India today has the largest school footprint in the world, nearly three times¹⁰ that of China, a country catering to a similar population base.

An average Indian government school has just 50-60 students and 1-2 teachers, while an average private school has about 265 students and nine teachers. There are nearly 400,000 government schools with less than 50 students and just one or two teachers. Research shows that such schools, also called 'sub-scale schools' are unfit to provide the required ecosystem for high quality teaching because of the following reasons:

- Divided teacher attention to students across multiple grades
- High share of teacher time devoted to administrative tasks
- Poor infrastructure due to economic viability of any investment
- Low State focus on improving schools that impact fewer students

The National Education Policy (NEP) 2020 also recognizes the problem of small and single teacher schools. It maintains that "the isolation of small schools also has a negative effect on education and the teaching-learning process" and recommends a judicious and careful handling of school consolidation using school-complexes/ cluster as one of the mechanisms.

¹⁰ Education in China: A Snapshot, OECD 2016

The goal of the education system is to make each school conducive to delivery of high-quality education by optimising sub-scale schools into fewer better-resourced schools. The type of school reorganisation possible are –

- **Same-campus schools:** Horizontal (where two schools of the same type are reorganised into one) or Vertical reorganization (where schools of different levels are reorganised into one integrated school)
- **Low or medium enrolment schools (without transportation):** (Typically <60 enrolments) primary schools within 1 km and upper primary schools within 2 km
- **Low or medium enrolment schools (with transportation):** Primary schools beyond 1 km and upper primary schools beyond 2 km (urban first; rural later)

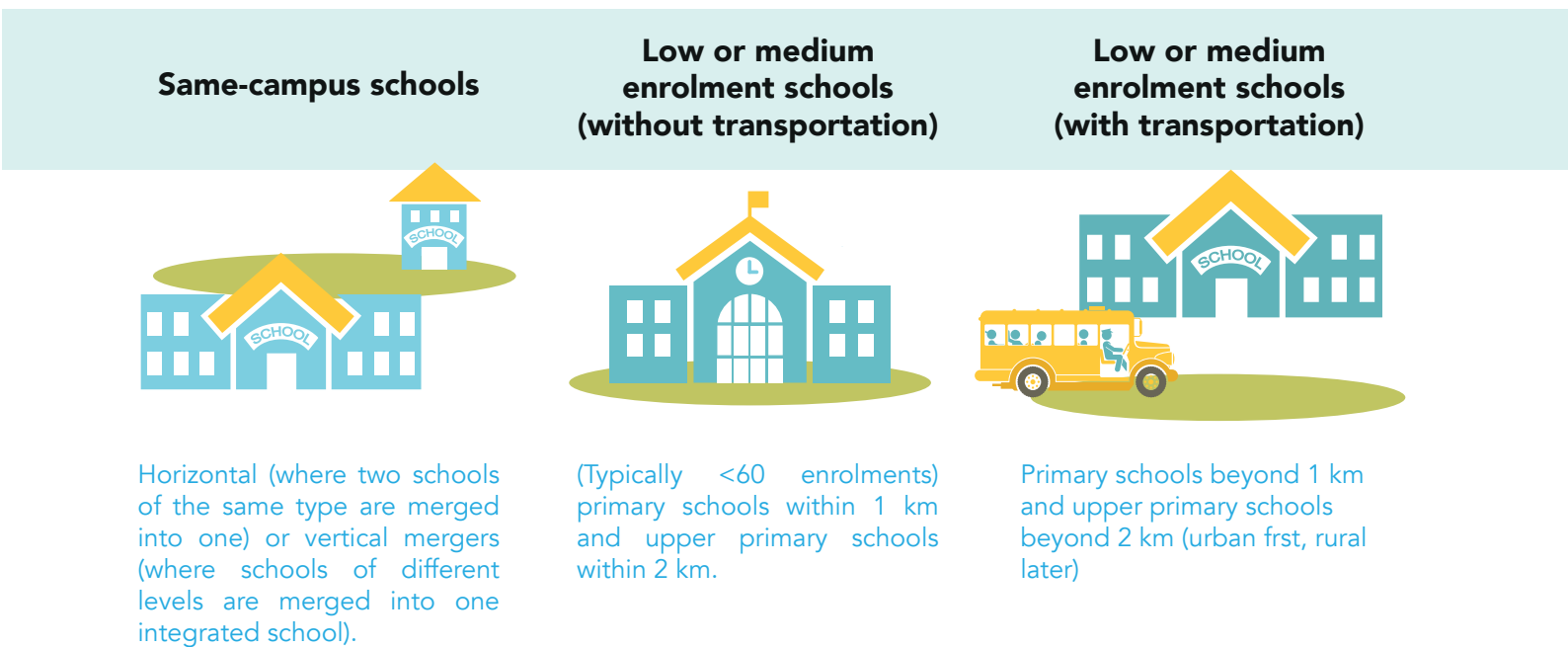


Exhibit 3.2: Types of school mergers

The aim of this exercise is to strike a balance between access and quality by pooling in resources and reducing the administrative burden of running multiple, unviable schools. The key for a State to successfully re-organise schools at-scale is two-fold -

- Create a strategic roadmap with re-organisation spread in phases across 2-3 years
- Ensure strong political alignment prior to on-ground implementation

School consolidation can result in multiple benefits such as greater teacher/ head-master availability, more resources and infrastructure, greater administrative support, improved governance, stronger parent community, etc. The experience of States like Jharkhand and Rajasthan show that re-organisation, if implemented strategically and thoughtfully, lead to almost no downsides. Fears of loss of access and dropouts among students are often not borne out on ground. In several schools, school consolidation has already increased enrollment in the short run, as more students are attracted to larger schools. The consolidated schools which happen to be a little farther than the earlier unconsolidated schools must be provided with safe transportation system as has been tried out in Jharkhand.

Rajasthan: School consolidations to create Adarsh Schools



Around 14,500 schools were consolidated to form more than 9,800 Adarsh Schools, one for each Gram Panchayat (GP). These schools have Classes I-X/XII under one roof. The process of integrating schools first required defining the parameters for integration. Schools with less than 30 children were merged with a school situated within a one-kilometer range and having higher enrolments.

Class I-V and VI-X schools existed in close proximity. Such schools were consolidated into one. UDISE data at the GP-level was leveraged for this exercise as it contained a list of schools along with details of their revenue village, GP and distance between the schools. A dedicated 20-member team led this effort. Additionally, teams were created at the GP level to verify UDISE data pertaining to distance between schools on ground

Jharkhand: Khunti merges seven schools into one school by setting up a Transportation System

The District Administration in Khunti took a particularly bold step during the third phase of school re-organization in Jharkhand in 2018. Khunti has created a large, **integrated Grade 1-12 model school** after merging as many as seven different schools into a single school. Four of these were sub-scale schools with less than 60 enrolments. The district innovated by setting up a **transportation system for students who live further away**. These students now assemble at their erstwhile merged schools from where they are brought by bus to their new host school.

The entire merger process has been carried out with the enthusiastic support of the SMCs. Parents gather in excitement to see their children off on the bus, excited by the learning opportunities available at the larger, well-staffed school. Today, the school has 2000+ students and 40+ teachers and is the pride of the district. It is led by an able principal and is benefiting from significant investment in high-quality infrastructure including labs, over-bridges and libraries. As further investment strengthens the school, other smaller schools even further away are already applying to be merged into the larger school as well.



Following a robust consolidation process across the three SATH States, - ~4,600 schools were reorganised in Jharkhand (horizontal distance mergers), 36,000 schools were reorganised in to ~16,000 schools in MP (same-campus mergers), and ~1,800 schools were reorganised in Odisha (also horizontal distance mergers).

3.2.2 Administrative Efficiencies through Tech and Data Systems

The scale of the education system in a typical mid-sized State in India is much bigger than most large corporations - with over 50,000 schools, 2 lakh employees (teachers, officers) and 5 lakh students. Considered cumulatively across States, school education systems would be one of the largest employers in India, larger than the Indian Railways. However, the school education system in many States continues to operate in a data-dark world and is thus characterized by the following -

- **Insufficient and sparse information** even for basic school, teacher and student data (such as enrolment, attendance etc.)
- **Time intensive, offline data collection processes** that diminish the amount of time spent on academic activities
- **Inefficient governance, monitoring mechanisms** resulting in lack of accountability
- **Lack of data-driven decision-making** leading to low objectivity, transparency and efficiency

With last mile tech connectivity at schools increasingly becoming a reality, both in terms of devices (laptops, computers, tablets/ smartphones) and internet availability, there is a clear opportunity to build a strong Education Management Information System (E-MIS). Some States have already initiated this journey. However, there is a need for conscious planning and a clear vision, rather than multiple disparate efforts.

A well-functioning MIS system should aim to deliver on three key objectives:

Vision: An Education MIS should enable 3 key objectives

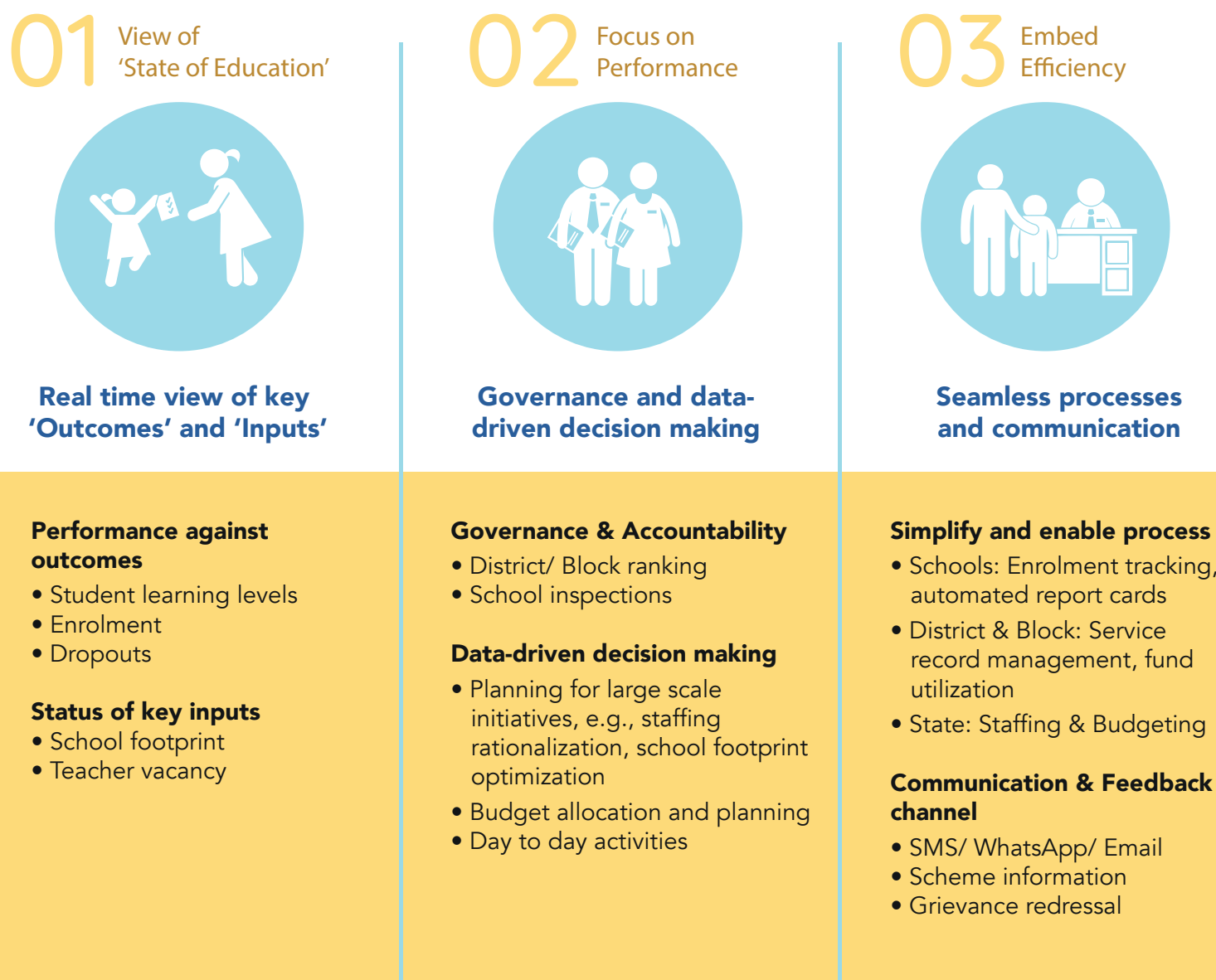


Exhibit 3.3: Objectives that E-MIS can enable

Some of the critical use-cases that States in India have been able to unlock using the MIS system include –

- **Single source of truth; central database:** Central warehouse of accurate data on school, staff and student information available at the click of the finger is the most basic and primary use-case. It also obviates the need for duplicated data-collection efforts made by teachers and principals.
- **Governance:** Availability of data pertaining to schools, staff, students, and schemes can allow stakeholders to track on-ground progress of program implementation through dashboards. This leads to clear percolation of accountability thus improving ability to link outcomes to rewards and recognition
- **Communication:** An Education MIS can also play the role of a two-way communication tool for parent engagement, feedback collection, grievance redressal, etc. Not only does this save time and effort of telephone calls, email management and letters, but it can also lead to higher community-led accountability and efficient allocation of resources.
- **Advanced data-driven analytics:** An advanced analytics functionality can be layered on top of a strong EMIS to leverage the power of Big Data to drive predictive analytics, cost-benefit analysis of schemes to allocate budgets, correlation analysis of infrastructure improvement, community engagement, and teacher qualifications with student academic results.

In Jharkhand, for example, real-time school monitoring data has helped the State identify the bottom 2,500 schools and provide targeted support. In Odisha, school staffing norms are being revisited and the availability of school-wise enrolment data is enabling the State to accurately assess the financial implications of the changes. In Madhya Pradesh, large scale teacher rationalization was conducted through a transparent tech-based process.

Rajasthan: Shala Darpan MIS to inform data-backed decisions



The Shala Darpan portal of Rajasthan is a database of over 86 lakh students from Classes 1 to 12 and more than 3.5 lakh teachers across more than 65,000 public schools. This portal is being used to assess demand for textbooks, monitor disbursement of cycles and transport vouchers, using real-time information, track implementation of schemes, streamline top-down communication and monitor academic performance of all students, activities that were previously performed by teachers. All critical HR processes related to teachers, such as promotion and salary processing are carried out through the portal. Reports on school/ post/ subject-wise teacher vacancy, transfer eligibility can be generated through the portal, thus facilitating organized and data-backed recruitment planning

3.2.3 Organization restructuring

Current education department structures and processes are not geared to support the massive transformations that are needed. As highlighted in the earlier chapter, there are multiple challenges in this regard. For e.g., there are overlapping and missing functions, large vacancies across departments (e.g., SCERT), poor role clarity and difficulty in matching skills and roles and a lack of a culture of collaboration and excellence.

Therefore, the vision for the Education Department of any State government is to be –

- **Well-staffed** with oversight over all academic and administrative matters
- **Optimally resourced** across functions in line with the strategic priorities and workload
- **Strongly led** by enough people to supervise as well as to execute
- **Functionally separated** between academic and administrative responsibilities
- **Performance-oriented** with individuals having clear accountability for outcomes and quality and being focused on results
- **Smoothly collaborative** across cross-functional teams put in place

Building upon the experiences from different Indian States, following changes in education departments are most urgent –

1. The core academic institutions (SCERT and DIET) must be strengthened

- a. Distinguish organization clearly from any administrative work
- b. Ensure vacancy levels are at the minimum across different levels
- c. Ensure diversity between academics for higher, middle, primary school
- d. Restructure DIET to mirror SCERT for effective collaboration

2. Field organizations need re-structuring for effective administration

- a. Introduce core academic positions (eg. ABEO or ADEO) as required
- b. Ensure vacancies are at the minimum across different levels
- c. Ensure hierarchies, reporting lines do not create too many layers in teams



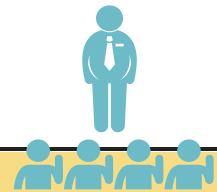
3. Departments with similar activities may be merged for improved synergies

For instance, project offices for elementary (SSA) and secondary (RMSA) were both responsible for on-ground program implementation resulting in duplication and poor convergence. These were both then merged to create Samagra Shiksha Abhiyan. Several States continue with separate project offices and these must be merged.

4. Education Department must be designed for the future

A visionary change to the structure of the education department could be to merge common functions and create core functions within the department that report to the Principal Secretary directly. The structure of the department could be drastically simplified to have Establishment, MIS and Technology, Policy, Academics, and Finance all as separate directorates reporting centrally. This would require a significant change in the ways of working and cross-functional collaboration at all levels but could significantly streamline all operations.

Odisha



In 2018, a comprehensive proposal for restructuring the Education Department in Odisha was put together and submitted for approvals. The objectives of this restructuring were to:

1. Improve administrative efficiency, drive synergies and convergence by the merger of related directorates
2. Separate administrative and academic functions to drive greater focus on quality education
3. Ensure compliance with MHRD guidelines
4. Extend the Department to include higher secondary and vocational education to enable seamless governance of schools and student learning pathways
5. Create a forward-looking organization focused on the delivery of outcomes

As a result, 16 Directorates were combined into 11 Directorates leading to a streamlined and more efficient administrative structure.

3.2.4 Communication streamlining

Technology can be a great enabler in helping set up and streamline top-down, bottom-up and lateral communication links between the State government and on-field staff.

There are two objectives of streamlining communication. First, reducing delays in communication and facilitating instantaneous information sharing. Second, making the flow of communication seamless between levels, i.e. from top (State) to bottom (teachers), and vice versa, and across levels (between teachers, or block-level officials, etc).

Himachal Pradesh: Communication streamlining to enable speedy communication

In Himachal Pradesh, the inordinate time taken for communication to flow from the State headquarters to more than 40,000 teachers through multiple administrative layers was reduced by using WhatsApp Groups and SMS. A dedicated SMS gateway was developed for the Department of Education, in coordination with the Department of Information Technology. Login IDs were created for State, district, and block level officials so that they could send bulk messages in addition to circulars for quick communication. This is a low-cost mechanism to reach large number of recipients (up to 10,000 at once). Additionally, more than 150 WhatsApp Groups at the State, district, and block level (covering around 8,400 officials and teachers) and around 30 initiative-level groups were created (e.g., Khaas Shiksha, Review and Monitoring Group of District Research and Evaluation Coordinators). These groups allow for instant feedback with respect to the communication received. They also allow teachers to share photos, videos, and documents of classroom practices.



3.3 Strengthen Human Capacity

3.3.1 Recruitment and rationalization of teaching and administrative staff

With large-scale teacher vacancies, or large numbers of under-qualified contract teachers, meaningful improvement in learning outcomes will add prove to be extremely difficult. Most States in India have significant teacher vacancies, largely due to three reasons:

- Historical unresolved court cases that prevent new recruitment
- Poorly defined and delayed recruitment and promotion processes
- Decision-making which does not account for retirements, attrition, etc.

There also exists an imbalance in teachers across schools. Often, large urban schools tend to have too many teachers, and rural schools, too few. Teacher rationalization is another essential component of optimizing delivery structures to deliver quality education in a State. This becomes even more critical in the wake of school consolidation as some of the host schools may have too many teachers, while others may be left with too few. This is because teacher rationalization typically does not happen regularly based on due process. In the long term, States should develop a transparent transfer policy and an assigned team through which rationalization is undertaken every year, within a specified time.

Besides an immediate improvement in Pupil-Teacher Ratio (PTR), States that have implemented this successfully have seen **benefits such as improved teacher satisfaction over time, as well as a significant jump in learning outcomes.**

Madhya Pradesh has undertaken an online teacher rationalization process, moving ~10,000 teachers from surplus to deficit schools. States like Odisha, Haryana and Rajasthan have also made good progress on recruitment, including making the entire process transparent, online, and competitive, resulting in <10% teacher vacancies.

3.3.2 Teacher training and mentoring

Research shows that the quality of teachers strongly correlates to the achievement of students. Current cascade models of training are ineffective. A standard set of topics is chosen for all teachers across the entire State, trainer effectiveness is often extremely variable, and the cascade leads to a large amount of transmission loss. All of this, coupled with weak monitoring, leads to a system where even crores spent on teacher training every year, does not translate into better learning for students in the classrooms. The National Education Policy (NEP) 2020 also recognizes the need for a teacher professional development program which is personalized and effective. It recommends 50 hours of continuous professional development program for every teacher every year.

We need a fundamental shift in the way training is conceptualized, designed, and delivered at the State level. There is a need to move from a model where training is one-size-fits-all, delivered through a cascade, and limited to few days a year, to one that delivers need-based inputs to each teacher directly from experts, addresses gaps in subject as well as pedagogical knowledge, and allows for the investment of time that is necessary for a teacher to truly make progress.

To make this happen, training should be delivered through personalized/ customized, tech-based blended systems rather than the current classroom only or the recent online only models. What is needed is an integrated system, whereby a teacher can take a self-assessment and then be guided through a personalized learning journey. The assessment should evaluate the teachers' subject knowledge (appropriate to the level of students that they are teaching), as well as their pedagogical understanding, thereby determining their starting point. The system should then provide relevant content to strengthen their knowledge and skills and provide opportunities for continuous assessment of the progress being made. The NEP 2020 recommends DIKSHA as a one-step solution which could be leveraged to design blended learning programs offering personalized learning to teachers based on their unique needs. During COVID, various States have also experimented with teacher capacity building in digital modes and increasingly realized the need/ potential for ongoing blended mode of teacher professional development.

Madhya Pradesh: Teacher training delivery and module customized to teacher needs



Teacher training design has undergone a major change in MP. Before SATH E, a generic training for all teachers was often the practice. Now, the State leadership uses the data on low student performance areas to identify specific content topics for trainings.

DIETs have been involved in trainings in a bigger way, and are using novel approaches such as Quizzes, Read-out-loud exercises, Case studies and Demo activities along with digital resources for training delivery and to minimize cascade based dilution.

3.3.3 Investing in school leaders

An engaged school leadership can create significant difference in ensuring high-quality classroom environment and teacher implementation. While teacher training is periodically done, school leaders don't go through structured trainings as it is not considered to be a priority. Some States have made sporadic efforts in terms of executing modules from National Centre for School Leadership (NCSL), while some have done one-off trainings; however, a more concerted effort is required.

To improve leader engagement, an effective, year-round training is required through a blended approach (mix of in-person and remote). Trainings should ideally cover both instructional and management aspects. In addition to training, exposure visits to the best of schools within India or internationally can help open leaders' minds. Further, a select set of high-performing cohort of leaders, identified through pre-determined criteria, may be sent for management trainings to premiere institutions in the country (e.g., India Institutes of Management) for an executive program. Forums for structured peer discussions can also greatly aid principals become aware of best practices.

3.4 Drive Accountability

3.5 Academic monitoring and data backed reviews

The success of any initiative in a large system depends on effective review and monitoring mechanisms built at various levels.

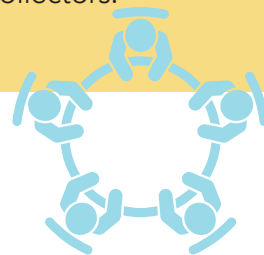
Developing mechanisms that enforce more accountability has been one of the key drivers of systemic transformation. States that have prioritized this initiative have seen remarkable improvements. The objective of this intervention is to ensure the availability of two types of data - (i) quality assessment insights, and (ii) data from visits to schools, and their academic monitoring, which can be used for cascaded, data-backed and regular review meetings, which follow a prescribed structure and format.

All three SATH E States have managed to make significant strides in improving their tech-based monitoring systems with a focus on academics. While in Odisha and Madhya Pradesh, the MIS interconnects several existing systems that were previously fragmented, in Jharkhand, a new greenfield MIS system was built called 'eVidya Vahini'.

In all three States, the systems have been setup such that through a visit allocation system, each month, block officers are allocated schools for visits. After every visit, visit reports are generated and specific issues in terms of infrastructure and academics are identified. A resolution is deployed and is systematically tracked. All key data metrics feed into district/ block and State level reviews. This allows for effective course correction leveraging real-time/ near real-time data which was till date a significant challenge for systems of such scale.

Madhya Pradesh: Districts and Block PMU meeting cadence and District Report Cards

Monthly PMU meetings are set up at district and block levels with a very high compliance. Over 95% districts and blocks submit the minutes of the meetings. District Report cards are also generated for each of the districts. The scores on district report cards inform the point of discussion in review meetings, several of which are also led by District Collectors.





Odisha: Odisha School Monitoring App (OSMA) to reward best performing schools

The State of Odisha built significant momentum in 2017 & 2018 through the Odisha School Monitoring App (OSMA), an app-based school monitoring system which formed the basis of block and district level reviews. Building on this, to recognize and reward best performing schools in terms of Learning Outcomes and motivate the rest to improve performance, the State decided to launch the School Certification Program. Over 6,000 schools were rewarded for improving performance on key learning outcomes.



3.6 Create Shared Vision and Motivation for Change

3.6.1 Driving engagement of key actors

Given the magnitude and complexity of the challenge the education system faces, a pull from the political leadership of States is important for generating momentum around systemic transformation. If the leadership clearly communicates and demonstrates that it prioritizes delivery of quality education, it becomes the priority of the rest of the administrative set-up as well. This in turn ensures that department, district, and block-level officials become more involved in improving educational outcomes. It is also necessary to engage and incentivize teachers and administrative officers appropriately so that they are motivated to carry out their responsibilities to the best of their abilities.

MP: AtmaNirbhar MP and Wall of Fame



The Hon'ble Chief Minister of Madhya Pradesh has clearly outlined school education outcome indicators which are to be achieved by 2023 in a mission mode under the AtmaNirbhar MP Mission. This declaration of goals has aligned all the stakeholders right from the Minister of Education to the teacher and parents in the State.

In addition, the Wall of Fame recognition for well performing schools is driving on ground behavior change and positive competition among the schools and districts. There are three categories of certifications on which schools are recognized:

- **Gold Champion** (competency achievement by >90% students)
- **Silver Champion** (competency achievement by 75-90% students)
- **Bronze Champion** (competency achievement by 60-75% students)

The 'Wall of Fame' scheme is being further refined and will be re-launched as schools re-open post COVID.

The NEP 2020 also recommends setting up State School Standards Authority to maintain minimum input standards in all the schools and drive the schools towards excellence by accrediting them.

3.6.2 Competition framework

Encouraging competition within the system by incentivizing stakeholders is one way to improve performance. Through this intervention, momentum is generated at the block level by creating a sense of healthy competition among blocks to improve on various inputs (e.g., high quality execution of Learning Enhancement Programmes) as well as outputs (i.e. FLN attainment and grade-level competency of students). Putting the onus of achieving a specific target on districts/ blocks/ schools devolves ownership and accountability from the State to the districts/ blocks and further to schools/ teachers.

Jharkhand: School Certification Program

A certification program was launched by the Jharkhand Education department to assess the performance of schools on the success of two flagship initiatives - Gyan Setu (Remediation program) and eVidya Vahini (MIS initiative). Three levels of certifications - Gold, Silver and Bronze were identified as part of the program to motivate schools/ teachers and sustain momentum over the long term. In the first year, 8,000+ schools nominated themselves, of which ~1,800 were externally verified. ~565 schools were bronze certified. The program is expected to re-launch once schools re-open post the pandemic.



Haryana: Saksham Ghoshna's competitive spirit nudges blocks to attain grade-level competency

As part of the Saksham Ghoshna campaign, blocks were assessed through an independent third-party to ascertain if 80% or more students were at grade-level competency. Once the State education department announced nomination for Saksham Ghoshna open, blocks nominated themselves to be evaluated by the third-party. If assessed blocks was found to meet the bar as per the third-party assessment, it was declared grade-level competent, or Saksham. Saksham blocks received recognition and appreciation from the CMO, State education departments, media houses, etc., and were felicitated in multiple ways. The constant engagement and involvement of the CMO, encouraged districts and blocks to improve their performance. Competition motivated performance improvement in a structured manner and prompted blocks to undertake systemic reform, adopting both academic and governance interventions. Seven rounds of assessment were conducted and 94 of 119 blocks in the State have been declared Saksham.



Chapter 4:

Conclusion, way forward and toolkits

Conclusion, way forward and toolkits



As a country, the challenge we now face is to ensure the delivery of quality education. The complexity of carrying out this task requires a shift in the approach we have taken till now. There is a need for a comprehensive strategy that combines elements of both Academic and Governance reforms, to ensure systemic and sustained progress towards improving learning outcomes of students. Successful systemic transformation requires a well-laid out roadmap with pre-defined targets, the alignment of all stakeholders around a unified vision, efficient communication channels, a culture driven by data-based accountability and a continuous process of capacity building across all levels.

In our experience of working with States, we have seen that the process of change is slow and takes time, especially in the early days. There is a significant hump to be overcome – to build motivation, ownership, and the skills to deliver the nature and pace of change – and in the early days it may feel like progress and outcomes are limited. However, with focused effort and the entire organization aligned, once the foundation for systemic change is laid, the impact can be significant and irreversible.

Systemic transformation, by its very nature, however, is a long journey, and this journey has just begun. The States that have initiated work on systemic education transformation over the last three to four years have already seen positive impact. As Andhra Pradesh, Haryana, Himachal Pradesh, Jharkhand, Madhya Pradesh, Odisha, and Rajasthan, embark on the next phase of their systemic transformation journey, it is time for other States to explore the potential of adopting this approach, customized to their context.

The accompanying 11 implementation toolkits delve into the details of how each intervention was designed and implemented in State-specific contexts. We hope that the framework for systemic transformation explained in this document along with codification of best practices from States is helpful for other States who might want to transform their school education system into a high performing one.

Appendix I:

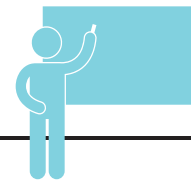
List of Contributors

S.No	Pillars Interventions	Interventions
1.	Shri Rajesh Kumar Sharma	Secretary, Education, Jharkhand
2.	Ms. Rashmi Arun Shami,	Principal Secretary School Ed, Madhya Pradesh
3.	Shri Satyabrata Sahu,	Principal Secretary, Education, Odisha
4.	Shri K K Pant	Principal Secretary, Education, Himachal Pradesh
5.	Shri Naresh Pal Gangwar,	Erstwhile Principal Secretary, School Ed, Rajasthan
6.	Shri Dr. R Venkateswaran,	Principal Secretary, School Ed, Rajasthan
7.	Dr. Shailesh Kumar Chourasia	Erstwhile State Project Director, School Ed, Jharkhand
8.	Shri Dhanaraju S	Project Director, RSK, Madhya Pradesh
9.	Ms. Anubha Shrivastava	Commissioner and Director – CPI, Madhya Pradesh
10.	Shri Bhupendra S Poonia	State Project Director, OSEPA, Odisha
11.	Shri Dr. Rakesh Gupta	State Project Director, SSA, Haryana
12.	Ms. K. Sandhya Rani	Commissioner, School Education, Andhra Pradesh
13.	Shri Ashish Kohli	State Project Director, SSA, Himachal Pradesh
14.	Shri Rohit Jamwal	Director, Elementary Education, Himachal Pradesh
15.	Ms. Kamna Acharya	Additional Director – CPI, Madhya Pradesh
14.	Shri Rohit Jamwal	Director, Elementary Education, Himachal Pradesh
15.	Ms. Kamna Acharya	Additional Director – CPI, Madhya Pradesh
16.	Shri Rohit Jamwal	Director, Elementary Education, Himachal Pradesh
17	Dr. Ashok Pareekh	Deputy Director & Controller, Curriculum, Rajya Shiksha Kendra, Madhya Pradesh
18.	Shri Gangadhar Sahoo	Director, TE&SCERT, Odisha

S.No	Pillars Interventions	Interventions
19.	Shri Surya Narayan Mishra	Jt. Director, OSEPA, Odisha
20.	Shri Dipak Ray	AD, Planning, OSEPA, Odisha
21.	Shri Pravat Mishra,	AD (MIS), OSEPA, Odisha
22.	Shri Tapas Kumar Nayak	Additional Director, TE & SCERT, Odisha
23.	Shri Satya Mohan Senapati	Joint Director, DSE, Odisha
24.	Ms. Y Durga Bhawani	School Education Department, Andhra Pradesh
25.	Shri Manoj Kaushik, Ms.Savitri Sihag, Shri Surender Bangar, and Shri Surinder Sindhu	School Education Department, Haryana
26.	Ms. Anuradha Sharma, Shri Hitesh Azad, Dr. Manjula Sharma, Shri Narender Sharma, Shri Pradeep Sharma, and Ms. Shikha Sharma	School Education Department, Himachal Pradesh
27.	Shri Jayant Mishra, Shri Avinav Kumar, Shri Sachin Kumar, Shri Keertiwas Kumar, Shri Dhirsan Soren	School Education Department, Jharkhand
28.	Shri B.K. Gupta, Shri Deepak Moond, Shri Mukesh Chand, and Shri Vinod Jain	School Education Department, Rajasthan
S.No	Knowledge Partners	Organization
1.	Ms. Seema Bansal & Team	Boston Consulting Group (BCG)
2.	Shri Aditya Natarajan & Team	Piramal Foundation of Educational Leadership (PFEL)
3.	Ms. Prachi Windlass & Team	Michael and Susan Dell Foundation (MSDF)
4.	Shri Gaurav Goel & Team	Samagra Governance

Appendix II Implementation Toolkits

Pillars	Interventions
Focus on Academic Reforms	 1. Competency Framework 2. Assessment Reform 3. Learning Enhancement Program
 Strengthen Administrative and Delivery Systems	4. School Optimization 5. Administrative efficiency through Tech and Data systems 6. Organization Restructuring 7. Communication Streamlining
Strengthen Human Capacity	8. Recruitment and Rationalization of Teaching & Admin staff 9. Teacher Training and Mentoring
Drive Accountability	10. Academic monitoring and data backed reviews
Creating Shared Vision and Motivation for Change	 11. Competition framework



1. Competency Framework

Introduction and context

Traditionally, classroom teaching has been focused on syllabus completion. There is little or no emphasis on competencies that students should master by the end of a chapter. Most teachers are unaware of what these competencies are in the first place. Consequently, even assessments become a test of students' memory rather than command over competencies. This results in students going through a cycle of completing chapters, taking assessments, and moving to higher classes without mastering requisite concepts. Research by Duflo et al suggests, "Even though children are moving up from one grade to the next, few actually master the grade-level competencies expected of them. This could be attributed to a number of factors, including large class sizes, a shortage of qualified teachers, unsuitable pedagogy and curriculum, and pressure on teachers to complete the prescribed syllabus¹¹." Qualitative improvements in education require a shift from emphasis on 'chapters taught' to 'competencies mastered'.

Expected objectives and outcomes

- Develop a learning outcomes (or competency) framework containing a comprehensive set of learning outcomes (LOs) across all grades.
- Map teaching-learning resources (e.g., textbooks, workbooks) to the identified learning outcomes framework to ensure coverage of the right concepts.
- Track mastery on learning outcomes across all identified indicators through periodic and continuous assessments.
- Disseminate updated learning outcomes framework to engage and educate key stakeholders on the change.

Design of the intervention

This toolkit comprises design elements to consider during the creation and adoption of a Learning Outcomes Framework (LOF)¹². These include:

- **Content:** Identifying a relevant and comprehensive list of Learning Outcomes (LOs) is the foundation of an LOF. The NCERT Learning Level Outcome Framework created in 2017 is a detailed document that provides a list of competencies by subject and class. It can be customised by States based on the desired structure and usage. The NIPUN Bharat guidelines provide another set of priority competency for foundational learning, targeted at pre-school and grades 1-3. A State may also choose to use a combination of existing frameworks to determine its competency framework, as done in the State of Haryana (refer supporting case study section for more details).

¹¹ Berry, J., Duflo, E., Mukerji, S., Shotland, M., Improving Learning Outcomes through the Government School System in India; <https://bit.ly/2Dr3Zzr>

¹² Note: Learning Outcomes Framework and Competency Framework has been used interchangeably

- **Structure:** In most situations, multiple resources such as textbooks, workbooks, learning kits and remedial teaching manuals are utilised for the teaching-learning process. Therefore, it is helpful to map each learning outcome to the resources that can be used to teach it. This makes the framework a ready reckoner. The framework can also be used as a tracker by providing teachers a field to indicate mastery of a LO. The teacher may input the number of students who have mastered an LO or mark a tick/ cross when a certain percentage of the class has mastered the competency.
- **Information dissemination:** Creating awareness regarding the use and adoption of the LOF is an important step. Besides official communication from the department to schools, directly reaching out to teachers through trainings, teacher WhatsApp groups or social media pages allows an opportunity to convey the need and merits of the exercise and creates momentum in the system.
- **Driving uptake:** Formal checks to ensure teachers use the framework can be introduced by giving visibility to LOFs in schools. Pasting printed or hand drawn copies in classrooms provides teachers easy access to details and is a reminder to emphasise competency-based teaching. As in Himachal Pradesh, States may use innovative means such as voice blasts, video messages, radio jingles to encourage teachers to paste charts in classrooms. Another means to drive uptake is by integrating competencies included in LOFs into centrally designed assessments e.g. by giving LO-wise breakdown of results
- **Monitoring compliance:** Each State has its own review and monitoring process¹³. Including questions regarding the use of the LOF in these proformas enforces a formal mechanism to mainstream the artefact. Compliance data can be discussed in various State/ district/ block level review meetings. Another method of following up on compliance is through teachers sending photographs of the LOF in their classroom or of them using the LOF on common WhatsApp groups, through social media pages etc.

¹³ For more information on review and monitoring process refer to 'Review and Monitoring'

Action charter

Finalise content

- Identify a relevant and comprehensive list of learning outcomes
- Incorporate existing NCERT and SCERT frameworks

Customise structure

- Categorize learning outcomes by assessment cycles, teaching-learning material, chapters, months

Disseminate information

- Create awareness regarding use and adoption of the LOF at forums, trainings or via WhatsApp groups & social media pages

Drive uptake

- Institutionalize usage by pasting LOFs in classrooms & integrating competencies into centrally designed assessments

Monitor compliance

- Monitor use via school monitoring, discuss compliance in reviews
- Teachers may send photos of LOFs in their classroom on WhatsApp



Supporting case study (Haryana)

Background

Between 2015 and 2017, Haryana created several learning outcome frameworks for varying applications and purposes, but these were not widely adopted. Multiple frameworks also led to confusion in the system and teachers, who were still focused on syllabus completion.

NCERT's 2017 learning-level outcome framework nudged Haryana to streamline existing frameworks and create a unified LOF - Saksham Taalika. It is a class-wise (Class I to V) LOF created by the State Council of Educational Research and Training (SCERT), Haryana, for English, Hindi, and Mathematics. It lays out the learning outcomes to be taught for each summative assessment test (SAT)¹⁴ from textbooks and remedial teaching material. It is a document made available to teachers for each class. For easy access and to drive competency-based teaching, it is also pasted in classrooms.

¹⁴ Summative Assessment Tests (SATs) are bi-monthly unit tests centrally administered across Haryana

Implementation

Key pieces of the implementation plan are highlighted below.

- **LOF Content:** A user-friendly LOF was designed keeping the following in mind:
 - **Teaching-learning material:** Two resources are primarily used in the classroom – textbooks and the remedial programme teaching guide called Learning Enhancement Programme (LEP) Manual¹⁵. Providing teachers with a list of competencies to be taught from each resource helped identify what concepts students need to master through which chapters. Including a mapping between the textbook and remedial teaching content in the framework allowed synchronised teaching from both sources.
 - **Summative Assessment Tests (SATs):** Competencies and chapters are taught based on the content tested in each SAT. Organising the framework by SAT cycle left no ambiguity with respect to when each competency needed to be covered.
- **LOF Structure**
 - **List of competencies:** The LOs act as a definite and clear learning goals for each subject and class, enabling teachers to focus on concepts and helping students become grade competent.
 - **Mapping to teaching-learning resources:** Teaching-learning resources such as textbooks, workbooks, remedial teaching manuals were mapped to the framework, making it a ready-reckoner. This helped to focus on teaching at the right level
 - **Tracking mastery of LOs:** The framework doubles up as a tracker by providing teachers a field to indicate mastery of a LO by the student. The teacher added a tick against the respective competency codes when certain competencies had been mastered by a student.
- **Creation process:** Features of the process to create a comprehensive LOF are as follows:
 - **Available frameworks:** The NCERT Learning Level Outcome Framework created in 2015 and updated in 2017 is a detailed document that provides a list of competencies by subject and class. It can be customised by the State's SCERT based on the desired structure.
 - **Selecting appropriate frameworks:** Saksham Taalika is an amalgamation of two pre-existing frameworks that form the basis of teaching-learning content: (i) SCERT Haryana created a list of learning indicators or competencies in 2015 that formed the backbone of the State textbook content (ii) framework developed by SARD, a non-profit in coordination with SCERT subject-experts, was the basis of remedial programme teaching content in LEP Manuals.
 - **Mapping textbook to remedial content:** Next, the two selected frameworks had to be integrated. Competencies were mapped across these two frameworks based on a combination of inputs from SCERT and the State Assessment Cell.

¹⁵ For more information on remedial teaching refer to 'Remedial Programme'

- **Information dissemination:** Awareness about Saksham Taalika was created through:
 - **Official communication:** Schools received detailed circulars from the department of education regarding adopting Saksham Taalika and pasting it in classrooms.
 - **WhatsApp groups:** Teachers received direct messages with detailed instructions regarding usage of the framework via 120 block-level WhatsApp groups¹⁶.
 - **Teacher training sessions:** Effective use of LOFs was promoted through teacher trainings. Teachers were introduced to the concept of competencies and frameworks at a training conducted by NCERT regarding use of the LO framework. Additionally, the State's remedial programme training content, for both in-person and video-based training, included instructions on using LOF.
- **Driving uptake among teachers:** To popularise the use of Saksham Taalika the following efforts were made:
 - **Integrating with assessments:** SATs are competency-based with each question mapped to a particular LO provided in the LOF. Exams were largely based on grade-level content with 25% based on remedial content. This ensured that teachers adopt the LOF not only for classroom but also remedial teaching.
 - **Placing LOFs in classrooms:** All schools were mandated to provide teachers with printed copies of the LOF to be pasted in all classrooms. This provided teachers easy access and acted as a reminder to lay emphasis on competency-based teaching
- **Monitoring compliance:** Monitoring usage of Saksham Taalika was done in the following ways:
 - **Administrative review and monitoring:** As part of administrative reviews and monitoring¹⁷ in the State, monitors and mentors made multiple school visits. During their visits they ensured that LOFs were pasted in classrooms and followed up with teachers in case they were missing.
 - **Sending photos:** Teachers needed to send photographs of the LOF pasted in their classrooms on teacher WhatsApp groups where Block Education Officers (BEOs) tracked compliance. 120 such block-level groups were in existence.
- **Applications:** The integration of the Saksham Taalika with other facets of the academic ecosystem was vital to ensure its adoption was sustainable. It was embedded within the system in the following ways:
 - **Classroom teaching:** Laying out the competencies to be taught through a chapter helped the teacher focus on necessary concepts and shift focus from a syllabus-completion approach. LOF provided teachers with a list of chapters to be taught from the textbook for each SAT and competencies to be focused on in a chapter. For instance, for the Math SAT-3, Class III students had to be taught the 'Dancing Numbers' chapter. The teacher needed to ensure that at the end of the chapter students could successfully compare numbers and identify the three smallest and greatest numbers in a series.
 - **Remedial teaching:** Alongside regular teaching, LOF provided teachers clarity on pre-requisite competencies that needed to be taught during remedial classes. For instance, to teach the chapter mentioned above, the remedial programme should teach 'Measurement' and 'Patterns'. This was necessary to ensure clarity on concepts such as far-near, heavy-light, small-big and the ability to identify shape and number patterns.

¹⁶ For more information on establishing communication channels refer to 'Streamlining Communications'

¹⁷ For more information on academic mentoring, monitoring and review refer to 'Review and Monitoring'

- **Assessments:** Assessments designed both centrally and by teachers should have questions corresponding to relevant competencies to gauge student understanding at different intervals and track progress. Since the LOF laid out competencies to be taught, all questions in SATs are competency-based. Even for in-classroom formative assessment tests, teachers are encouraged to create assessments aligned with competencies in the LOF.
- **Dashboard:** A Student Assessment Test dashboard provide teachers with student performance (percentage students who know the LO) on each competency tested in the SAT. This data could be viewed at the State, district, block, school and teacher level. Availability of granular data allowed teachers to benchmark the performance of their class against other geographies and identify areas that required attention.

Stakeholders	Roles and responsibilities
 SCERT	Creating the LOF including its content and structure, ensuring all content across different TLM and assessments are mapped to the LOF
DIET officers	Creating the LOF including its content and structure, ensuring all content across different TLM and assessments are mapped to the LOF
Director (School Education) and DCs	Leading State and District review meetings, using the language of data and competencies in meetings, setting deadlines to ensure that competencies are articulated and LOF charts are visible through the school premises, for instance through LOF charts pasted in classrooms

Outcomes

Incorporating learning outcomes into multiple facets of the education ecosystem is vital to ensure its adoption and sustained use. Teachers use the Saksham Taalika and it helps shift the focus of classroom teaching from syllabus completion to a competency-driven methodology. It also helps in the effective implementation of other initiatives such as the LEP¹⁸ and conducting quality assessments in the State¹⁹.

¹⁸ For more information on academic mentoring, monitoring and review refer to 'Remedial Programme'

¹⁹ For more information on academic mentoring, monitoring and review refer to 'Assessment Quality'

Appendix

Haryana's Saksham Taalika

- **Relevant documents:**

- **Saksham Taalika/ Learning Outcome Framework:** A tabular mapping of learning outcomes to be taught for each summative assessment from textbooks and remedial teaching material
- **Textbook framework:** List of competencies created by SCERT in 2015 based on NCERT Learning Indicator framework. Also forms the backbone of the State textbooks
- **Remedial teaching framework:** Framework developed by SARD and SCERT subject-experts. Forms the basis of remedial programme teaching content in LEP Manuals
- **Student Assessment Test Dashboard:** Provides key student performance statistics on each competency tested in the SAT

A similar approach driven of usaging of competencies and Learning Outcomes to drive the teaching-learning process has been taken up by the SATH States. A common list of competencies, mapped to a LOF has been developed and States are revising their textbook content, remediation programs, teachers' assessments of students against this framework.

In **Jharkhand**, the Learning Tracking Format has been developed to track student-wise learning levels on key competencies for classes 1-8 on the State MIS eVidya Vahini (eVV). Once schools re-open, it will be employed for baseline assessment of student learning levels, track student progression over time and prioritize remediation content as per the identified competencies for improvement.

In the past, a similar tool has been used for 'Spot Assessments' by CRCs/ BRCs, who visit schools and conduct random spot checks of sample number of students from a school on the selected competencies. This data is fed into the eVV app and is used for certification of schools in different categories, an indicator of school rankings on learning levels.

The figure displays three screenshots of the Learning Tracking Format app interface, showing the process of tracking student competencies for Class 3 students in Jharkhand.

Screenshot 1: Learning Tracking Format

- Header: Learning Tracking Format, BASIC SCHOOL BOKARO THERMAL
- Filters: Select class (Class 3), Select Section (A), Select month (May)
- Search button
- Student list: Gunjan Kumari, Neha Kumari, Bandhan Kumar, Punam Kumari, Khushi Kumari, Puja Kumari, Simran Kumari, Shankar Kumar
- Each student entry has a 'TEST' button.

Screenshot 2: Gunjan Kumari Class 3

- Header: Gunjan Kumari, Class 3
- Subject tabs: MATHEMATICS, ENGLISH, HINDI
- Form fields: No. of days school was open, Days present
- Group: Lakya Group
- Skills Status: MATHEMATICS
- All competencies:
 - ☒ Recognises 2 digit numbers and can identify sequence of numbers upto 99 (2 अंकीय संख्या को पहचानता और 99 तक की संख्याओं के क्रम को पहचानता)
 - ☐ Can add & subtract 1 digit numbers (1 अंक की संख्या को जोड़ना और घटाना)
 - ☐ Can add & subtract 2 digit numbers without carry over (2 अंकी की संख्या का क्रम जोड़ना और घटाना)
 - ☐ Can add & subtract 2 digit numbers with carry over (2 अंकी की संख्या का क्रम जोड़ना और घटाना)
 - ☐ Can multiply 1 digit numbers by 1 digit number (1 अंकीय संख्या से 1 अंकीय संख्या से गुणा करना)
 - ☐ Can multiply 2 digit numbers by 1 digit number (2 अंकीय संख्या से 1 अंकीय संख्या से गुणा करना)
 - ☐ Can divide 2 digit numbers by 1 digit numbers (2 अंकीय संख्या का 1 अंकीय संख्या से भाग करना)
 - ☐ Can multiply 2 digit numbers by 2 digit numbers (2 अंकीय संख्या का 2 अंकीय संख्या से गुणा करना)
- Buttons: SAVE & CONTINUE, SAVE & EXIT

Screenshot 3: Gunjan Kumari Class 3

- Header: Gunjan Kumari, Class 3
- Subject tabs: MATHEMATICS, ENGLISH, HINDI
- Form fields: Write, Speak, Read
- Write:
 - ☐ Can identify, differentiate, & write both capital and small letters of the alphabet / अक्षरों को पहचानना, उनमें अंतर करना और अक्षरों में बड़े और छोटे अक्षरों को पहचान कर लिखना
 - ☐ Can write simple words / सरल शब्दों को लिखना
 - ☐ Can write complex words (अभिध शब्द लिखना)
 - ☐ Can write simple sentences (सरल वाक्य लिखना)
 - ☐ Can write complex sentences with correct grammar and punctuation (संगठित और विधायक वाक्यों का सही प्रयोग करके हल्क विधायक लिखना)
 - ☐ Can write full paragraphs (3-4 simple sentences) fluently based on familiar topics (सबसे पहचाने गये और रोचक पर 3-4 वाक्यों का अनुवाद लिखना)
- Speak:
 - ☐ Names commonly seen objects/pictures in X language / सामान्य रूप से देखे जाने वाले वस्तुओं या चित्रों के नाम खत्मित भाषा में बताना
 - ☐ Can verbally answer simple questions about himself/familiar objects/ activities (वर्णनी करने में या अपनी पहचान करने वाले वस्तुओं पर सवालियों के बारे में सामान्य प्रश्नों का मौखिक उत्तर देना)
 - ☐ Can verbally answer simple questions on simple reading comprehension (सरल पठन से संबंधित प्रश्नों का मौखिक उत्तर देना)
- Read:
 - ☐ Can identify, differentiate & read both capital and small letters (depends on language) of the alphabet / अक्षरों को पहचानना और उनमें अंतर करना, अक्षरों में बड़े और छोटे अक्षरों को पहचानना
 - ☐ Can read simple words / सरल शब्दों को पढ़ना
 - ☐ Can read complex words / समीक्षा शब्दों को पढ़ना
 - ☐ Can read simple sentences

Exhibit 4.1.1: Learning Tracking Format aligned to competencies for classes 1-8 in Jharkhand

In **Madhya Pradesh**, implementation and returns from Dakshata Unnayan, the flagship remediation program are assessed through the Dakshata Unnayan Tracker. The tracker comprises a list of target competencies defined for 3 categories for learning levels (L1-2, L3-5, L6-8) and 2 subjects (Hindi, Maths). Teachers note the date on which a student achieves each competency – this enables student progression tracking over time. For aggregate data reporting, teachers input the percentage of students in a class who are able to achieve a competency, in the State MIS, the M-Shiksha Mitra.

NAS के सीखने के प्रतिफल पर आधारित दक्षता उन्नयन की ट्रैकिंग के लिए फॉर्मैट

विद्यार्थी प्रगति कार्ड (कक्षा 1 व 2) - हिन्दी

अवधारणावार स्थिति																		
क्र.	विद्यार्थी का नाम	कक्षा	सुलभ-जीवनता			पढ़ना				लिखना								
			सरल निर्देश सुलभकर पढ़ना करना	किसी कहानी/ कविता/ चित्र आदि को समझकर उस पर सरल चर्चा करना	किसी सामान्य/ वार्षिक विषय पर 4-5 पंक्तियों तक (अर्थात्, मित्र, परिवार के बारे में)	वर्गीकृतता में से कोई 15-20 अक्षर पहचानना	कम से कम 5 मात्राएँ पहचानना	अर्धपूर्ण चिन्ता मात्रा वाले		मित्रा वाले 10-12 शब्द पढ़ना	अक्षर 15-20 अक्षर लिखना	कम से कम 5 मात्राएँ लिखना	अर्धपूर्ण चिन्ता मात्रा वाले		मित्रा वाले 10-12 शब्द लिखना			
								10-12 शब्द	पढ़ना				12 शब्द पढ़ना	10-12 शब्द लिखना				

विद्यार्थी प्रगति कार्ड (कक्षा 1 व 2) - गणित

			अवधारणा के अनुसार स्थिति (यदि विद्यार्थी को आता है तो टिक करें)						
			1	2	3	4	5	6	7
क.	विद्यार्थी का नाम	कक्षा	प्रारंभिक	संख्या पहचान	2 अंको की संख्याओं की समझ	2 अंको की संख्याओं में जोड़ना	2 अंको की संख्याओं में घटाना	मापन	ज्यामितीय आकृतियां
			1 से 99 तक की किसी भी संख्या की पहचान करवाएं, इसके लिए अंक कार्ड का उपयोग करें अथवा कहीं भी लिखी संख्या को दिखाकर पढ़ें	99 तक की संख्याओं का पहचानना, पढ़ना, लिखना, मूर्तरूप से, चित्रों से, प्रतीकों से एवं संख्याओं में गिनना व लिखना	दैनिक जीवन की समस्याओं को हल करने में 2 अंको की संख्याओं का जोड़ कर पाएं (संख्याएं क्षैतिज रूप में लिखी हों व उर्ध्वाधर रूप में लिखी हों को हल करना)	दैनिक जीवन की समस्याओं को हल करने में 2 अंको की संख्याओं का घटाना (संख्याएं क्षैतिज रूप में लिखी हों व उर्ध्वाधर रूप में लिखी हों को हल करना)	अमानक इकाइयों में मापन	आकार की समझ (गोल, वृत्त, त्रिकोण (त्रिभुज), चौकोन (चतुर्भुज)	
					</				

Exhibit 4.1.2: Learning Tracking Format aligned to competencies for classes 1-8 in Madhya Pradesh

2. Toolkit for Assessment Reforms

Introduction and context

Traditionally, assessments in States have been taking place in an ad hoc and dispersed manner. It has been observed that currently students in any State sit for a multitude of assessment tests, some directed by the State department and others mandated by a national directive. These tests often assess students for different competencies at different grade levels, are conducted at variable frequencies during the school year, and require distinctive planning and skill-set requirements of teachers. Further, the results of these tests often show vastly different performances of the same schools. This has led to a situation where it is difficult to determine which is the right assessment to rely on for mapping student learning levels. **While the nature of all these tests vary, there is little clarity on the exact purpose of each of these assessments.** There is, thus, a need to identify the core purpose of each assessment and then schedule it in the yearly academic calendar.

This should be followed by suitable design, data collection, and utilization strategies. Assessment data provides valuable insights into student performance and can be used to customise teaching content and methodologies. In the absence of such data at the student, class, block, district, and State level, it is impossible to gauge the performance of the education system. Moreover, there needs to be a focus on competency-based formative assessments rather than rote-based summative assessments. The New Education Policy has also called for rationalization of assessments structure within States to address these issues.

Expected objectives and outcomes

- Create simplified assessments framework, with fewer assessments that are well-tied to varied use-cases and purposes
- Ensure reliable data collection mechanisms with rigorous monitoring mechanisms to improve learning outcomes
- Ensure assessments are designed in a manner that questions are mapped to target competencies
- Enable teachers to measure student learning levels at regular intervals so that teachers can take timely corrective action to improve student performance

Design of the intervention

The following should be considered to revamp the assessments framework, quality of assessments, administer assessments, and create an assessments dashboard in the State.

Ensuring administration of select standardized, quality assessments

- **Development of Assessments Framework:** Depending on the requirements of students as well as the fundamental purpose served by each assessment, a simplified assessments framework must be developed which caters to the needs of the State and at the same time, reduces the burden on students.
- **Calendar of Assessments:** A pre-aligned, pre-informed calendar of assessments in the academic year should be shared with all stakeholders beforehand, so that differing preparation strategies can be commenced timely.

- **Building Capacity and Team Formation:** The effort may be led by SCERT or by education experts or partners such as TPA (Third Party Assessors), Pratham etc. A specialised composite team may also be created for this purpose as done in Andhra Pradesh in the form of an Assessment Cell. It is important to have a rigorous selection process and clearly define roles and responsibilities of each stakeholder. These teams may be provided training to build expertise, if needed. These experts may help in process formulation, question-paper design, evaluation protocols and apt usage of assessments data.
- **Frequency of administration:** Assessing students at regular intervals with gaps is important to understand student performance on the course content taught. It is important to spread out the frequency of teacher level (formative) and standardised (summative) assessments while providing sufficient time for in-classroom teaching.
- **Learning Outcome (LO) mapping:** LO mapping is important to ensure that questions are testing the right concepts. They shed light on mastery of concepts taught, ensure that all concepts are tested and that a good mix of questions is created.
- **Exam paper creation:** The exam question papers may be created by a group of teachers or by an external third-party onboarded by the State, as in Jharkhand. These teachers may receive customised training or question banks sourced from teachers across the State as done in Haryana. External bodies with expertise in education such as Centre for Science of Student Learning (CSSL) or Pratham may be leveraged to provide assistance with the subject matter in the process.
- **Question paper quality:** A good quality question paper ensures that questions are asked at the correct difficulty level, test what they intend to, are worded appropriately, and do not have typographical errors. Questions should be mapped to target competencies for the subject/ grade-level as per the purpose of the assessment.
- **Logistics:** Assessments may be administered in a centralised or decentralised manner. In a centralised setup, as in Haryana, soft copies of the question papers are sent to the district level where they are printed and then sent to schools. An alternative, as followed in Jharkhand, is to test students verbally/ in written and input data on the eVV app. This is done by CRCs and BRCs as part of the Spot Testing program.
- **Assessment administration:** Monitoring may be carried out during assessments through rigorous invigilation to prevent cheating or post-assessments by ensuring student marks have been calculated and recorded correctly.

Creating an assessment dashboard that provides relevant insights in a usable format

- **Collecting data:** The first step is to identify the data to be collected at the appropriate level of granularity (student-wise, class-wise, subject-wise and learning outcome-wise by school, cluster, block, district). Guidelines should be issued to relevant stakeholders along with suitable formats, in case data collection for student performance is expected. Teachers should be given the flexibility to conduct assessments and use data for self-evaluation without uploading to a centralized database.
- **Digitising data:** Teachers may record student performance into an Optical Mark Recognition (OMR) sheet as in Himachal Pradesh or through an online form integrated with existing digitised data systems. In case data must be fed into an online form, the requisite infrastructure to perform data entry at the school level must be provided.
- **Creating a dashboard:** A dashboard may be created in house by leveraging the State NIC or through a private vendor with expertise in the domain. It is important to plan the data input formats, data flow, visualisation, and user interface.

Different data points may be collected at the chosen level of granularity and frequency. Student performance may be measured in terms of:

- Marks obtained in a question
- Number of questions answered correctly
- Number of students scoring marks in a certain range
- Percentage of students who have acquired an LO. A prerequisite to this is having assessments set with question-wise LO mapping²⁰

A user-friendly dashboard includes custom views for stakeholders showing relevant information and trends (e.g., improvement of student performance over period of time for a certain set of LOs).

- **Training:** To help teachers input data and use the dashboard, they require training. This may be conducted in the form of in-person trainings, workshops or remotely through videos or infographics that can be made available on WhatsApp groups and Department websites.
- **Monitoring data quality:** A review and monitoring mechanism helps maintain data quality and ensure compliance. During school monitoring visits, officers can conduct checks on a random sample of answer sheets and/ or orally test students.

²⁰ For more information on assessment design, please refer to 'Quality of Assessments'

Action charter

Streamline Assessments Framework	Develop simplified assessments framework, with purpose-driven, pre-scheduled tests with prior information to all.
Form a team	Create a team of SCERT experts and/ or education experts.
Set assessment frequency	Establish frequency for teacher-level (formative) & standardized (summative) assessments.
Create exam paper	Create exam paper based on a defined process Involve teachers and education expert organizations.
Map learning outcomes	Map each question to a learning outcome Incorporate a good mix of questions across all concepts.
Check question paper quality	Check the difficulty level, test concepts, phrasing and typographical errors for each question.
Administer assessment	Administer assessments in line with the purpose and design of the specific assessment. Prevent cheating through rigorous invigilation.
Collect data	Collect assessment data at the appropriate level of granularity (student, class, subject, learning outcome) and frequency as per the purpose of the assessment.
Digitize data	Collect and digitize assessment data through online forms, portals or OMR scanners.
Create a dashboard	Develop a dashboard in house by leveraging the State NIC or through a private vendor.
Visualize data	Select the various graphs, tables and reports based on use-cases for each stakeholder.
Train teachers & staff	Train teachers and administrative staff. Discuss methods to input data & effectively use the dashboard.
Monitor data quality	Decide review and monitoring cadence to maintain data quality and ensure compliance.
Drive data-backed decisions	Leverage the dashboard to take data-driven, academic and administrative/ operational decisions.

Challenges and mitigation

Challenges	Mitigation Strategies
Lack of suitable expertise in SCERT to advise on goals of assessment, assessment design, implementation, and evaluation.	Onboard external experts, plan orientations and trainings for internal capacity-building. Focus on a coherent view of assessments, create a common check-list that all assessments must satisfy (deploy a common framework).
Lacking necessary technological expertise and capacity to create a dashboard.	On-board a tech vendor for integrating student assessment data and related dashboards into existing MIS.
Teachers failing to understand the goals and purpose of various types of assessments.	Orient and educate teachers on various types of assessments, and enable them to decide the best use-case for each type.
Institutionalising the use of dashboards capturing assessment data.	Train teachers on how to view assessment results on the dashboard and effectively use insights; regularly take input for teacher trainings.
Maintaining data quality despite the manual and self-reported data input process.	Convey to teachers that there are no incentives attached to entering inflated data or showing good performance. Random audits to be conducted by BEOs, DEOs and DIET officers, and conduct student assessments for random samples of students. Deploy a non-teacher BRP/ CRP cadre (as is case in Jharkhand).



Supporting case study (Jharkhand)

Background

Like most States, Jharkhand used to conduct annual learning assessments (SA1/ SA2) as per the requirements of Continuous and Comprehensive Evaluation (CCE). However, the quality of data generated by these assessments was poor and was rarely shared back with the field. There were several shortcomings: (i) data from some block and districts was often incomplete due to limited data entry processes and manpower (ii) collected data was of poor quality (e.g., characters in place of numbers) (iii) competency-wise student-level data of student performance was not available (iv) several schools showed results which were highly improbable (>90% scores) and inconsistent with ground reality (v) most of the questions used in assessments were recall-based which do not give insights about understanding of relevant student concepts.

In order to address these challenges, Jharkhand developed a unique model of Spot-Testing where BRP/ CRPs randomly assess students during school inspections and generate learning assessment data of over 2 lakh students every month.

Implementation

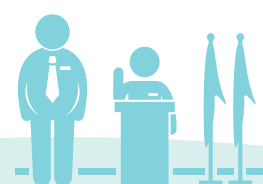
Spot Testing is a system where BRP/ CRPs randomly assess 3 students during school inspections. The assessment is only in 3 subjects (English, Math, and Hindi)

The implementation of spot testing has 5 essential elements:

- **Standardized list of competencies:** SCERT defined a standardized list of competencies with a focus on foundational competencies up to Class 5 level. Each competency was then mapped to example questions to ensure consistency across the State.

Mathematics	Class 1	Counting till 99	English Reading	Class 1	Can identify, differentiate, & read letters of alphabet
		1 digit addition/ subtraction			Can read simple words
	Class 2	2 digit addition/ subtraction			Can read complex words
		2 digit addition/ subtraction		Class 2	Can read simple sentences
	Class 3	1x1 digit multiplication			Can read complex sentences fluently
		2 x 1 digit multiplication		Class 3	Can read full paragraphs' fluently with correct pronunciation and punctuation
		2 digit by 1 digit division			Can read, comprehend, and answer simple RC questions
		2 x 2 digit multiplication		Class 4-5	Can read, comprehend, and answer complex RC questions
	Class 4	3 digit by 1 digit division			
		Recognition of Fractions			
	Class 5	Add/ Subtract Fractions			

Exhibit 4.2.1: Standardized list of competencies developed for Class 1 to 5



Process of spot testing

If a student is in Class X, choose the highest competency of Class X/2

For example: If a student is in Class 5, choose the highest competency of Class 2

If the student answers 2 out of 3 questions, the student is assumed to have grasped the competency.



Keep checking for higher competency till the student cannot answer the question
This is the highest learning level of the student

If X/2 is a fraction, round downwards.



Keep checking for lower competency till the student can answer the question
This is the highest learning level of the student

Class 1	Counting till 99
	1 digit addition/subtraction
Class 2	2 digit addition/subtraction
	2 digit addition/subtraction
Class 3	1x1 digit multiplication
	2 x 1 digit multiplication
	2 digit by 1 digit division
	2 x 2 digit multiplication
Class 4	3 digit by 1 digit division
	Recognition of Fractions
Class 5	Add/ Subtract Fractions

Starting in the middle allows us to determine the highest learning level by asking the least number of questions

Class 1	Counting till 99
	1 digit addition/subtraction
Class 2	2 digit addition/subtraction
	2 digit addition/subtraction
Class 3	1x1 digit multiplication
	2 x 1 digit multiplication
	2 digit by 1 digit division
	2 x 2 digit multiplication
Class 4	3 digit by 1 digit division
	Recognition of Fractions
Class 5	Add/ Subtract Fractions

Exhibit 4.2.2: SOP for Spot Testing

- **Simplified standard operating procedure:** In order to assess students, the process must consume as little time as possible. The process has been defined such that BRPs/ CRPs start the assessment of a student from the middle of the competency list and then move up or down (i.e. test higher/ lower competencies) based on whether the student answers correctly or incorrectly.
- **Easy-to-use digital interface:** A mobile application was designed with a simplified user interface. Under this interface, the learning levels of a student in each subject can be captured with just a single touch. Data recording & digitization is therefore not a chore.

Select the highest competency on the tab

Select the highest competency on the tab



Exhibit 4.2.3: Identifying right competency level for a student and feeding into the app

- **High quality training:** Each BRP/ CRP was given sustained and continuous support to execute spot testing inside classrooms.
 - **Zero-cascade State level training:** Each BRP/ CRP was individually trained at State-level over 1 month to ensure no dilution in training, and to ensure perfect understanding of assessment tools and methodology.
 - **FAQ documents & manuals:** Material distributed in printed and electronic form.
 - **Continuous communication:** Engagement through WhatsApp and Call Center/ Control Room.
- **Clear & consistent messaging:** The most important element was the consistency in messaging from the State through letters/ WhatsApp/ workshops, etc. that the assessments would not be used for any form of accountability either against teachers or BRP/ CRPs. This sustained and consistent messaging created incentives for field officials to report this data accurately without fear or favor.
- **Immediate usage & dissemination:** Every month, the spot testing data is analyzed at a district level and competency level and shared with blocks and districts. This data is then made a mandatory part of review processes. Every month, officials can see trends in learning across subjects/ grades/ competencies and action it accordingly.

Roles and responsibilities

Stakeholders	Roles and responsibilities
CSM	Tech vendor which developed the Spot Testing module on eVV (State MIS) on which spot testing is conducted, assessment data is uploaded.
BRPs, CRPs	Visit schools, and assess 3 randomly selected students and enter data on spot-testing.
DEO, DSE	District-level reviews and tracking of school visits, and learning outcomes by schools.
JCERT	Competencies-identification for testing.
JEPC (Jharkhand Education Project Council) & SATH-E team	Analysing data for weak LOs (where students have weak performance), regular reviews of districts.

Outcomes

There are different types of outcomes that have resulted from the implementation of Spot Testing in the State:

- **High quality, accurate, and consistent dat:** For the first time, the State has access to high quality learning data. It has been cross-verified at school level and proven to be an accurate reflection of learning outcomes in the State. The consistency of the data is remarkably accurate as can be seen from the image below where differences in data collected at 3 separate time-periods in October 2018 is within a 1% range. It is not possible to manipulate data across 2 lakh students and 3000 BRP/ CRPs with this level of consistency.

Jharkhand: Vast repository of accurate learning data covering 2 lakh students available each month

	1 st – 10 th Oct 2018						11 th – 20 th Oct 2018						21 st – 31 st Oct 2018					
	Grade																	
	1	2	3	4	5	6												
Recognises 2 digit numbers and can identify numbers upto 99	67.2	87.6	93.9	96.8	98.3	98.6	66.9	86.7	94.7	97.8	98.4	98.9	67.1	86.9	93.8	96.6	98.1	99.0
Can add & subtract 1 digit numbers	14.6	90.0	80.6	91.1	94.2	96.2	16.7	90.4	83.0	92.6	94.8	97.6	16.6	90.8	83.4	91.8	94.8	97.7
Can add & subtract 2 digit numbers without carry over	0.0	17.2	53.0	74.4	82.9	90.0	0.0	17.0	56.6	78.3	84.7	90.7	0.0	19.0	56.1	75.8	84.7	91.3
Can add & subtract 2 digit numbers with carry over	0.0	4.9	29.6	56.1	68.4	80.3	0.0	4.2	31.7	58.6	70.4	80.9	0.0	5.0	30.9	55.4	70.2	80.7
Can multiply 1 digit numbers by 1 digit number	0.0	0.0	18.5	42.4	57.6	70.4	0.0	0.0	19.0	44.0	59.8	71.6	0.0	0.0	19.3	41.8	58.0	71.9
Can multiply 2 digit numbers by 1 digit numbers	0.0	0.0	9.7	30.5	47.4	60.8	0.0	0.0	9.8	31.8	49.8	62.5	0.0	0.0	10.0	29.9	47.1	62.7
Can multiply 2 digit numbers by 2 digit numbers	0.0	0.0	0.0	11.2	25.7	40.7	0.0	0.0	0.0	12.4	27.0	41.7	0.0	0.0	0.0	11.8	23.6	42.0
Can divide 2 digit numbers by 1 digit numbers	0.0	0.0	0.0	18.5	34.8	49.7	0.0	0.0	0.0	18.9	36.2	50.2	0.0	0.0	0.0	18.3	33.4	51.8
Can divide 3 digit numbers by 1 digit number	0.0	0.0	0.0	6.0	16.4	32.0	0.0	0.0	0.0	7.1	18.0	30.0	0.0	0.0	0.0	6.2	15.5	31.2
Can recognise fractions from images & vice-versa	0.0	0.0	0.0	1.0	3.4	12.8	0.0	0.0	0.0	1.1	3.9	11.0	0.0	0.0	0.0	0.8	3.6	10.9
Can add and subtract simple fractions	0.0	0.0	0.0	0.0	2.1	8.4	0.0	0.0	0.0	0.0	2.3	7.9	0.0	0.0	0.0	0.0	1.9	6.6

Decimal point consistency in data collected across by 3000 BRP/CRPs over 30 days is impossible to manufacture.

Variation in data also consistent with on-ground realities and qualitative understanding. Trends hold true across all subjects - Math/English/Hindi.

Accuracy of Spot Testing driven by low conflict of interest in CRP cadre (separate from teacher cadre)

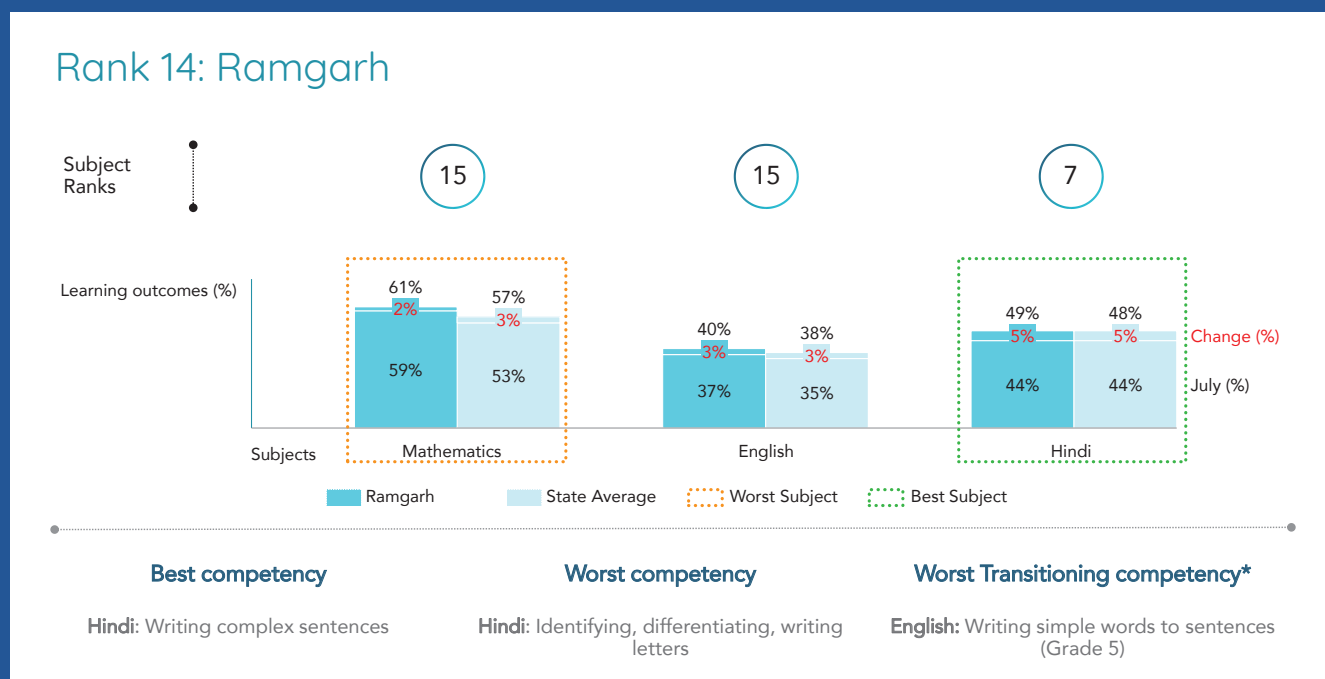
Exhibit 4.2.4 – Learning dashboards created using Spot Monitoring data

Most importantly, the data is not just accurate but is also:

- **Frequent:** This is not annual assessment data but data available at a high rate of frequency (daily/ weekly/ monthly). This allows the State to analyze month-on-month improvements, impact of summer holidays or teacher strikes on learning, detect poor implementation immediately, etc.
- **Granular:** The data is available at a disaggregated subject level, grade level, and competency level allowing for a range of complex analytics to be applied to make meaningful inferences.
- **Use of data for decision making:** Availability of data has opened a new space for analysis and data-driven decision making:
 - **Impact Evaluation:** Spot-testing learning data (because of its accuracy and granularity) is now being used to judge the impact of any intervention in the State (NGO interventions, State-academic programs, etc.).

- **Decentralized academic decision making:** This has led to monthly discussions on trends in learning, and decentralized decisions to improve learning in specific competencies/ subjects through innovative training mechanisms, peer-learning etc.
- **Teacher training:** The State has used the data to highlight specific competency gaps which have shown low growth over longer periods of time and designed training modules to address them.

Rank 14: Ramgarh



Improvement in 3/1 digit division (Sugam) is also significant

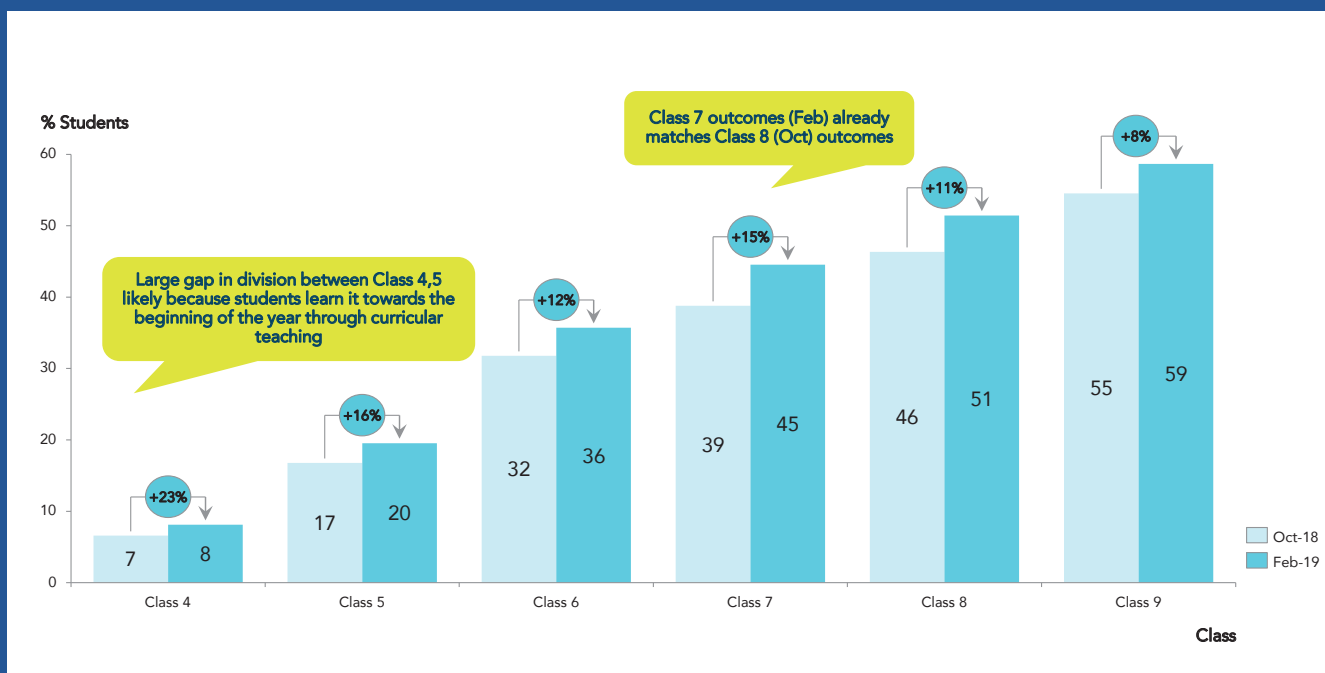


Exhibit 4.2.5: Sample data visualisation to aid decision making

- **Changed narrative around learning outcomes** – Because of daily spot testing and its subsequent usage in regular decision making at all levels of the system, there is a completely changed narrative around learning outcomes in the State.
 - **School level:** Teachers are aware that the focus of inspection has now shifted from inputs to outcomes. Children are now tested on improvement of learning levels on a regular basis.
 - **Block/ District level:** All officials have open access to the learning data available at a granular level and are engaging with their district's learning data every month. This has led to a consistent and meaningful conversation on assessments, outcomes, and improvement.
 - **State level:** wAccess to high quality learning data has led to every initiative by State or non-State actors being evaluated primarily based on learning, thus making quality education and learning outcomes the center of administration.



Supporting case study (Madhya Pradesh)

Background

The design, data capture and analysis of assessments in the State did not provide competency-wise understanding of the learning levels of students. In the absence of a unifying rubric, the scores across years were not comparable. The State department realized the need to strengthen ongoing assessments for grades 9-12 and build internal capacity to conduct valid, reliable, and fair learning assessments, to facilitate evidence-based decisions.

Towards this end, it was decided that an assessment cell should be set-up in the State department consisting of a State level assessments team, who would support the State in the design and administration of high-quality assessments, data analysis of results to identify implications for central curriculum, training, governance and other interventions.

Implementation

Post initial conceptualization, an RFP was floated as part of Project SATH-E to onboard an expert organization to support the MP education department with recruiting and forming this assessment cell as well as build its capacity. The RFP process was run in 2018, and Education Initiatives (EI) was onboarded as the formal assessments partner in Feb 2020. Specifically, the following aspects were detailed out:

- **Objectives of the assessment cell:** There are two primary objectives of the cell:
 - To design high-quality diagnostic assessments, efficiently conduct assessments, perform sophisticated data analytics, and disseminate the results to identified stakeholders so as to inform teaching practices, curricula and materials, training, etc.
 - To build the capacity of the district key resource group to be able to conduct tests, understand results and engage in their dissemination, as well as drive on-ground actions for improvement thereafter.

The cell is responsible for designing and administering high-quality assessments that test learning competencies and higher order thinking skills (e.g., questions on understanding, analysis etc. and not just on knowledge). It is also responsible for collecting the data generated from these assessments and undertaking a robust data analytics exercise. The insights from this data are expected to provide State, district and block level officers' actionable information for various purposes such as identifying content for teacher training, benchmarking student learning levels, etc. In the medium term, the cell will also conduct student assessments on non-cognitive aspects like attitudes and values which are equally important for overall success of students.

- **Suitable composition of the assessment cell:** The assessment cell has 6 different roles
 - A Project Manager, who functions as the head of the cell (1 person)
 - Assessment design professionals (at least 1 per subject taught in secondary grades)
 - Data officers (4 persons)
 - Communication associates (2 persons)
 - A software professional (1 person)
 - District Key Resource Group (2 DKRGs per district): to be identified and trained by EI, DKRGs are officers of DIET or teachers from a district. This group would assist the cell in administration of the test, result dissemination and implementation, and supply additional manpower to the cell as and when needed.
- **Key asks made of EI as per tender scope of work:** Following are the 7 key work-areas of Educational Initiatives (EI) in this context:
 - Establishing a State assessment cell for Classes 9-12 of government schools at State level.
 - Building the capacity of the State assessment cell (including DKRGs) to perform all functions related to assessment including designing assessments, collecting data on assessments, data analysis and dissemination.
 - Assist in conducting an independent diagnostic assessment for two grades (grades 9 and 11) in secondary and higher senior secondary classes for 4 subjects for grade 9 (Maths, Science, English, Hindi) and for 6 subjects for grade 11 (Maths, Science, English, Hindi, Commerce and Economics).
 - Assist in conducting an assessment/ study of values and attitudes of a sample of children from all grades 9-12.

- Status of various tasks as of now, and what's expected in the time left.
 - State assessment cell has been established, under which 15 Subject Expert (SE) and 64 Assessment Design Expert (ADE) have been successfully recruited. Currently, recruitment of approximately 55 personnel is pending.
 - 9 out of 18 training workshops of all SEs and ADEs have been completed. The remaining 9 training workshops, diagnostic study, and a study of value and attitudes and its impact on learning outcomes to be conducted in the remaining period.
- **Outcomes seen so far and anticipated going forward:** EI, along with the Education department of the State, has established a secondary assessment cell, leading to a visible improvement in assessment design and administration process. Capacity building workshops for the members of the assessment cell (including DKRGs) are ongoing.

Roles and responsibilities

Stakeholders	Roles and responsibilities
State education department	• Outlined the scope of work for creating a robust assessment cell, via which EI was onboarded • Coordinate with EI for setup and capacity building of the assessment cell.
Education Initiatives (onboarded via RFP)	• Establish recruitment criteria and process for onboarding the State's assessment cell. • Undertake various activities (such as workshops) to build capacity of the assessment cell. • Provide the framework and necessary instruments for conduct of diagnostic tests (academic as well as cognitive).
Members of the assessment cell	• Attend and participate in capacity building programs, as mandated. • Create assessments for the State.
District/ block officials	• Supervise the administration of assessment, as instructed by the department. • Use the assessment results provided to improve student learning and development

Appendix

Relevant Documents:

- Secondary assessment cell – [RFP](#)²¹
- [Question banks and blue prints created by the assessment cell, MPBSE and State education department](#)²²

²¹ https://drive.google.com/file/d/1bI8CDDTWC9ZrxHtP_I-m22As1xyuWngT/view?usp=sharing

²² [https://www.vimmarsh.mp.gov.in/\(S\(xgiv55cuciqwtm23edmfupap\)\)/Examination.aspx](https://www.vimmarsh.mp.gov.in/(S(xgiv55cuciqwtm23edmfupap))/Examination.aspx)



Supporting case study (Haryana)

Background

The Haryana education department collected student assessment data, but the assessment framework and process faced certain deep-seated challenges: (i) examinations were not held frequently (ii) competencies were not captured in the assessments framework (iii) no set processes for marks entry (iv) data visualization strategies were not employed.

Haryana then conducted a standardized examination but it faced certain issues: (i) large-scale manual entry of marks 63 million data points was time-consuming and prone to errors (ii) 60% data loss due to damage to answer booklets either in storage or due to security lapses (iii) the online report generated was not user-friendly.

Hence, there was a need to build a robust system to collect, digitize, analyze data, and disseminate learnings.

Implementation

State-wide assessments were standardised and learning outcome data was collected, per question at the student, class, and subject level. Actionable insights at school, teacher, block and district level were provided via a user-centric [Student Assessment Test \(SAT\) Dashboard](#)²³ to help formulate decentralized and context-specific strategies to improve performance.

- **Designing assessments:** The State conducted six standardised assessments with each question aligned to a specific learning outcome (LO). This allowed LO performance of all students across the State to be analysed on the same standardized scale.
- **Collecting data:** The data was collected for six assessments in an academic year and the dashboard had an average fill rate of 87%. This dashboard recorded scores for Class I to XII.
 - **Class I to VIII:** Student-wise and subject-wise data for half-yearly and annual assessments was recorded. The metrics captured included all objective questions answered correctly and number of marks obtained. For the remaining four assessments (there are six in all), class-wise, subject-wise marks were captured, e.g., percentage of students scoring between 10% and 33%, or above 90%, etc. Further, LO-wise data was captured for students who answered a question correctly.
 - **Class IX to XII:** For all assessments, student-wise, subject-wise total marks obtained are recorded.
- **Digitising data:** Within 15 days of the exam, teachers collate marks for all students. A representative or data entry operator from each school logs into a data entry portal integrated with the State MIS to record assessment scores. The data is used to generate performance reports at the school, teacher, block, district and State level.
- **Visualising data:** Availability of student-level, question-wise and subject-wise data allows timely and corrective action. The administration can make targeted policy decisions while teachers can modify classroom teaching based on the class competency status.
 - **Information available:** The dashboard provides student performance data over the past 4 months with filters available for each district, block, school, class and subject:
 - **Reports available:** The dashboard provides views of data aggregated at the State, district, block, school and teacher level for different stakeholders such as district and block level officers, principals and teachers.
 - **Access:** The dashboard is available online and publicly accessible, thus improving accountability in the system.
- **Training:** To help teachers input data and use the dashboard, infographics and training videos were sent across to more than 119 block-level teacher WhatsApp groups, and links were added to the Department website. Additionally, block-level officers conducted workshops with school heads.

²³ <http://mtms.hryedumis.gov.in/#/DashboardHomePage>

- **Monitoring data quality:** Information in the Academic Monitoring System (AMS) is used to triangulate data. The AMS generates a block-level cheating report through a proforma filled by mentors during school visits. To check consistency with assessment results, 200 block and district education and District Institute of Education and Training Officers (BEOs, DEOs, DIET officers) conduct checks on a random sample based on:
 - **Answer sheets:** Officials check for cases of wrong answers marked correct, incorrect totalling of marks and similar answers written by multiple students.
 - **Student interaction:** The consistency of student responses with assessments is checked through asking students questions in the classroom to gauge mastery of concepts. The number of cases where student responses are not consistent with assessment marks are recorded into the proforma.
- **Driving decisions:** Assessment data analysis at different levels (State, district, block, teacher, school) and of different types (subject, grade and competency), enables officials and teachers to view and use assessment results. Following are some use cases:
 - **State level:** Dashboard provides an overview of high and low performing districts. Availability of block/ district/ State level performance helps in review and monitoring especially during district-level meetings and sub-divisional reviews. This helps identify best practices in well-performing districts and devise corrective action in poor-performing districts. The dashboard helps identify weak LOs that need to be included in teacher training. State level teacher trainings include content on weak LOs to equip teachers with innovative and effective pedagogy. The dashboard also helps the State allocate budget for areas that need more support.
 - **District level:** By identifying low performing blocks in the district, officials can plan targeted interventions. They can assess the performance of their blocks, right up to the school or LO-level.
 - **Block level:** Data helps Block Resource Cluster Coordinators (BRCCs) identify weak performing schools. On ground, it helps plan targeted interventions and helps mentors create agendas for school visits so that they can focus on specific problems.
 - **School and teacher level:** Data allows performance comparison across schools in the block, district, and State, over time. LO-based performance of students with a subject and class-wise view helps teachers identify areas of focus and provide adequate remedial training. Student-wise data helps in the creation of student report cards. A print option allows them to print and display results in the classroom.

Outcomes

The dashboard provides granular, student-level and LO data which is updated within 15 days of the assessment. This provides an accurate picture of student performance to all stakeholders and helps build transparency and public accountability.

3. Learning Enhancement Program

Introduction and context

Students being unable to comprehend coursework appropriate to their grade-level is a grave challenge confronting the Indian education system. According to ASER 2018, the proportion of students in class V who can read class II level texts shows a marginal improvement to 50.3% in 2018 from 47.9% in 2016. Nationally, about half of all children can read, and less than a third can do basic arithmetic. **1 out of 4 children leave class VIII without basic reading skills²⁴**. This challenge is further compounded by the No Detention Policy, rolled out as part of the Right to Free and Compulsory Education Act 2009, which stipulates that schools cannot hold back students from classes I to VIII.

As a result, students continue to progress to higher classes without mastering the learning outcomes of previous classes. Therefore, students repeatedly perform poorly in examinations, leading many to subsequently drop out. An international study by Programme for International Student Assessment (PISA), 2015 ranks India 71 among 73 countries on reading, math, and science abilities. The study also revealed that 15-year-old Indians lag global toppers by 200 points; this score translates into an Indian 8th grader performing equivalent to a Korean 3rd grader.

As students move to higher classes without mastering learning outcomes of the previous one, the gap between their actual learning levels and what they are taught in the classroom keeps widening. It is thus necessary to provide students with the requisite support to bridge this learning gap and gain mastery over learning outcomes from previous classes. A way to do this is through State-wide, structured, regular remedial programmes that impart foundational skills and competencies that are prerequisites for the current class rather than revising all the chapters from the previous class.

It is important to note that while remediation is essential to bridging the learning deficit, it is not a long-term solution. States need to implement remediation in campaign mode for 4-5 years to bring all children to grade-level. In the long run, however, there is a need to shift the approach to a fundamental focus on key competencies that need to be achieved. This is particularly essential in the foundational grades 1-3, where children should attain the basic competencies of literacy and numeracy.

Expected objectives and outcomes

- Identify learning gaps among children across all grades through assessments on basic behind grade competencies.
- Map learning gaps to targeted remedial programs.
- Develop targeted remedial materials (teacher guidebook/ student workbooks) to address learning gaps.
- Train teachers to appropriately deliver remedial coursework through 'Teaching at the Right level' approach.
- Periodically assess students' progress on target competencies, and improve program design and execution basis field feedback.
- Ultimately, help children address learning gaps through customized support.

²⁴ Annual Status of Education Report (ASER) 2018, Pratham

Design of the intervention

A remedial programme has the following key design components and choices to consider:

- **Construct and scope:** Remedial classes must be scheduled within school hours but with dedicated teaching hours for remediation alone. This is important to ensure that the programme is scalable and sustainable, while at the same time it is not overrun by other daily teaching and administrative tasks. Teachers often focus on syllabus completion. Time allocated to solely focusing on remedial competencies acts as a precursor to drifting away from a syllabus completion approach and inculcating a behavioural change of competency-led teaching. A remedial programme has the following possible constructs:
 - **Continuous programme:** An ongoing programme where defined hours for remediation are assigned through the course of the academic year. It may include 1-2 week-long dedicated days for remedial before the ongoing remediation hours begin. An ongoing programme gives students more time to master different concepts at a gradual pace and makes continuous revision possible.
 - **Bridge programme:** A long (6-12 weeks), one-time programme may occur prior to or during summer vacations to focus on behind grade students. A fixed time duration limits the number of competencies covered; however, it allows students an opportunity for focused learning.

States may choose a combination of the bridge program (where the whole day is focused on remediation for 4-6 weeks), followed by a continuous program. The initial bridge will build momentum and focus officials on the program in mission mode. It also allows for a significant chunk of time to be spent on bridging gaps before proceeding to the regular syllabus. **However, it takes time for any intervention to settle in a large system, and there may often be ongoing course corrections required, which is why a booster and an on-going program together can maximize impact.**

It is also important to define the scope of remedial teaching, including the classes and subjects.

- **Teaching strategy:** Typically, remedial programmes adopt a pedagogy different from in-classroom teaching. Remedial learning strategies comprise more hands-on activities, are practice-oriented and are tightly linked to remedial competencies to foster learning. It helps teachers supplement the learning and assessment needs of diverse groups of students in multi-grade classrooms. For students, it helps self-learning and allows them to study according to his/ her aptitude and skill.
- **Classroom teaching methodology and remedial materials**
 - **Grouping students:** Grouping strategies for teaching remedial content require identification of student learning levels and using the information to group students. Groups may be formed across combinations of different learning levels or only students farthest behind grade-level may be targeted. This enables teachers to teach at the right learning level and provide attention to behind-grade students as well as allows students to engage in peer-learning. In the given constraints of limited teacher availability, with presence of 2 or more groups of students, instruction in remedial periods should prioritize those who are left behind.

- **Competency-based remedial materials:** The States must provide prescriptive content in the form of teacher handbooks and student workbooks for remediation for different levels of students. The centralized design allows for strategic choices and expert input at the State level with respect to pedagogical approach, specific competencies that need to be included, pacing, etc. Another prerequisite is clearly mapping learning outcomes to remedial content that is used to teach it. This allows clarity for teachers regarding competencies that must be achieved as part of remediation.
 - **Tracking student progress:** To accurately identify the learning levels of each student, it is necessary to administer periodic assessments that focus on learning outcomes. Based on when they are conducted, the assessments help identify student learning levels to enable teaching at the right level as well as track progress in the grasp and mastery of a competency.
- **Effective teacher training:** Effective and timely teacher training is necessary to enable teachers to simultaneously teach multiple students at varied learning levels. Additionally, teachers must be guided on using new tools and content created for remedial classes. A best practice is a combination of cascaded in-person and continuous online training. While the cascaded in-person training enables live doubt resolution, it is time inefficient, heavily dependent on the quality of the trainer and content quality dilutes as layers increase. One-time training is insufficient and continuous teacher support can prove helpful. To overcome demerits of cascaded in-person training, video-based training can be introduced. Videos provide demonstrations, thus making the content come alive.
- **Strong mentoring, monitoring, and review mechanism:**
 - **Mentoring:** To provide teachers continuous support, it is helpful to establish a cadre of mentors in the State. It may consist of subject matter and pedagogy experts who can make school visits and provide feedback or share teaching best practices.
 - **Monitoring:** A strong monitoring mechanism helps ensure that teachers across the State are implementing the remedial programme in line with prescribed guidelines. It should be carried out at various levels by multiple stakeholders and can be integrated with the usual academic/ school visits and monitoring process.
 - **Review:** Cascaded academic review meetings at HQ/ district/ block level help close the monitoring feedback loop and hold relevant stakeholders accountable for academic outcomes while involving the larger administration.
- **Campaign mode execution:** Ensuring that the program's importance, its design, and goals are internalized requires execution in campaign mode/ mission mode. This involves ensuring program launch by Hon'ble CM/ EM, etc. to rally stakeholders around the goals, frequently recognizing high performing teachers, schools, and field officers as well as driving competition to boost performance.

To maximise impact, States need to run the program with a consistent design for a period of three to four years. However, as the program extends, several innovations may be considered to strengthen it further:

- Summer and winter programs for students who are very far behind grade-level competence.
- Residential programs during holidays for students, to ensure higher attendance and greater intensity.
- Use of technology to reinforce classroom teaching and rigor.

If executed well, remedial programmes can lead to immediate results. Some examples include:

- **Madhya Pradesh:** 15%+ children jumped one level (i.e., from grade 1-2 learning level to grade 3-5 learning level per State's program design) within three months across different subjects and grades, as reported by teachers.
- **Odisha:** Students across grades scored 10-15% more on average, in both Math and Odia.

Action charter

Finalize construct & scope	- Identify the classes and subjects to be taught on which remediation is to be done - Define program construct – e.g., upfront bridge program or continuous remediation through the year or a mix of the two
Define grouping strategy	Determine the criteria and thresholds for dividing students into different groups as per learning levels
Develop remediation content	Develop custom, competency-based remediation content including teacher handbooks, student workbooks etc. Incorporate practice-oriented teaching strategies with hands-on activities
Design and conduct teacher trainings	- Conduct one-time in person training in a cascaded model - Lend continuous support through video-based/ online trainings and peer discussions/ learning forums
In-school execution	- Form student groups based on learning levels - Use custom, competency-based teaching content, which leverages activity-based learning, especially for early grades - Ensure effective implementation based on prescribed guidelines and hold relevant stakeholders accountable

Challenges and Mitigation

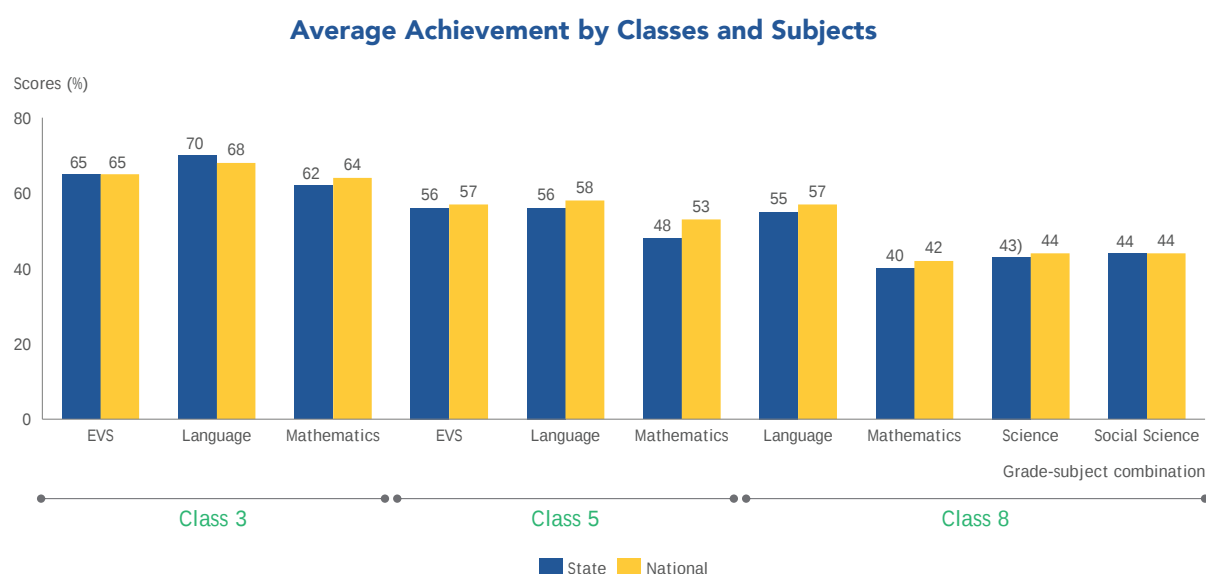
Challenge	Mitigation
Teachers are: - Not used to competency/ LOs based teaching, rather they prefer to complete books and syllabus. - Used to a theoretical instruction style rather than one focused on ensuring that students grasp the content.	There is a structural need to move teachers away from 'syllabus completion' approach to 'imparting competencies' thinking. It is crucial to make them understand that it is futile to complete syllabus when students don't have basic literacy and numeracy skills. Teachers have to be convinced that unless the actual learning levels of students are mapped and then they're taught at that level, they will be unable to learn higher-grade concepts.
Across stakeholders: Discomfort with grouping based on student learning levels.	There is a need to make all stakeholders internalize that grouping of students as per learning level is not detrimental to their self-esteem; rather the progress they finally start making, when an instruction is addressed to their level, provides a sense of accomplishment.
Students are: - At risk of bullying in multi-grade classrooms. - Prone to develop low self-confidence if covering the same remedial material repeatedly.	- Develop a strict monitoring mechanism to thwart bullying. - Content in the workbooks should be periodically revised even while adhering to the same competency standards.
Resource constraints: Limited number of teachers that have to handle multiple groups of students at different learning levels.	Incorporate constraints into planning and number of groups' formation.



Supporting case study (Madhya Pradesh)

Background

Several studies indicate that a significant proportion of primary school students in Madhya Pradesh are not at grade-level competence. According to the National Achievement Survey conducted by the Ministry of Education in 2017, which tested 1,40,363 students across more than 8,566 schools in Madhya Pradesh, it was found that the State was below the national average in most of the categories.



1

Copyright © 2021 by Boston Consulting Group. All rights reserved.

Exhibit 4.3.1: Performance of MP in NAS 2017

Research has proven that learning gaps continue to compound for students who lack foundational learning in early years. **In addition, in the absence of a strong pre-primary education system, it is also important to address critical pre-primary competencies in grade 1 to ensure appropriate school readiness for children.**

To address both these issues, the State decided to launch a remediation program titled Dakshata Unnayan (DU) for grades 1-8²⁵. The program was designed keeping in mind the well proven Teaching at the Right Level (TaRL) methodology whereby children are grouped by learning levels in order to ensure targeted classroom instruction to each group and associated teaching-learning material is prepared keeping the grouping in mind.

Implementation

Multiple choices exist for designing various aspects of remediation programs. For designing the program in MP, the State studied all these options in detail and made the following strategic choices based on applicability and suitability in the local context:

Operational design:

- Option 1** In-school: Time is carved out for remediation from the existing school timetable.
- Option 2** Outside of school hours: Additional time, outside of the regular school day, is identified for remediation (such as stay-back after school/ holidays, etc.)

²⁵ Owing to budgetary constraints, the scope of the program was subsequently reduced to cover only grades 3-8. The State is now planning to launch a separate FLN Mission dedicated to grades 1-2.

MP decided to operationalise the program within school hours to ensure sustainability and scalability. This ensured adequate student and teacher attendance for the program and allowed the program to get focus and priority at every level, starting from teachers and parents, up to the district and State administration (and not be seen as an ‘additional’ voluntary program).

Program Duration:

- Option 1** One-time booster where the whole day is focused on remediation for a specific duration (say 1-1.5 months).
- Option 2** Multi-year on-going program that continues through the entire academic year.

In MP, the program was implemented through an intensive remediation booster month in the beginning of the academic session, in which 2 hours per day were dedicated to DU. The initial booster period helped in building critical momentum in the initial months and allowed for a significant chunk of time to be spent on bridging gaps before proceeding to teach the regular syllabus. However, since attendance is often very low in the initial month post vacations, concentrating the whole program in the initial months would result in a significant percentage of students missing out on the program. Hence, the booster month was followed by 1-1.5 hours of targeted remediation per day throughout the rest of the year.

Dakshata Unnayan: Brief summary of the program

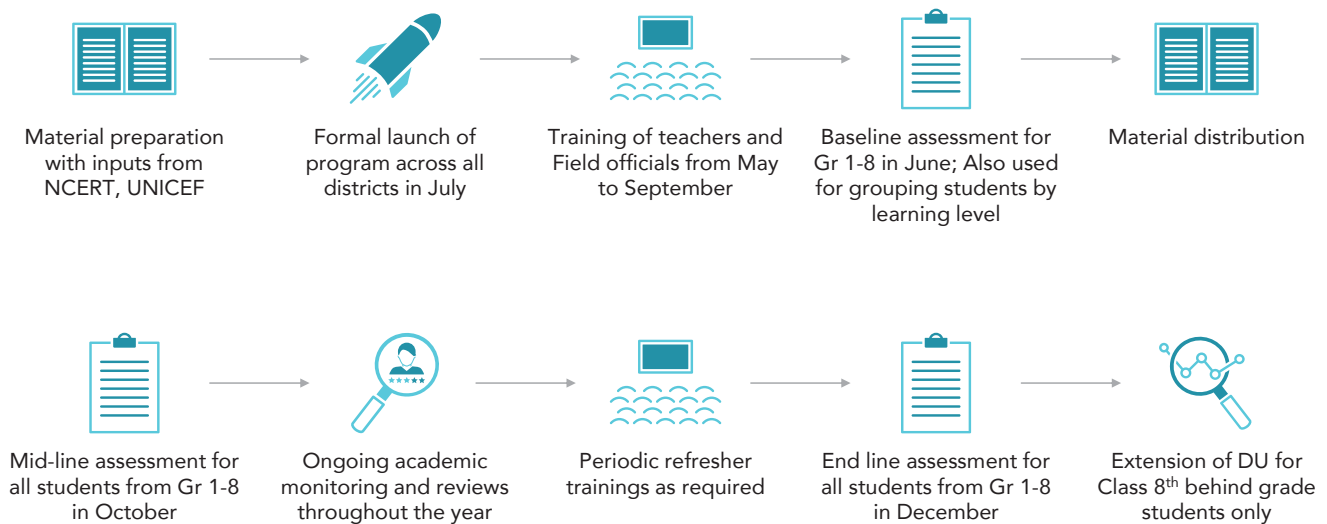


Exhibit 4.3.2: Illustrative annual cycle of remediation in MP

This also allowed time for the program to settle in a large system like MP, and left scope for ongoing course correction.

Grouping Construct

- | | |
|-----------------|---|
| Option 1 | Re-organize all classes into groups on the basis of their learning levels. |
| Option 2 | Pull-out behind-grade students during school hours and teach them separately. |
| Option 3 | Group students in two or three groups within each class based on learning levels. The teacher facilitates teaching for these groups using content created for multi-level teaching. |
| Option 4 | Create heterogeneous (mixed learning levels) groups of students and use peer-learning as a way to improve learning outcomes of behind grade students. |

In a typical classroom, students span a range of different grades and learning levels. If they are taught uniformly or made to read the same pages of a textbook irrespective of their ability, the learning of the student is compromised. Consequently, in line with the approach suggested under TaRL, MP chose the homogenous method of grouping where students at the same learning levels are grouped together. However, the State also instructed teachers to allow for some peer learning to happen via students of higher learning groups once they finish the practice worksheets meant to be used by them in the DU hour.

Additionally, the State chose the model of grouping students within the classroom rather than across classes. This was done keeping in mind the fact that typically in MP one teacher teaches grades 1 & 2 and one teacher teaches grades 3-5, and hence grouping was suggested for each teacher within her class. Under the program, students were grouped basis their learning level into 3 categories –

- Ankur (learning level of grades 1-2)
- Tarun (learning level of grades 3-5)
- Umang (learning level of grades 6-8).

This kind of re-grouping facilitated the teachers as they did not have to tackle huge variances in learning levels of students in the same class. Students also benefited because teachers were able to focus more on those students whose learning levels needed to be upgraded most, thus reducing the accumulated learning deficit.

Development of TLM for teachers and students

- | | |
|-----------------|--|
| Option 1 | State designs, prints and provides specific content for the remedial program (lesson plans with activities for teachers, worksheets for each student). |
| Option 2 | No prescribed content and allow teachers to create lesson plans by themselves for different groups of students |

To assist the teachers in teaching at the right level (TaRL) as per the Dakshata Unnayan grouping, the State developed student workbooks focusing on literacy (Hindi) and numeracy for each learning group. The student workbooks were supplemented by teacher handbooks, which served as a guide for teachers to implement the program and ensure that the student workbooks are being used in the appropriate manner.

Capacity building for all stakeholders

The pedagogical interventions under DU were supported by a strong system of capacity building for teachers and field staff.

- Intensive five-day training was conducted for teachers at district and block levels, along with training for department officials including DEO/ DPC, Block Academic Center (BAC) and Cluster Academic Center (CAC) at the beginning of the session.
- These were supplemented by periodic refresher training at the ground level for various levels of stakeholders.
- Pre-written modules and digital content were leveraged across all these trainings to ensure minimum transmission loss in a cascade system.

Trainings were also refined in the second year of the program based on inputs received from the teachers and key challenges coming in implementation.

Ongoing monitoring & support

The State also ensured regular monitoring of execution and tracking of learning outcomes through various methods.

- **Midline/ Endline Assessments:** The change in learning levels were monitored through a midline and an endline assessment conducted every cycle.
- **Student Competency Trackers:** The State also floated student competency trackers at school level which teachers had to fill for getting a status check of their own classrooms without having to report it to the State.
- **Shala Darpan:** Additionally, the Shala Darpan school monitoring system was leveraged to ensure remediation program focused monitoring across all schools with a dedicated section on DU. 40% schools were covered each month to ensure each school was visited at-least once every quarter.
- **Report Cards and VCs:** The State also shared monthly report cards with the district leadership to support in implementation, and performance of the districts was reviewed through weekly VCs with the State leadership.
- **Parent-Teacher Meetings:** To ensure downward accountability and engage parents, practice of holding regular PTMs was instituted in all schools.
- **VFS Call Centre:** This was supplemented by setting up of a virtual field support (VFS) cell at the State level with both inbound and outbound calling to track execution, get feedback and handle grievances and questions.

Roles and responsibilities

Stakeholders	Roles and responsibilities
SCERT	• Designing the construct and scope of the remedial programme • Developing teaching-learning content such as worksheets, teacher manuals, etc. • Training teachers through in-person and video-based modules • Developing tools for assessment and grouping
Teachers	• Conducting baseline to understand grade competence • Grouping students based on learning levels • Administering teaching material through activity-based learning structured around workbooks • Tracking student progress
District/ Block/ Cluster-level officer	• Training teachers at the block level • Setting-up WhatsApp groups, sending messages and cross-checking addition of members in these groups for video-based training for video-based training • Mentoring teachers and providing continuous support • Assessing LEP components during school inspection and recording progress

Outcomes

In 2018-19, 67 lakh+ students across primary and middle classes were covered in 1.1 lakh+ schools in the State. The State also trained 2 lakh+ teachers in conducting remediation classes and associated pedagogical concepts. To assist in program execution, a network of ~6,000+ mentors was leveraged, along with ~2,600 DIET Staff, DRGs and SRGs. Additionally, PTMs were organized in 99% of the schools and discussion on DU profiling, worksheets and results were done with 34 lakh guardians. As a result, as per self-reported data from the schools by the schools, there was a 20-30% improvement in learning outcomes across the districts during the academic year:

- 30%+ students moved from Ankur to Tarun in grades 3-5 Maths
- 20%+ students moved from Ankur to Tarun in grades 3-5 Hindi
- 20%+ students moved from Ankur/ Tarun to Umang in grades 6-8 Maths
- 15%+ students moved from Ankur/ Tarun to Umang in grades 6-8 Hindi

The success of the program continued in the academic year 2019-20, by which Dakshata Unnayan became a part of everyday vocabulary of schools and gained acceptance among the teachers, with most teachers reporting the program to be a useful tool for addressing learning gaps. In AY 2019-20, as per self-reported data from schools, 15-30% additional elementary students had seen learning improvements.

- 25%+ students moved from Ankur to Tarun in grades 3-5 Maths
- 20%+ students moved from Ankur to Tarun in grades 3-5 Hindi
- 15%+ students moved from Ankur/ Tarun to Umang in grades 6-8 Maths
- 15% students moved from Ankur/ Tarun to Umang in grades 6-8 Hindi

Appendix

1. [Dakshata Unnayan Resources\(2018-19\)](#)²⁶: Including remediation workbooks and teacher manuals.
2. Dakshata Unnayan Remediation Workbooks (2020-21):
 - a. [Grades 3-5: Hindi](#)²⁷
 - b. [Grades 3-5: Maths](#)²⁸
 - c. [Grades 6-8: Hindi](#)²⁹
 - d. [Grades 6-8: Maths](#)³⁰
3. Learning Trackers: Used by teachers to test students on competencies and accordingly identify learning levels for remediation
 - a. [Hindi](#)³¹
 - b. [Maths](#)³²

²⁶ <http://educationportal.mp.gov.in/Dakshata/>

²⁷ <https://drive.google.com/file/d/15pPcB5P79FS8XMYX6kkjD0HMI63AFiD2/view>

²⁸ https://drive.google.com/file/d/1aqbOJCEvAlw_ARZsX85Sy_O_A1fWZDoz/view

²⁹ https://drive.google.com/file/d/1QBTbZd0gkhNzIT68Fu1feOJGcbm_iV9c/view?usp=sharing

³⁰ https://drive.google.com/file/d/1tSq418p_1-POSJts9NpXgh1iRHqhUkhH/view?usp=sharing

³¹ https://drive.google.com/file/d/1L9RZhS4smeoRTAWo-WfdMI5rQEVgpZ_R/view?usp=sharing

³² https://drive.google.com/file/d/1_Jsgiafjnc3BSH5jG3hZyLHKjKVVQWvj/view?usp=sharing



Supporting case study (Jharkhand)

Background

In 2018, learning levels in Jharkhand were extremely poor, with ASER data indicating that only 34% of Grade V students were able to read complex English sentences, and only 19% of students were able to subtract two-digit numbers. The State's own data reflected similar statistics, and it was clear that Jharkhand's students were significantly behind their grade-level and struggled with basic literacy and numeracy skills.

In this context, Jharkhand's remedial education program - Gyan Setu - was conceptualized to significantly improve foundational learning outcomes. Gyan Setu is based on the premise that teaching should be pitched directly at a child's learning level and not the grade-level that they are enrolled in. This concept was pioneered by Nobel Prize-winning research conducted by JPAL and Pratham, which has also been reinforced by the World Bank Development Report, 2018 as one of the most scientific methodologies to improve student learning outcomes.

Implementation

- **Construct and scope:** Gyan Setu focuses on building foundational literacy and numeracy skills among students behind grade-level.
 - **Statewide program:** Currently, the program impacts ~40 Lakh students across Grades 1-9, covering about 35,000 schools.
 - **Year-Round program:** Students practice Gyan Setu for 1.5 hours every morning, before going back to grade-level studies for the rest of the day. It is essential to make this program a continuous year-long program instead of a short campaign mode program to ensure that it is mainstreamed into the system and leads to substantial and long-lasting learning improvement over time rather than a brief or short spike.
 - **Interspersed campaign mode remediation called “Booster Phase”:** For the first 45 days of the academic year, students work in their individual learning groups and are taught at their learning levels. They also work on their Gyan Setu workbooks, pitched at personalized learning levels for the entire duration of the day. This is done in mission mode so that students who are far behind academically have enough opportunity and time to bridge the academic gap.
- **Teaching strategy:** Teachers do not use conventional teaching strategies to deliver Gyan Setu classes. Jharkhand realized the urgent need to engage students by using innovative and scientific teaching practices to ensure this program achieves its intended objective:
 - **Differentiation:** As there may be multiple learning levels in the classroom, teachers differentiate instruction to ensure optimal learning for each child in the classroom. Focus is given to students at the lowest levels in the classrooms.
 - **Peer learning:** Students support each other in Gyan Setu classes. Teachers use peer and cooperative learning techniques to ensure ALL students are learning.
 - **5 step teaching strategy:** Every lesson starts with a focus on why a particular topic is being taught, followed by an engaging teacher demonstration, a joint teacher- student activity and then independent problem solving by students. In every lesson, the problem is effectively broken down and modelled by the teacher before students begin to practice. In the end, the learning is summarized by students. Teacher guidebooks help teachers develop their lesson, by providing various activities that teachers can use for engaging teacher demonstrations. Learning-level mapped workbooks are provided to students for practise and problem-solving.
 - **Teaching Archetypes:** Gyan Setu was designed keeping in mind the realities and context of Jharkhand’s schools. To make this process as easy as possible, especially in schools with teacher shortage, and to ensure that it can run effectively at scale, Jharkhand prepared school archetypes that teachers would follow.

प्राथमिक: दो शिक्षकीय विद्यालय

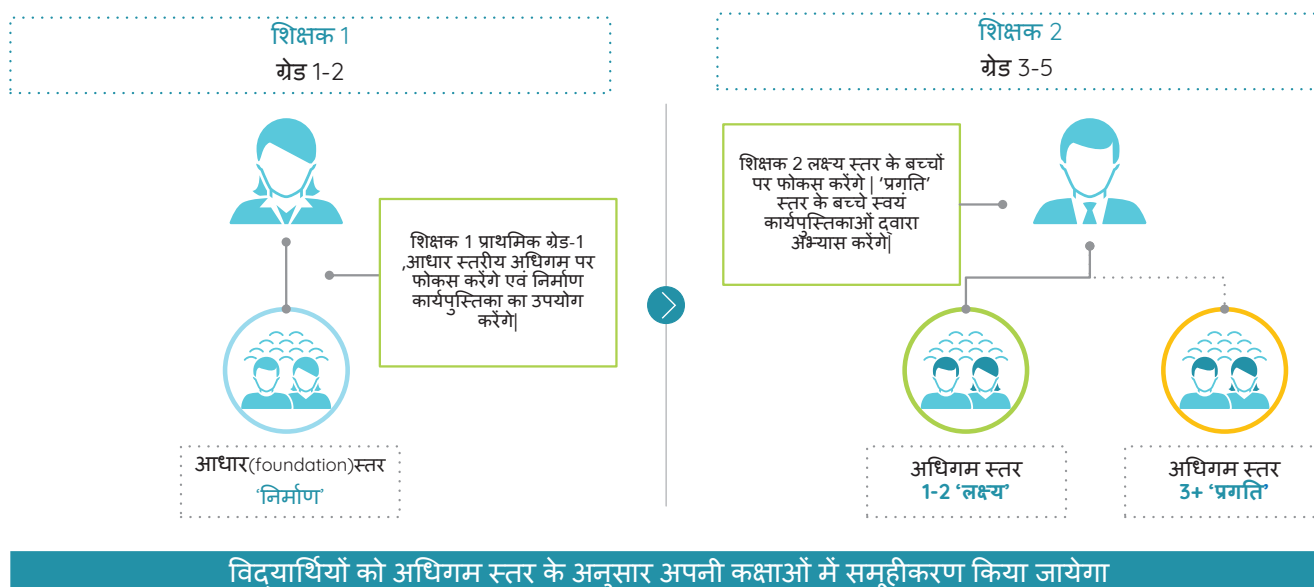


Exhibit 4.3.3: School archetypes for Gyan Setu implementation

- Classroom teaching methodology:** Teachers identify and form student groups and use customized content such as worksheets, activities and practice questions to tailor their teaching methods to learning levels of different students.
 - Grouping students:** Based on a rigorous baseline assessment, teachers identify student levels and accordingly group students in their classrooms. These groupings have been thought through with immense attention to detail, keeping in mind the capabilities and bandwidth of our teachers. The grouping needs to be simple to understand for teachers and easy to execute. Ideal design needs to be balanced by practical realities such that implementation at scale can be effective.
 - Customized content:** 5 Workbooks have been designed by the department that students practice on during the daily Gyan Setu period. Workbooks are assigned to students based on the results in the baseline assessment. For example: a student in Class 8 who is at Level 3 will receive worksheets designed to take the student from Level 3 to Level 5.
 - Tracking student progress:** Jharkhand has developed a system where BRP/ CRPs assess 3 random students every day on foundational literacy/ numeracy only. Specific incentive systems have been built to ensure that there is no incentive to report false data and all BRP/ CRPs have been trained on a very simple form of assessments that track only for basic skills. Today, Jharkhand tracks learning data of 2 lakh students per month and can see improvement or otherwise in any district or block on a live basis. This learning data has in turn become the means to ensure learning-outcome focused conversations at all levels of the system and is further used to fine tune training or curriculum.

- **Effective teacher training:**

- Training is provided to ensure that all ~1.2 Lakh teachers involved in the programme are well-equipped to administer remedial classes and simultaneously teach multiple students at varied learning levels. Additionally, teachers are guided on using tools and content created for remedial classes. Training in Jharkhand worked on addressing critical gaps in large scale trainings, which are usually overlooked by most States. Training is provided by a cohort of 750 well-trained Master Trainers (MTs), who are trained directly by the State in multiple batches in order to reduce the cascade and quality control the training. The last day of the State training focuses on facilitation training.

- **Strong mentoring, monitoring and review mechanism**

- Monitoring: Around 2000+ schools are inspected in Jharkhand every day and a number of key Gyan Setu specific indicators, such as quality of Gyan Setu conducted, workbooks used and checked, lesson planning etc are reported. Capacity building, whether of district leaders or frontline administrators, to be able to gather, analyse and use this real time data and make swift improvements is an inherent part of the State's strategy to make Gyan Setu a success. Every week, data is collected from eVidyaVahini based on field entries by CRPs / BRPs. Thereafter, the State PMU translates the data into meaningful insights and directly calls on-ground stakeholders to further understand gaps. Based on the final analysis, field visits to schools and block offices are conducted to comprehensively review implementation. Finally on the final report, a clear plan of action is created jointly with key district officials, including the Deputy Commissioner.

District Scorecard

District Name	Gyan Setu (25)	Average BRP/CRP visits (25)	Teachers' Biometric (25)	Student Portal (25)	Total Score (100)	January (W1) Rank	December Rank	Change in ranking
Godda	17.9	14.4	25.0	19.2	76.4	1	-	-
Paschimi Singhbhum	22.7	19.2	21.3	9.9	73.0	2	-	-
Dhanbad	13.5	16.9	22.3	18.2	71.0	3	-	-
Purbi Singhbhum	15.1	18.2	18.8	18.9	70.9	4	-	-
Jamtara	16.6	25.0	15.8	12.1	69.5	5	-	-
Deoghar	19.6	16.9	17.2	14.2	68.0	6	-	-
Garhwa	20.0	24.4	13.8	9.6	67.7	7	-	-
Ramgarh	23.6	20.5	19.1	4.0	67.3	8	-	-
Khunti	13.6	16.6	16.7	19.7	66.6	9	-	-
Saraikela	14.8	20.4	17.9	12.2	65.3	10	-	-
Kodarma	18.3	16.7	15.7	13.1	63.8	11	-	-
Lohardaga	11.6	13.5	21.0	17.2	63.3	12	-	-
Bokaro	17.3	15.0	19.4	11.3	63.0	13	-	-
Ranchi	14.3	20.7	19.6	6.8	61.4	14	-	-
Latehar	18.9	8.9	12.8	19.9	60.6	15	-	-
Pakaur	19.2	11.2	19.8	9.5	59.6	16	-	-
Palamu	16.8	20.7	15.7	3.5	56.7	17	-	-
Giridih	15.7	20.1	15.2	5.4	56.4	18	-	-
Gumla	16.7	4.6	15.4	17.2	53.8	19	-	-
Dumka	13.6	14.3	17.1	7.6	52.6	20	-	-
Hazaribagh	17.9	8.3	19.8	4.4	50.5	21	-	-
Sahibganj	17.8	12.4	13.4	4.8	48.3	22	-	-
Simdega	17.6	14.4	2.3	11.4	45.7	23	-	-
Chatra	11.0	13.1	10.6	5.9	40.6	24	-	-

Source: Based on data received from e-Vidya Vahini and call center

Note: The parameters may change for each month depending on stage of implementation of each initiative

Exhibit 4.3.4: Districts which are under-performing multiple times are actioned on priority by districts

- Review:** The Gyan Setu Review Model is one of the first outcome focused review model designed by any State – this is one of the State’s primary governance methodologies leveraged across all levels – from quarterly Chief Secretary led reviews and daily reviews of the districts led by the SPD to monthly reviews of blocks by District Commissioners. Reviews track monthly compliance and targeted action plans. But these reviews have some unique features - firstly, core focus of reviews is on learning outcomes & discussion on movement in competencies. Secondly, to build motivation and actual ownership for the project – meeting participants are mandated to prepare and present in the meetings as opposed to listening to instructions from their bosses. The presentations have transformed the meeting from a review of work done to a learning exchange platform and has generated a mission mode culture towards attainment of objectives. Since the past few months, all 24 districts have been conducting DEO DSE level reviews and over 75% districts have been conducting DC led reviews. Infact, reviews are now so mainstreamed into the system that over 90% blocks are reviewing their clusters as well. These reviews are also graded by the State for quality basis, a quality index and constant feedback is provided on content on reviews.

Roles and responsibilities

Stakeholders	Roles and responsibilities
JCERT	• Designing workbook content for students • Designing teaching guidebooks with innovative classroom practices to be followed by teachers • Creating training content for teachers to implement Gyan Setu • Facilitating training for teachers • Formal platform for best practice showcasing and sharing across the State
Teachers	• Monitoring Gyan Setu implementation across the State • Workbook distribution and tracking • Managing NGO partners to support districts in the implementation of Gyan Setu • Implementation and tracking of Booster phase, Baseline, Summer Program • Compliance, action and follow up from all SPD reviews (Proceedings/ letters/ showcauses) • Organising review of bottom schools, blocks, districts directly at State level • Driving quality and implementation of Gyan Setu reviews

Stakeholders	Roles and responsibilities
Teachers	- Conducting baseline assessments to determine student learning levels - Grouping students based on learning levels - Administering teaching material through activity based learning - Tracking student progress
BRPs/ CRPs	- Inspecting schools and completing monitoring forms - Providing qualitative feedback from inspections - Setting-up WhatsApp groups and disseminating teacher training content, - Mentoring teachers and providing continuous support
DEOs and BEOs	- Conducting monthly Gyan Setu review meetings at their levels - Driving continuous compliance in their districts/ blocks

Outcomes

Over the first 6 months (Oct 2018 to Mar 2019) Gyan Setu led to 12% improvement across most competencies. As shown in the figure in the right column, students currently in class 5, for example, have already achieved competencies that students in grade 6 students started with in 2018. This trend is similar for most grades.

Gyan Setu | 12% improvement across most competencies in Jharkhand as of 2019

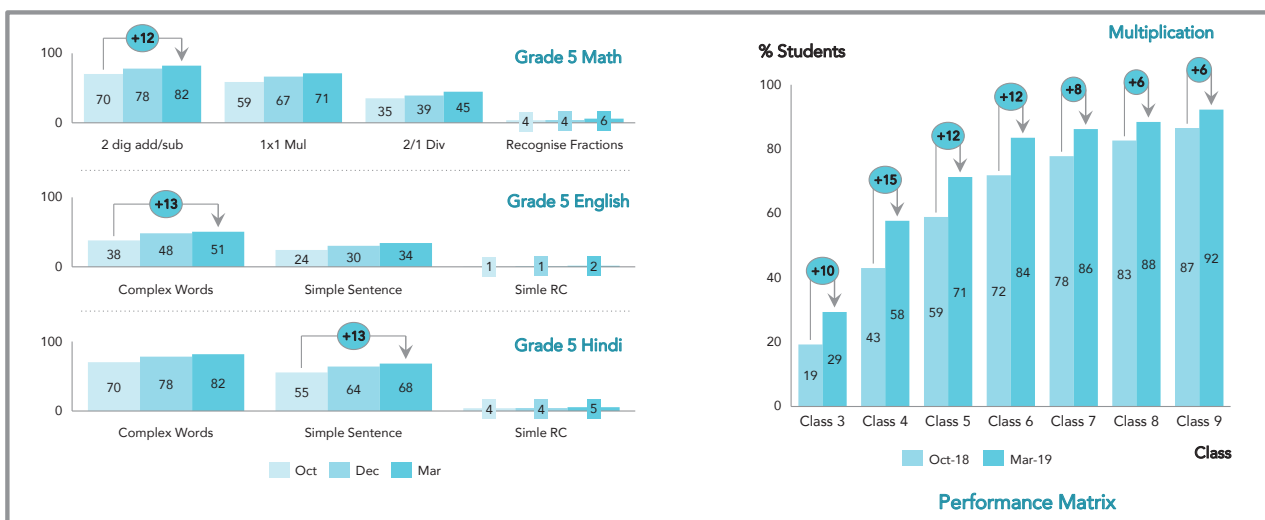


Exhibit 4.3.5: Improvement in Learning Outcomes in the first 6 months of Gyan Setu implementation

Appendix

The following illustrations capture examples of remedial worksheets used in Math and English to support children who are behind grade learning in Jharkhand.

Example: Learning articles in English

Guidebook

Can understand usage a, an, this and that in simple sentences	
a/ an के प्रयोग को समझ सकेंगे।	चरण-1 : शिक्षिका कुछ छोटे वाक्यों को ब्लैकबोर्ड बोर्ड पर लिखे जैसे- a pen, an apple, water, an orange, oil, sugar, a boy, a girl। ऊपर लिखे शब्दों और वाक्यों पर शिक्षिका सबके साथ इनके प्रयोग पर चर्चा करते हुए स्पष्ट करे कि हम 'a' और 'an' का प्रयोग सिर्फ countable nouns से पहले करते हैं, जैसे- a pen, an apple। यहाँ पर a/an nouns (वस्तु या व्यक्ति) की संख्या को बताते हैं, परन्तु जिन nouns को नहीं गिना जा सकता उनके आगे हम a, an का प्रयोग नहीं करते। जैसे- water, sugar. शिक्षिका यह भी स्पष्ट करे हम 'a/an' का उपयोग अलग-अलग क्यों करते हैं। शिक्षिका यह भी बताए कि जो शब्द a, e, i, o, u की आवाजों से शुरू होते हैं वहाँ हम किसी व्यक्ति या वस्तु की 1 संख्या को दर्शाने के लिए 'an' का प्रयोग करते हैं। बच्चों को बताएं कि ये vowels हैं व ये शब्दों में मात्राओं की तरह प्रयोग होते हैं। जैसे- b + a = ba ब + ऐ = बै बुलाते हैं। जैसे : This is an eye मतलब यह एक आँख है। (यहाँ पर eye शब्द vowel से शुरू हुआ है)। This is a pen. (यहाँ पर pen शब्द consonant p से शुरू हुआ है) चरण-2 : अभ्यास पत्रकों की सहायता से अभ्यास पूर्ण करवाएँ।

Associated Worksheet

Naming words - use of a / an		Practice Worksheet-11
1. Circle the words that begin with vowels.		
banana	umbrella	eye
hand	cupboard	owl
egg	ease	arrow
arum	ones	ant
		ox
		grass
2. Match the given words to the correct articles (a, an)		
monkey	parrot	orange
		teacher
		aeroplane
		ice-cream
		song
		bread
		onion
		ear

Competency: Learning articles in the guidebook, students practice associated worksheet No.11

Exhibit 4.3.6: Remedial worksheet to help student understand usage of 'a', 'an', 'this'

Example: Learning place values in Math

Guidebook

सीखने-सिखाने के चरण	गतिविधियाँ	अभ्यास कार्यपत्रक
इकाई, दहाई व सैकड़े के अंक दिए होने पर संख्याएँ बनाना।	गतिविधि-1 : शिक्षिका ग्यामपट्ट पर 1-9 तक के अंकों में से कोई तीन अंक लिखे। फिर इन अंकों के स्थानों को बदल-बदल कर इनसे बनने वाली तीन अंकों की संख्याएँ बनाकर दिखाएँ तथा संख्याओं को बच्चों से पढ़वाएँ।	3

Associated Worksheet

उद्देश्य : इकाई, दहाई व सैकड़े के अंकों की सहायता से संख्या बना सकें।									
नीचे दिए गए अंकों से सर्वसम्भव संख्याएँ बनाइए तथा उनका नाम शब्दों में लिखिए -									
4, 3, 5			7, 2, 8						
सैकड़ा	दहाई	इकाई	संख्या	संख्या शब्दों में	सैकड़ा	दहाई	इकाई	संख्या	संख्या शब्दों में
4	3	5	435	चार सौ पैंतीस					

Competency: Learning place value in math, students practice associated worksheet #3

Exhibit 4.3.7: Remedial worksheet to help student understand place value of numbers



Supporting case study (Haryana)

Background

Before Haryana embarked on a systemic transformation journey in 2014, schools conducted a Classroom Readiness Programme in the first month of the academic year, a time usually characterised by low attendance and delays in textbook delivery. The programme included revision of concepts from the previous grade. This short-term yearly effort placed little focus on quality and was largely ineffective. This resulted in the need for a methodical and holistic remedial effort resulting in the development of the Learning Enhancement Program (LEP) aimed at bridging learning gaps by spending dedicated time to teach students at their existing learning levels.

Implementation

The operational model for Haryana's Learning Enhancement Program leverages multiple best practices across States.

- **Construct and scope:** Learning Enhancement Program (LEP) is a continuous remedial programme in Math, Hindi and English for students in Classes I to V, conducted through the academic year. It currently caters to 10 lakh students in all 8,556 government primary schools across Haryana. Remedial classes are conducted during the first 45 minutes of a school day, with the schedule of lessons aligned with content taught in the classroom. Additionally, to make students grade-ready and clarify basic concepts, remedial content is taught in short, intensive capsules of 5 weeks at the start of the academic year. In Class I and II it helps build a strong foundation and in Class III to V it brings students below grade-level to the requisite grade-level.
- **Teaching strategy:** Teachers in Haryana use Activity-Based Learning (ABL) to supplement the learning and assessment needs of students in multi-grade multi-level classrooms.
- **Classroom teaching methodology:** Teachers identify and form student groups and use customised content such as worksheets, activities and practice questions to tailor their teaching methods to the learning levels of different students.
 - **Grouping students:** Each new lesson begins with an oral pre-assessment to understand students' grasp of concepts. Based on an assessment of learning levels, teachers create three types of groups. Students over two levels behind grade-level competency are grouped together and seated closer to the teacher to ensure they receive more attention. Students one or two levels behind grade-level and those at grade-level are grouped together to facilitate peer-learning.
 - **Customised content:** Teachers leverage the LEP manual to teach concepts based on students' grade-level. LEP manuals are 15 comprehensive remedial teaching guides for teachers of Classes I-V for Hindi, Maths, English. The first section of the manual provides detailed instructions on how to assess students, carry out grouping, administer content, and track student performance. The rest of the manual follows a lesson plan format and contains prerequisite learning competencies, sample questions to understand student performance, questions for in-class teaching and activities (ABL) to explain a concept through multiple approaches. For instance, counting can be taught using objects such as stones and money or through rhymes.
 - **Tracking student progress:** Students are assessed both before and after a concept is taught to get insight into the progress being made. Teachers conduct oral or activity-based assessments of prerequisite competencies and indicate mastery of each competency for all students in the Mulyankan Soochi. The LEP manual includes a tracker, Mulyankan Soochi, for teachers to indicate students' grasp of competency prior to and after each Summative Assessment Test (SAT). The tracker is a subject-wise tabular representation of chapters and competencies, by the student. Society for All Round Development (SARD), a non-profit organization, helped in developing the content for these manuals in close coordination with SCERT subject-experts. The teacher repeats the lesson and provides more practice until at least 80% of the class has grasped a concept.

- **Competency-based teaching:** A class-wise Learning Outcome Framework, Saksham Taalika³³, was created by the State Council of Educational Research and Training (SCERT), Haryana, for each subject. It lays out the learning outcomes to be taught from textbooks and remedial teaching material for each SAT. The framework is pasted in classrooms for easy access and as a reminder for laying emphasis on competency-based teaching.
- **Effective teacher training:** Training is provided to ensure that all 28,000 teachers involved in the programme are well-equipped to administer remedial classes and simultaneously teach multiple students at varying learning levels. Additionally, teachers are guided on using tools and content created for remedial classes. A combination of cascaded in-person and continuous online training is useful for teachers.
 - **One-time in person training:** At the time of the programme's inception, in-person introductory training was held for in-service teachers. Content includes training on critical elements such as grouping, administering assessments, and effectively using LEP manuals. SARD and SCERT subject experts trained 500 Block Resource Persons (BRPs) as Master Trainers (MTs) and BRPs trained teachers at the block level in a cascaded model.
 - **Continuous video-based training:** DigiLEP, video-based training, provides teachers with continuous support and overcomes the demerits of cascaded training. Competency and pedagogy videos are disseminated to teachers through over 120 block-level WhatsApp groups. This is a popular dissemination channel and 55% (20,000 of 36,000) teachers are included. Teachers receive messages with instructions and a web-based form link to record their demographics (block, subject, grade) before routing them to the videos on the DigiLEP website. This helps track and review uptake. To overcome the limitation of having only 250 members on a WhatsApp group, 2 teachers from each school were added. Block Education Officers (BEOs) ensured smooth functioning and compliance by posting content on the group and monitoring uptake. BRPs were trained to set-up WhatsApp groups, send messages and cross-check member addition. The course consists of 80 videos, categorised by competency. 30 videos came from the in-person MT training mentioned above and 50 videos were shortlisted from over 1,000 videos crowdsourced from teachers in Haryana. Crowdsourcing helped build diverse content and encouraged teachers to experiment with best practices. DigiLEP content is increasingly being integrated with in-person training. SCERT has added DigiLEP content to their training as a refresher and to help generate interest in video-based training.
- **Strong mentoring, monitoring and review mechanism**
 - **Mentoring:** 500 BRPs, Block Resource Centre Coordinators (BRCCs), Assistant Block Resource Centre Coordinators (ABRCs) are mentors who lend continuous support to teachers through school visits during remedial teaching time. They provide feedback, share teaching best practices and fill a detailed proforma. They visit approximately 10 schools per month such that all schools are visited in 2 months.
 - **Monitoring:** A strong mechanism ensures effective implementation of the remedial programme based on prescribed guidelines. Monitors are assigned at two levels:

³³ <http://hsspp.in/LLO.aspx>

- School LEP Owners (SLOs), typically Head Teachers of their schools, drive compliance and monitor adoption of competency-based pedagogy on a continuous basis. They capture granular details in a proforma.
 200 block and district education and District Institute of Education and Training (BEOs, DEOs, DIET) officers assess LEP components during a school inspection and record progress in a proforma. They review 4-8 schools per month and all schools in a quarter.
- **Review:** Academic review meetings at the block, district and State levels by SDMs, DCs and Director of Elementary Education (DEE) include discussing the status of LEP. This helps close the monitoring feedback loop and hold relevant stakeholders accountable for academic outcomes. A multi-layered mechanism measures LEP compliance, quality and progress through proformas filled on a portal or through a mobile application and compiled on the State Academic Monitoring System (AMS). Review parameters include monitoring visit, data recording compliance for BRPs, BEOs, DEOs, DIET and SLOs, LEP compliance, quality and progress measured by learning level distribution (by subject, class, school, month), and SAT results, with a focus on behind grade students. AMS forms the backbone of these reviews (monitor dashboard, mentor dashboard).

Roles and responsibilities

Stakeholders	Roles and responsibilities
SCERT	- Designing the construct and scope of the remedial programme — Developing teaching contents such as worksheets, manuals, LOFs - Training teachers through in person and video-based modules
Teachers	- Conducting pre-assessment to understand grade competence — Grouping students based on learning levels — Administering teaching material through activity-based learning - Tracking student progress
BRPs	- Training teachers at the block level - Setting-up WhatsApp groups, sending messages and cross-checking member addition for video-based training - Mentoring teachers and providing continuous support

BRCCs and ABRCs	• Mentoring teachers and providing continuous support
BEOs	• Ensuring smooth functioning of video-based training • Posting content on WhatsApp groups and monitoring uptake • Assessing LEP components during a school inspection and recording progress
DEOs and DIET officers	• Assessing LEP components during a school inspection and recording progress
Head Teachers/ SLOs	• Driving compliance and monitoring adoption of competency-based pedagogy continuously
SDMs, DCs and DEE	• Conducting review meetings at the block, district and State levels

Outcomes

Teachers in 96% of classes across the State are conducting LEP as desired. Student grouping occurs in 97% of total classes and activity-based learning in 94% of total classes. Teachers in 93% of classes are filling the Mulyankan Soochi.

Appendix

Relevant Documents:

- Learning Outcome Framework: A tabular mapping of learning outcomes to be taught for each summative assessment from textbooks and remedial teaching material.
- LEP Manuals: Comprehensive remedial teaching guides for teachers for Classes I-V for Hindi, Maths, English that follow activity based learning.
- Mulyankan Soochi: Subject-wise tabular representation of chapters and competencies, by student - used by teachers to indicate students' grasp of a competency.

DigiLEP: Video-based training to provide teachers with continuous support

- WhatsApp group messages: Sample messages sent on Block level WhatsApp groups which include an infographic, learning outcome framework, link to the video training content and instructions.
- WhatsApp group infographics: Sample infographics that provide teachers steps of effectively conducting LEP.
- Website: Repository of all video content available to teachers.
- Form link: Form that captures teachers' demographics before giving access to the DigiLEP website to track usage.
- Dashboard of views: Key statistics about DigiLEP uptake and content engagement.
- AMS dashboard: Haryana's Academic Monitoring System (AMS) provides key statistics on LEP compliance, quality and progress.
- Monitor dashboard view: Shows information relevant to monitors on the AMS.
- Mentor dashboard view: Shows information relevant to mentors on the AMS.

Academic monitoring proformas: Forms filled by the following officials on their school visits

- Mentors
- Monitors: SLOs; BEOs and DEOs

4. School optimization

Introduction and context

The Right to Free and Compulsory Education Act (RTE), 2009 made education a fundamental right for every child between the age of 6 to 14 years. **To ensure universal school access for all children, the Act also stipulated that a child's home must be at a 1 km distance for primary schools and 3 km for upper primary schools.** As a result, many schools were established near each other, often with suboptimal enrollment, surplus teachers, or just one teacher, and/ or lacking adequate infrastructure. There are **four key challenges** of sub-scale schools:

- **Lack of child specific attention due to multi-grade and multi-level teaching:** Sub-scale schools typically have 2 or fewer teachers for all of the classes 1-5 (in primary schools) or classes 6-8 (in middle schools). Teachers have to simultaneously teach all subjects to children across multiple grades and diverse learning levels. Teachers are usually able to focus on students of one grade only and find it difficult to deliver structured education to all students in such environments.
- **Limited time available for teaching due to admin tasks:** In small schools, teachers are also responsible for admin & clerical work, supervising mid-day meals (MDM), responding to data requests etc. Our in-field studies indicate that in sub-scale schools, studying only happens for the first 3 periods of the day, after which teachers focus on administrative tasks. Additionally, when a teacher is absent or is called away for election duty, the school almost ceases to function as there is little to no cover.
- **Sub-scale schools typically do not have learning infrastructure:** Infrastructure in these schools is often inadequate and is limited to 2-3 classrooms. Governments also typically tend to prioritize bigger schools for infrastructure such as libraries, labs and computers, etc.
- **Monitoring & Governance tends to be limited:** From a system standpoint, the very large number of schools make any visit-based monitoring/ accountability efforts by block/ district officials difficult to execute. The focus of most programs thus inevitably is larger schools.

A solution to addressing a large number of sub-scale schools is to consolidate nearby schools to create larger schools. To strike a balance between access and delivery of quality education, the viability of suboptimal schools needs re-evaluation.

Expected objectives and outcomes

- Improve the viability of schools by merging same campus schools or low-medium enrollment schools in the vicinity of other schools.
- Provide sufficient teachers and other resources (e.g., physical infrastructure) to all schools as enrollment scale becomes viable.
- Improve school experience and accountability via parents/ SMCs through larger student and parent community.
- Enable more effective monitoring/ mentoring as schools count reduces.

Design of the intervention

There are several types of mergers possible, and its phasing must be determined by the State government:

- **Same-campus schools:** horizontal (where two schools of the same type are merged into one) or vertical mergers (where schools of different levels are merged into one integrated school)
- **Low or medium enrollment schools (without transportation):** (<20 or <30 enrollments, 30-60 enrollments); primary schools within 1 km and upper primary schools within 2 km
- **Low or medium enrollment schools (with transportation):** primary schools beyond 1 km and upper primary schools beyond 2 km (urban first; rural later)

While mergers with transportation have not been done on a large scale anywhere, few experiments are being undertaken in various places. Other options being explored are buses/ mini-buses, provision of cycles to older students and provision of a transportation fund to SMCs.

The entire integration exercise can be divided into three phases – (i) pre-merger; (ii) during merger; (iii) post-merger

Pre-merger:

Before undertaking a school integration exercise, certain key elements must be considered:

- **Ensure accurate information on schools:** Comprehensive data of schools in the State is a starting point. States may leverage the State MIS data, if available. Alternatively, UDISE data can be used. Data pertaining to distance between schools, enrollment, teacher vacancy, infrastructure, medium of instruction, separate girls' or boys' school or co-ed school prove helpful in ensuring accuracy.
- **Define criteria:** Criteria for the integration of schools can be defined based on the States' landscape. This is critical in identifying schools that need to be integrated. The criteria may be based on distance and/ or enrollment. Following RTE norms should be kept in mind while defining the criteria.
 - **Primary school:** Students in classes I to V must have a school within one kilometre of the neighbourhood.
 - **Upper Primary school:** Students in classes VI to VIII must have a school within 3 kilometres of the neighbourhood.
- **Identify merger options:**
 - Schools with zero enrollment, separate schools that exist in the same compound, low enrollment schools in close proximity, separate girls and boys' schools in the same neighbourhood, separate girls or boys primary and secondary schools may be considered for mergers.
 - Schools with inferior infrastructure may be physically merged with those possessing better infrastructure.
 - In case physical consolidation is not possible due to large distance, or lack of available infrastructure in host schools, then schools may be merged to have a common administration and shared infrastructure but operate in individual buildings.
 - Where possible, more classes may be added to a school (upgradation) to allow for mergers.

- **Conduct field verification via cross functional teams to finalize schools for mergers:** School consolidation is a large and revolutionary step for any State. It needs careful strategizing, strong implementation rigor and large-scale stakeholder management. For this, a dedicated cross-functional team with senior leadership must be created to manage the entire process. The team should also have a set of junior persons who can run a call centre for grievance redressal and visit the field for verifications and checks.
- **Strengthening host schools:** One of the core pillars of consolidation is that the host schools will have better facilities and learning environment in comparison with the merged school. Additionally, for the parent and student community, the advantages of going to a school somewhat further away must be obvious, and often, that comes from aesthetics. From both these perspectives, the State will need to re-invest the money saved through mergers into the host schools, especially to strengthen infrastructure, cleanliness, aesthetics, and the classroom-learning environment. Ideally, some of the basic fixes should happen in the pre-consolidation phase.

During mergers

- **Live updates:** As with all field interventions, the progress and output of all steps of the process needs to be tracked on a live basis to ensure data validation, real-time corrective action, and ensure overall monitoring and accountability. In States where mergers have been successful, the senior department leadership personally reviewed on-ground action two to three times per week.
- **Stakeholder engagement:** There are various stakeholders in a process like school consolidation – teachers, students, parents, elected officials, media, field officers, etc. Each of these stakeholders must be constantly engaged and communicated with, to ensure the process does not derail. A combination of videoconferencing, field visits, press releases, field community engagement by officers and a grievance call centre can ensure that all stakeholders are taken along in this process.
- **Media management:** Managing the media is critical to the long-term sustainability of the project. It is important for the State to communicate its vision clearly, succinctly and control the narrative so that the benefits of mergers and its impact on learning outcomes are highlighted, as opposed to negative connotations of shutting down schools or of potential student dropouts.
- **Grievance handling systems:** A robust, time-bound grievance redressal process, where all stakeholders can register grievances that are tracked, investigated, and resolved at the District level should be setup. It is essential to maintain transparency and take corrective action, wherever necessary.

Post-merger tracking:

After schools have been formally approved for mergers and shifting has begun, the process of shifting needs to be monitored and tracked very closely. This involves real-time tracking and corrective action on two aspects:

- Administrative processes like transfer of money and closure of bank accounts, SMC re-organization, and re-use of vacated buildings.
- Status of students shifting from merged to host schools followed by targeted community engagement and interventions in schools with lowest rates of student shifting (usually because of inadequate awareness or poor verification).

Teacher Rationalization:

Once mergers are executed, the exercise is likely to result in significant numbers of surplus teachers or headmasters/ principals in several schools. Their allocations need to be planned.

An illustration on the impact in 4 States is provided below.

State	Number of schools initially	Number of schools merged
Madhya Pradesh	~120,000	~36,000 schools merged in to 16,000 campuses
Rajasthan	~83,000	~20,000
Odisha	~60,000	~1,100 schools with <10 enrollments were closed in 2019 1,800 same campus schools by March 2019
Jharkhand	~41,000	~1,700 zero enrollment schools merged in phase I in 2017 ~4,300 schools (<60 enrollments) merged in phase 2 in 2018

Exhibit 4.4.1: Impact of school mergers across States

Action charter

Set criteria	Define criteria for integration (basis distance and enrollment)
Identify schools	Obtain relevant data to identify subscale schools to merge basis set criteria
Finalise list of schools	Prepare and propose list of schools to be integrated Obtain necessary approvals and finalize list of schools post field verification
Integrate schools	Consolidate schools through physical or administrative integration or upgrade to include more classes
Establish support structures	Conduct community consultations, improve teacher availability and infrastructure, provide need-based transport vouchers, etc. Established grievance redressal and course-correction mechanisms

Challenges and mitigation

Challenges	Mitigation Strategies
Community backlash due to • Perception of school closure • Students inconvenienced if they must travel longer distances • Stricter supervision of teachers under school heads as opposed to remote and infrequent interaction with block officers • Political pressure from local representatives and court cases to resist change.	• Engage, educate and explain the benefits to all key stakeholders. • Form district level committees led by DCs; leverage cross-district teams if needed to ensure rigour • Get DEOs to visit school heads and principals to convey and convince them of the merits of integration • Get Principal Secretary to engage with political representatives and explain the change with its benefits
Lack of school information and data pertaining to infrastructure, enrollment etc.	Leverage UDISE data and manually verify details

Four case studies are presented in the following sections, each, with slightly nuanced approaches. Jharkhand and Odisha focused on horizontal mergers (i.e. same level schools). While Jharkhand used a more rigorous field-verification approach; Odisha used a top-down policy driven process. Madhya Pradesh and Rajasthan demonstrate vertical integration (across levels) with Madhya Pradesh focusing on same-campus mergers.

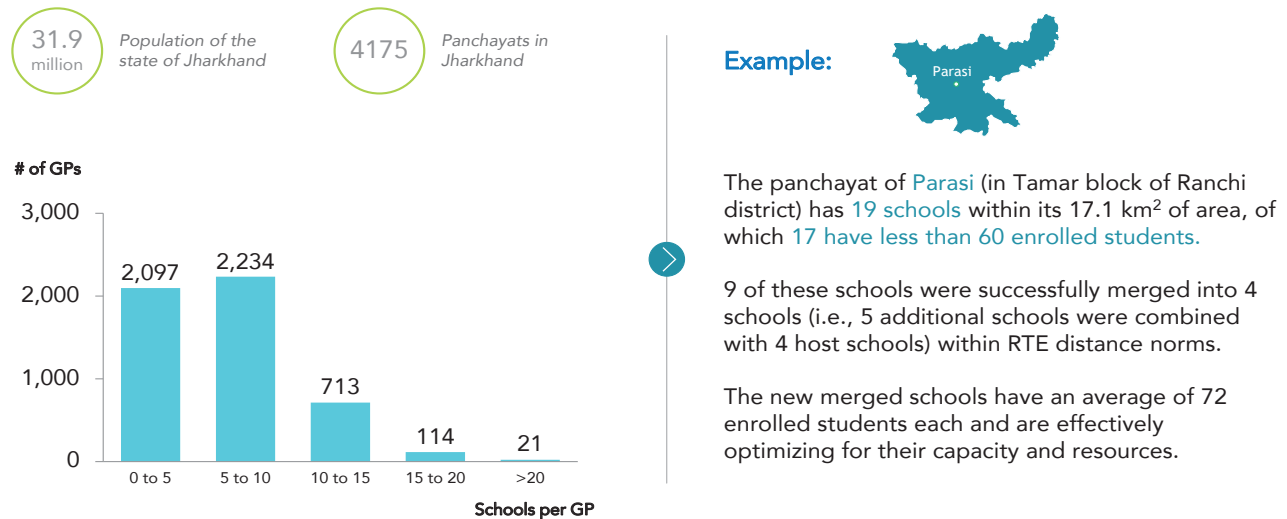


Supporting case study (Jharkhand)

Background

Before any consolidation efforts, 45% of schools had <60 students enrolled and 65% of schools had just 1 or 2 teachers. The graphic below from Jharkhand shows that nearly 60% of the Gram Panchayats (GP) in Jharkhand have more than 5 schools. A typical Gram Panchayat has a population of 7,000-8,000 people and hence ~1,500-2,000 students. If even 20% of these students go to private schools, one does not need more than 5 schools to accommodate the students. Yet, in any GP one will find 5-7 primary schools (if not more) and a host of middle and secondary schools. It was, therefore, an imperative for Jharkhand to adopt a structured school integration process.

Several panchayats in Jharkhand had excess schools



1. 24.6% of population is in the 5-14 age group (Census 2001) i.e., 98.6% of school-going population is enrolled in schools 2. Dept. of Education 3. Kendriya Vidyalayas (Central schools)
 Note: The remaining students (229 per panchayat) are primarily enrolled in unrecognized schools.
 Source: Jharkhand DISE panchayat data (2017-18), Census 2001, and BCG Analysis.

Exhibit 4.4.2: Area of focus for consolidation

Implementation

The entire integration exercise in Jharkhand may be summarised in the following steps.

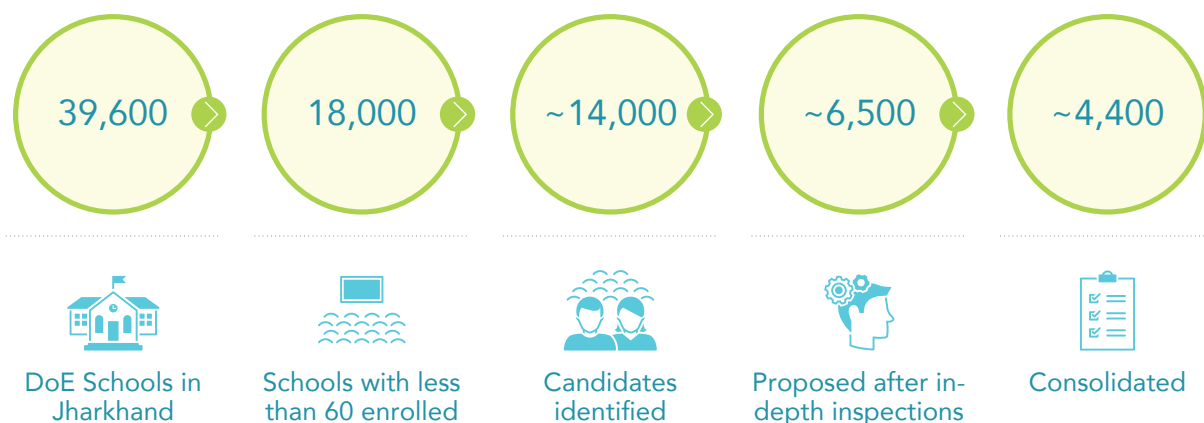
Step 1: GIS based geo-analytics to identify a list of consolidation candidates - Most States now have GIS locations of all their schools. A centralized process based on enrollment and distance analytics helped identify 13,000 candidates for school reorganization. Schools identified for re-organisation were within RTE norms:

- Primary schools with <60 students and within 1 km of host school
- Upper primary schools with <60 students and within 2 km of host school
- Same-campus schools within 100m of each other

Step 2: Field verifications of identified candidates - A database generated list needs field verification. Parameters including real enrollment, actual distance, terrain in-between schools, host school capacity, socio-economic & demographic constraints – e.g., language, etc. needed to be verified. To ensure rigour and honesty, a cross-district action team undertook a second level of verification over and above the local team (BRP/dCRPs).

Step 3: Obtaining necessary approvals for mergers - The verified list of schools was processed for approvals through 2 levels of formal committees at the block and district level which consist of teachers, elected representatives, as well as officials from departments.

School reorganization effort in Jharkhand



Majority of schools were physical mergers & not same-campus mergers

Exhibit 4.4.3: School consolidation in Jharkhand

Step 4: Grievance redressal mechanisms - A robust time-bound grievance redressal process where all stakeholders could register grievances was set up. Every grievance is tracked, re-investigated and resolved at district level. This helped maintain transparency and take corrective action in case of exceptions.

Step 5: Post-mergers tracking - After schools were formally approved for mergers and shifting began, the process of shifting was monitored and tracked very closely. This involved real-time tracking & corrective action on 2 things namely:

- Administrative processes like transfer of money & closure of bank accounts, SMC re-organization, and re-use of vacated buildings.
- Status of students shifting from merged to host schools was tracked on a school-by-school basis. This was followed by targeted community engagement and interventions in schools with lowest rates of student shifting (usually because of inadequate awareness or poor verification). 180 'red-flag' cases were identified and personal visits by State officials were conducted to red-flag cases to engage with the community and resolve local issues or reverse the order if necessary. At the end of the effort, 98% of students shifted to nearby schools. The remaining 2% may be long term absentees, fake enrollments, etc.

Once mergers were executed, the exercise resulted in a surplus of ~4,500 teacher posts and thereby improving the PTR.

Roles and responsibilities

Stakeholders Roles and responsibilities	Roles and responsibilities
Block Resource Person (BRP)/ Cluster Resource Person (CRP)	Field verification of key parameters including real enrollment, actual distance, terrain in-between schools, host school capacity, socio-economic & demographic constraints – e.g., language, etc.
Assistant District Program Officer (ADPO)	Cross district action teams to ensure second level of verification of data in an unbiased fashion above BRP/ CRPs.
Block Education Extension Officer (BEEO)/ District Education Officer (DEO)	Resolution of queries and grievance redressal of all stakeholders was maintained transparently in a time bound manner.
District Commissioner (DC)	Overview of all activities across the district ensuring a fair process, acting as the District Committee Chair.
Deputy Director	Overall monitoring of school mergers, ensuring requisite legal requirements & approval.
SATH Team	Strategy to identify schools, tracking and monitoring updates & regular training and capacity building activities.

Outcomes

A survey was conducted with the students, parents and teachers who had shifted to new host schools and 96% of the stakeholders reported that they were happy and satisfied with their new school. Students were engaged in discussions during field visits by all department officials (SPD, Director Primary, DSEs/ DEOs, ADPOs etc.). Students showed excitement and enthusiasm towards their new host schools because of the multiple facilities available in the school such as playground, library, better toilets, classroom infrastructure, etc. School consolidation has provided multiple benefits to the students in form of

- Better teaching facilities with dedicated teachers for each grade
- Improved disciplinary and academic environment in schools
- Access to schools with better infrastructure
- Larger peer group which has resulted in better attendance
- Access to effectively administered schools with more resources
- Improved school monitoring and scheme supervision etc.
- Dedicated administrative support and increased teaching time in classrooms

Moreover, an external impact assessment exercise was conducted to understand the true successes and improvements needed in the school consolidation exercise. IIM Ranchi was onboarded through an RFP for this purpose. A study across ~200 schools was conducted and demonstrated improvements in academic enrollments, significantly better infrastructure, time spent on governance, and higher satisfaction across stakeholders. This includes 7 lakh children benefiting from better teacher availability, reduction of 4,500 teacher posts and projected savings of ~INR 400 Crore through reduced teacher and infrastructure requirements. Detailed findings summarized below:

Deep-dive: IIMR Impact Assessment of School Reorganization

Intervention	Key Metric	Assessment	Remarks
Improved Academic Environment	PTR		Marginal improvements for Host Schools
	MGML		Significant reduction for Target Schools
	Instructional Time Spent		~2 hrs/week increase for Teachers and HMs
	Administrative Time Spent		~2 hrs/week reduction for Teachers of Target Schools
	Independent teacher per subject		20-50% improvement compared to Target and Subscale schools
Access to Enhanced Infrastructure	Avail. of Classrooms		Almost 2x improvement for Target School and Host Schools
	Avail. of Water sources		Almost 1.5-2x improvement for Target and Host Schools
	Avail. of Toilet		Marginal improvement for Boys and Girls Toilets
	Avail. of Electricity		Reduced availability compared to Subscale Schools
Governance Mechanism	Travel Time to School		30-40% increase in travel time in certain districts
	Time in Data Collection		
	Time in Transferring Monetary and Physical Entitlements		Marginal improvements in time spent on governance
	Time in rollout of govt. schemes		
	Number of monitored schools		More time available per school due to reduced schools
Overall Perception	Classroom Interaction		>85% satisfaction among parents, SMC, HMs, Students (on avg.)
	Quality of Teaching		<50% satisfaction across all stakeholders
	Infrastructure Access		>90% satisfaction among students (more friends, bigger playground)
	Preference to attend School		
	Overall satisfaction		>75% satisfaction for students, parents, SMCs (max for students) ~60% satisfaction for HMs, teachers

Exhibit 4.4.4: External impact assessment of consolidation in Jharkhand



Supporting case study (Odisha)

Background

As of 2018-19, ~55% of Government schools in Odisha had enrollment of less than 60, and ~29% schools had enrollment less than 30. Government school sizes were almost a third of the size of private schools in terms of students and teachers.

Government schools are ~1/3rd the size of private schools

Average Govt. School

~3
teachers

~125
students

Average Private School

~15
teachers

~680
students

Small-scale schools have a structural disadvantage in delivering quality education

- 1 Limited teacher availability for each subject-grade combination
- 2 Infrastructure bottlenecks – lack of playgrounds, labs etc.
- 3 Limited public accountability due to small parent-base
- 4 Lesser support and monitoring per school due to wider footprint

NEP 2020 also emphasizes on issues plaguing sub-scale schools, recommends consolidation

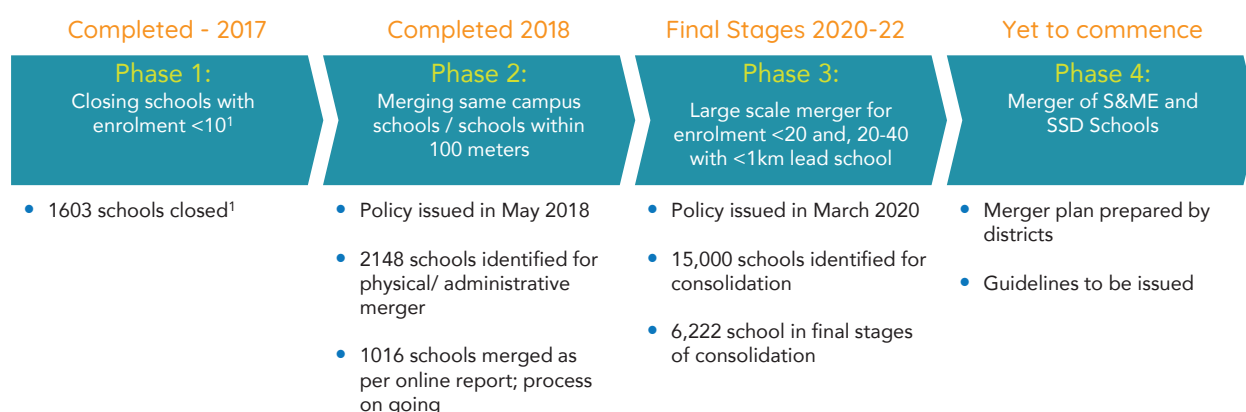
Source: DISE 16-17 Data

Exhibit 4.4.5: Structural disadvantages of sub-scale government schools

Implementation

School consolidation has been carried out in a phased approach in Odisha since 2017.

School consolidation exercise divided into 4 phases



1. Completed before launch of SATH-E program

Exhibit 4.4.6 – Phases of school consolidation, Odisha

In March 2020, the Government of Odisha approved a bold, large-scale merger policy and set an ambitious vision for the State, which laid out distance and enrollment norms for consolidation for eight different school scenarios. For 2020-21, the State opted to pursue consolidation of scenario 1 and 3 (scenario 2 was completed in 2018) under which most of such schools (approximately 15,000) were accounted for.

School Category	Enrollment criteria		Distance of nearby Elementary/ Secondary School
	Non-Scheduled Area	Scheduled Area	
Any Primary/UP/Secondary School*	20 or less	20 or less	Any distance
Any Primary/UP/Secondary School	Any Enrollment	Any Enrollment	100 meters
Primary School*	Less than 40	Less than 25	1 km
Upper Primary School (VI-VIII)	Less than 50	Less than 40	2 km
Upper Primary School (I-VIII)	Less than 60	Less than 45	1 km
Secondary School (VI-X)	Less than 50	Less than 45	2 km
Secondary School (I-X)	Less than 80	Less than 45	2 km
Secondary School (IX-X)	Less than 60	Less than 40	3 km

Exhibit 4.4.7: Distance and Enrollment Norms for Consolidation

In order to make sure that the implementation runs smoothly at the district, block and school level, it was important to create clear and exhaustive guidelines for the implementation modalities. These guidelines were then disseminated and training workshops for each step were carried out with the district and block level officers. Tracking of these modalities was also important to make sure implementation happened at scale. The broad steps followed during the integration are highlighted below.

- **Satellite School identification** - Analysis on GIS data of all the sub-scale schools was done to identify prospective satellite schools' distance from lead schools. A list of 15,000 target satellite schools was shared with the district officers for an on-ground verification.
- **Verification and lead school mapping** - In order to ensure equity in access for all students, district and block officers performed in-person verification to ensure viability of mergers for each satellite school. Factors such as geographical relief, demography, barriers such as railway lines and national highways were kept in mind while approving schools for consolidation. List of approved schools was then submitted to the State Level School Consolidation Committee (SLSCC) for final approval. SLSCC analyzed the submitted data and approved consolidations in line with the stipulated guidelines.
- **Grievance management** - To make consolidation a success, a grievance redressal mechanism was put in place at the Block, District and State level. Aggrieved parties were able to submit a complaint for a specific school, in both - offline and online forms. These complaints were then investigated by the District Grievance Cell which constituted a fact finding report to the District Collector. Upon examining these submitted reports, the District Collector recommended the changes, if any, to the State which further examined all recommendations and approved/

rejected the grievance and recommended order of continuing with or stopping the school consolidation.

- **Field activities** - High level of field engagement is required to get Headmasters to carry out post-consolidation activities. These activities include transfer of teachers, transfer of property, handing over all the immovable property to Panchayati Raj Department, student tracking, formation of new SMCs and disbursement of allowances to students. Detailed guidelines for all such activities were created and disseminated to the field and workshops were organized to align the stakeholders. All of these activities were tracked on a school-by-school basis through the State MIS. District-wise progress report on all activities was discussed in the State PMU each month and then in the respective district review meetings.

Outcomes

- Nearly 9,000+ schools consolidated: 1,110 sub-scale schools (enrollment <10) and 1,824 same campus schools were consolidated in phase I and II. Consolidation of another ~6,600 sub-scale schools is underway. This is in alignment with Odisha's long-term vision to have 40,000 schools and no schools with less than 2 teachers.
- Well-defined processes and guidelines: To mobilize all the 30 Districts and 314 Blocks to carry out various activities in the consolidation process, it was critical to create guidelines that were exhaustive to cover various scenarios, but also simple to carry out in the field. All the steps to be taken by each stakeholder from State level teams to individual headmasters were clearly defined in the guideline document and was then explained in the subsequent webinars. The clarity of process lent by these actions was imperative to make such a large-scale transformation possible.

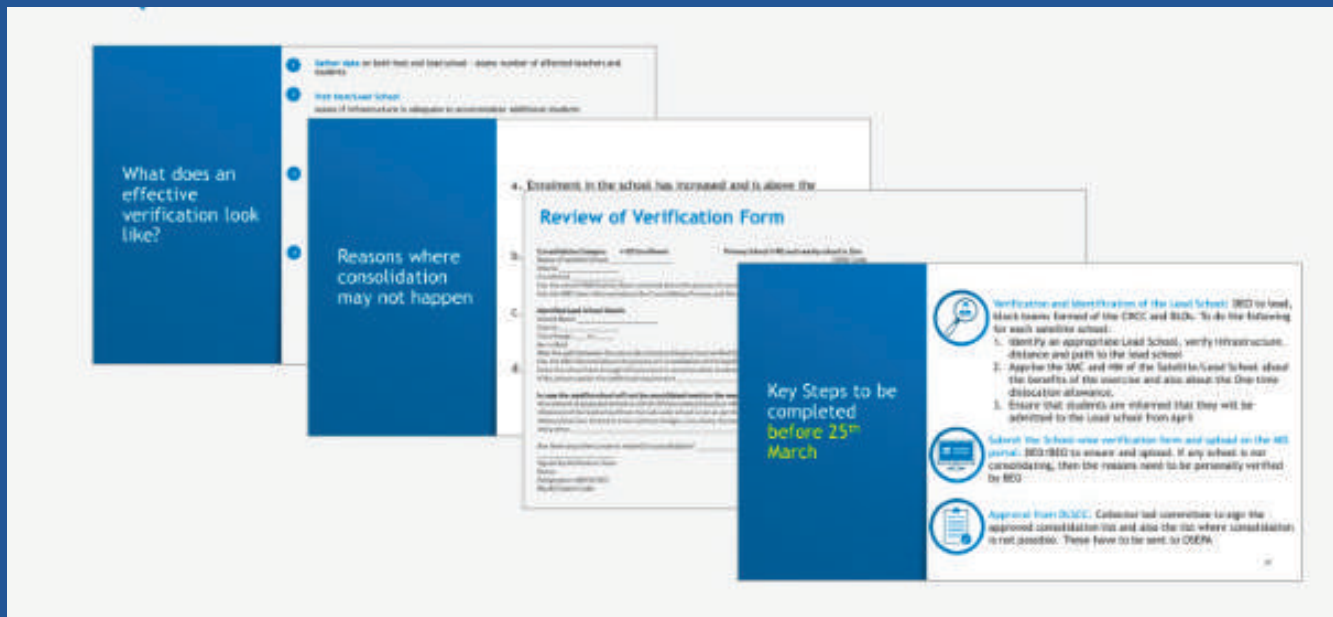


Exhibit 4.4.8: Sample verification process for schools

Not only were systematic verification processes put in place, but a multi-level process for pre-emptive identification of red flag cases and their re-verification was constituted. At the State level, potential red-flag cases were identified:

- GIS analysis was run using the school coordinates, mapping out aerial distances to lead schools. Any satellite schools with the distance higher than policy mandated were marked as red-flags for re-verification for the on-ground teams.
- A demographic analysis was done to identify areas with high SC/ ST populations. Select cases where more than 3-4 satellite schools were being merged to a single lead school were identified as red flags as they could potentially have a shortage in infrastructure.
- Satellite schools with different medium of instruction were identified as red flags and removed from the consolidation list, e.g. some Urdu satellite schools were identified to not be merged with Odia medium schools.

VFS call centers were utilized to call headmasters and block level officers to verify check for these red flags. A comprehensive list of such red flags was shared with districts to re-verify the specific challenge marked out. This list was further used to cross check merger cases before final approval during the State-level School Consolidation Committee meetings.

- **Early and effective grievance management:** It is imperative to make sure all and any aggrieved parties have access to a legitimate grievance redressal channel. For this, a grievance structure was notified and through regular reviews at the District and State levels, grievances were escalated, discussed and cleared before proceeding with consolidation.

- **Monitoring and tracking:** Field activities carried out in ~7,000 schools were tracked on a weekly cadence to make sure the schools are consolidated before reopening of schools post COVID. Digital tracking through the State MIS and the weekly cadence governance through DRMs and Nodal offices brought discipline and rigor at the District and Block level teams.

Districts have shown varying performance on post consolidation activities; to be completed by 15th April

Name of the district	School Count total	Schools reported (%age schools)	School Account closed	Teacher reporting	Transfer of Property	Building vacated and handed over
MAYURBHANJ	434	42%	13%	40%	17%	14%
NAYAGARH	142	51%	25%	51%	30%	23%
SONEPUR	137	61%	36%	61%	36%	20%
MALKANGIRI	118	62%	25%	62%	31%	26%
BHADRAK	207	66%	29%	66%	44%	39%
NUAPADA	142	69%	55%	66%	57%	58%
GANJAM	433	68%	41%	67%	55%	45%
CUTTACK	440	70%	28%	68%	41%	24%
JAGATSINGHPUR	206	74%	55%	72%	49%	42%
RAYGADA	172	70%	39%	69%	41%	35%
KALAHANDI	242	71%	26%	67%	44%	38%
BALASORE	152	74%	28%	73%	31%	33%
BOUDH	135	76%	23%	76%	62%	51%
ANGUL	170	78%	45%	75%	52%	41%
JHARSUGUDA	104	78%	47%	77%	53%	52%
BOLANGIR	185	82%	41%	80%	54%	43%
DHENKANAL	218	96%	72%	94%	70%	70%
BARGARH	259	84%	48%	84%	61%	49%
SUNDARGARH	236	91%	60%	90%	68%	62%
JAJPUR	312	91%	36%	90%	47%	29%
KHORDHA	167	98%	51%	95%	47%	51%
SAMBALPUR	194	93%	47%	89%	65%	51%
KENDRAPADA	217	98%	34%	96%	48%	38%
KEONJHAR	191	97%	29%	95%	30%	28%
KANDHAMAL	298	99%	55%	94%	56%	54%
GAJPATI	325	99%	35%	99%	39%	34%
DEOGARH	79	100%	47%	100%	82%	84%
KORAPUT	356	126%	71%	119%	79%	74%
NAWARANGPUR	86	148%	43%	147%	90%	26%

• Poor performing districts: Mayurbhanj, Nayagarh, Sonapur, Malkangiri

• Good performing districts: Dhenkanal, Deogarh, Sundergarh, Koraput, Kandhamal

Exhibit 4.4.9 – Tracking of post-consolidation activities in Odisha

Appendix

- **School Consolidation**³⁴ - Notification by Education Department of Odisha detailing the principles and process of school consolidation and rationalization
- **List of schools**³⁵ - Schools across various categories proposed for consolidation in Odisha

³⁴ <https://drive.google.com/file/d/11QsqQxy3wkAika1KvTPIGC7irNYc1aNx/view>

³⁵ http://osepa.odisha.gov.in/webadmin/upload/NOTIFICATION%20NO%2014331%20DATED%2012.10.20%20ON%20RATIONALIZATION%20AND%20CONSOLIDATION%20OF%20SCHOOLS%20UNDER%20S&ME%20DEPARTMENT_04_53_46pm9e098cb28bef63e44764d64d740405af.pdf



Supporting case study (Madhya Pradesh)

Background

In 2018, Madhya Pradesh had ~1.2 lakh public schools under the School Education Department including Primary, Middle, Senior and Higher Secondary schools. Out of ~84,000 Primary Schools (classes 1-5), ~40,000 schools had a total enrollment of less than 40 students (RTE norms indicate 40 students as the minimum number of students to open a primary school).

There were more than 20,000 single-teacher schools and no schools had all of grades 1 to 12. As students progressed through grades, they found fewer schools with senior grades and with no integrated schools, they often had to change schools thrice before reaching Class 11 (Primary to Middle to Secondary to Senior Secondary).

In this context, Madhya Pradesh planned to embark on a school consolidation journey, with an aim to improve academic quality through administrative and economic efficiencies that would be gained by creating large, vibrant schools with adequate teachers and other resources.

Initial GIS analysis suggested that out of the total 1.2 lakh schools, approximately 53,000 schools were within the same campus (translated as within 150 metres of one or more other schools), each being run as a separate school. Merging these schools represented a 'quick win opportunity' as no physical movement of students and teachers was required. So, the State decided to undertake an administrative merger of these same campus schools in the first phase of school consolidation (titled 'Ek Parisar Ek Shaala' initiative).

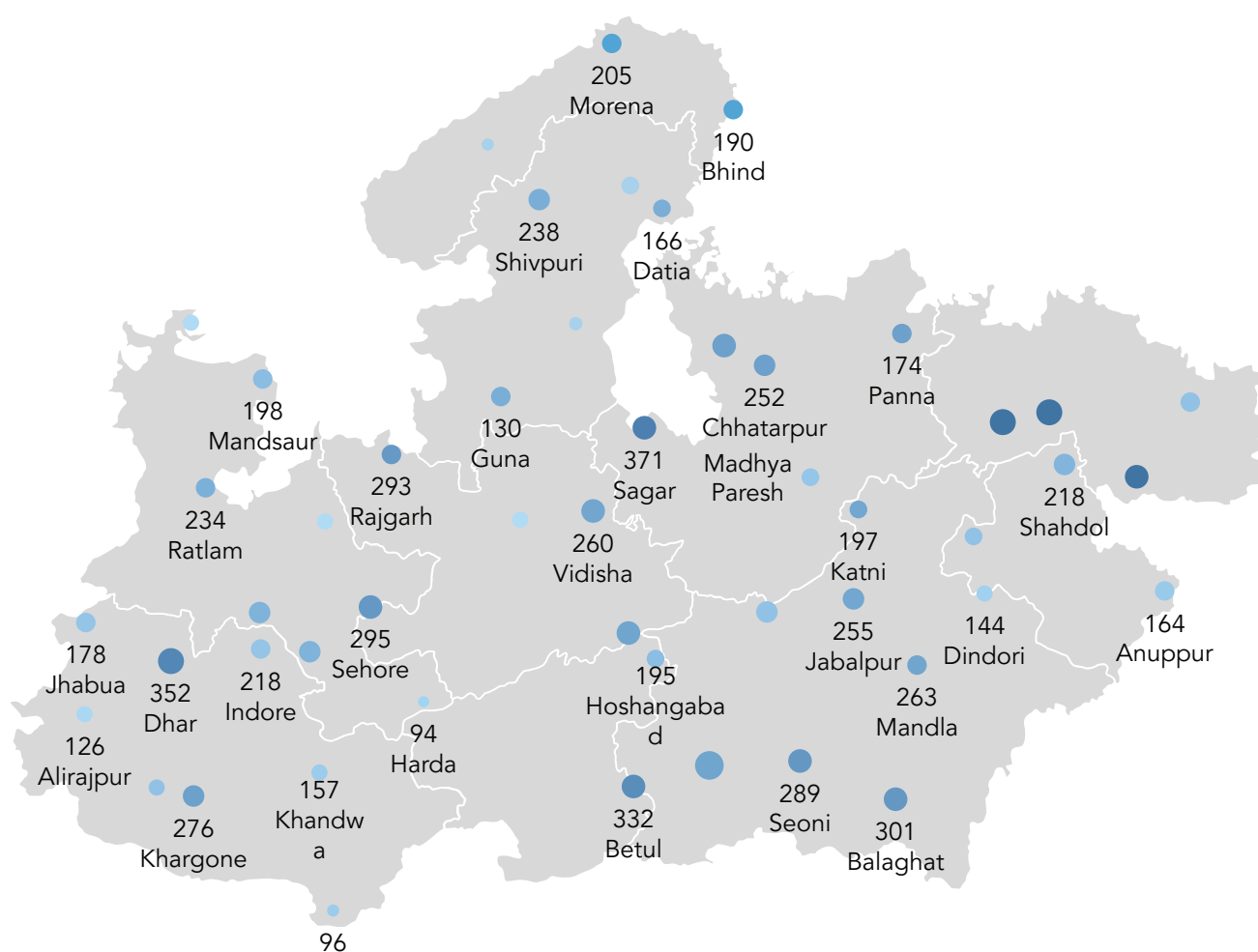
Implementation

- **Identifying schools:** GIS-based geo-analytics was carried out to identify a list of consolidation candidates for Madhya Pradesh. Basis the GIS data, the distance of each school with respect to all the other schools in the same block was calculated and all schools which were within 150 metres of each other were identified as clusters. This list was then sent for field verification.

— **Field verification of identified candidates:** A database-generated list is often far from accurate and needs field verification. Parameters including real enrollment, actual distance, terrain in-between schools, socio-economic and demographic constraints like language etc., need to be field verified. To ensure rigor and honesty, in MP, this entire list was sent out to the District Collectors for field verification. The cluster level officials verified the list and shared the verified list with the State-level officials, where the complete list was compiled. To ensure a correct verification process, the officials were oriented through VC. It is crucial at this stage to communicate the plan and the overall vision of the project with the field officers, so they have context as to why they are doing a certain exercise and its expected benefits.

The output after this step was a verified list of schools within 150 metres of each other, which could be viably merged into a single school. The final list involved merger of ~35,000 schools into ~16,000 schools. These 16,000 new schools included mergers of all kinds (1-8, 6-10, 6-12 etc.).

- **Obtaining necessary approvals for mergers:** Once a verified final list of proposed mergers was ready, cabinet approval was taken for its implementation. Post the approval, the list was processed through formal committees at the district level (comprising the District Collector, CEO-ZP, Assistant Commissioner - Tribal Department, District Education Officer, District Project Coordinator and DIET Principal), under the chairmanship of the District Education Officer (DEO). It is imperative to track this process of approvals across districts. Once approved by the committee (could vary by State), the final process of mergers was initiated.
- **Defining parameters and guidelines for integration:** Once the list was finalised and the field officials (both district and block) were oriented about the State's vision for the initiative, a detailed implementation plan for the smooth rollout of the initiative in the field was defined by the State. The plan laid out exactly what all an 'administrative merger' would comprise of and how it will be executed. Exhibit 4.4.12 lays down some of the key aspects around which detailed guidelines were drafted for integrated schools.



- 1 The role and authority of school principal (or the highest school head position) for the integrated school
 - Responsible for performance grade 1 onwards; should make school development plan for all grades etc.
- 2 The role of other HMs in such schools
 - e.g., role of middle school HM if school principal is also present, and how the two work together (division of responsibilities)
- 3 Norms for resource sharing across schools
 - Teaching staff
 - Non Teaching staff
 - Infrastructure sharing as needed (classrooms, toilets, library, labs, tech infra etc.)
- 4 Plan for potential infrastructure upgradation in these schools
- 5 Guidelines around all academic and administrative aspects (SMCs, assembly, MDM, timetables, attendance capture etc.)
- 6 Process for rigorous on-ground monitoring of implementation post official merger execution

Exhibit 4.4.11: Major aspects around which integration guidelines were drafted

Trainings

- **Development of material-** To ensure a smooth implementation of the mergers on ground, once the plan was defined, detailed and comprehensive training content was developed with examples.
- **Training plan-** Since the implementation would require action and monitoring from officials across all levels (Teachers, Principals/ HMs, Cluster, Block etc.), a training plan was created, with the State-level officials covering all districts in-person. Subsequently, a regular training schedule was established. MP effectively used the virtual classroom network which covers 90% of the blocks to reduce the number of cascade levels in trainings and directly explain the steps of implementation to school heads and teachers of the selected schools.

एकीकृत टाइम-टेबल बनाने का सही तरीका

एक रजिस्टर में कक्षा 1-5, कक्षा 6-8 एवं कक्षा 9-10 का टाइम टेबल बना लेना पर्याप्त नहीं है 

	Period1	Period2	Period3	Period4
कक्षा 9	उ. मा. शिक्षक			
कक्षा 10				उ. मा. शिक्षक
कक्षा 6		माध्यमिक शिक्षक		
कक्षा 7				
कक्षा 8				
कक्षा 1				
कक्षा 2			प्राथमिक शिक्षक	
कक्षा 3				
कक्षा 4	प्राथमिक शिक्षक			
कक्षा 5				

एकीकृत टाइम टेबल में विद्यालय प्रमुख यह सुनिश्चित करें की शिक्षक अपने वर्ग की कक्षाओं को पढ़ाने के बाद शेष पीरियड दूसरी कक्षाओं को पढ़ाएँ। सभी शिक्षकों एवं सभी कक्षाओं को एक वर्ग मानते हुए शिक्षकों को पीरियड आवंटित करना 

	Period1	Period2	Period3	Period4
कक्षा 9	उ. मा. शिक्षक			
कक्षा 10				उ. मा. शिक्षक
कक्षा 6		माध्यमिक शिक्षक		
कक्षा 7				उ. मा. शिक्षक
कक्षा 8	उ. मा. शिक्षक			माध्यमिक शिक्षक
कक्षा 1				
कक्षा 2			प्राथमिक शिक्षक	
कक्षा 3		माध्यमिक शिक्षक		
कक्षा 4	प्राथमिक शिक्षक			
कक्षा 5				माध्यमिक शिक्षक

Exhibit 4.4.12: Excerpts from training collaterals

- **Field Engagement and query/ grievance redressal mechanisms** – A robust, time-bound query and grievance redressal process was set up. All stakeholders could get clarifications or raise specific grievances that could be tracked, re-investigated and resolved at the district level. This was essential to maintain transparency and take corrective action in case of exceptions. In MP, multiple channels were used for this purpose. For example:
 - A fortnightly VC was conducted with all districts where district officials could clarify doubts and raise concerns/ grievances.
 - Face-to-face sessions were conducted through senior State officials at the divisional level with the same objectives.

- Multiple WhatsApp groups were created with all school heads and block/ district officials where merger related queries were addressed, official letters published, and success stories were shared.
- Monthly review meetings were facilitated in the field at the district level (in the presence of all the district and block officials) and at the block level (in the presence of the block and cluster level officials).
- All school heads were provided one to one support through a call centre set up at the State level.

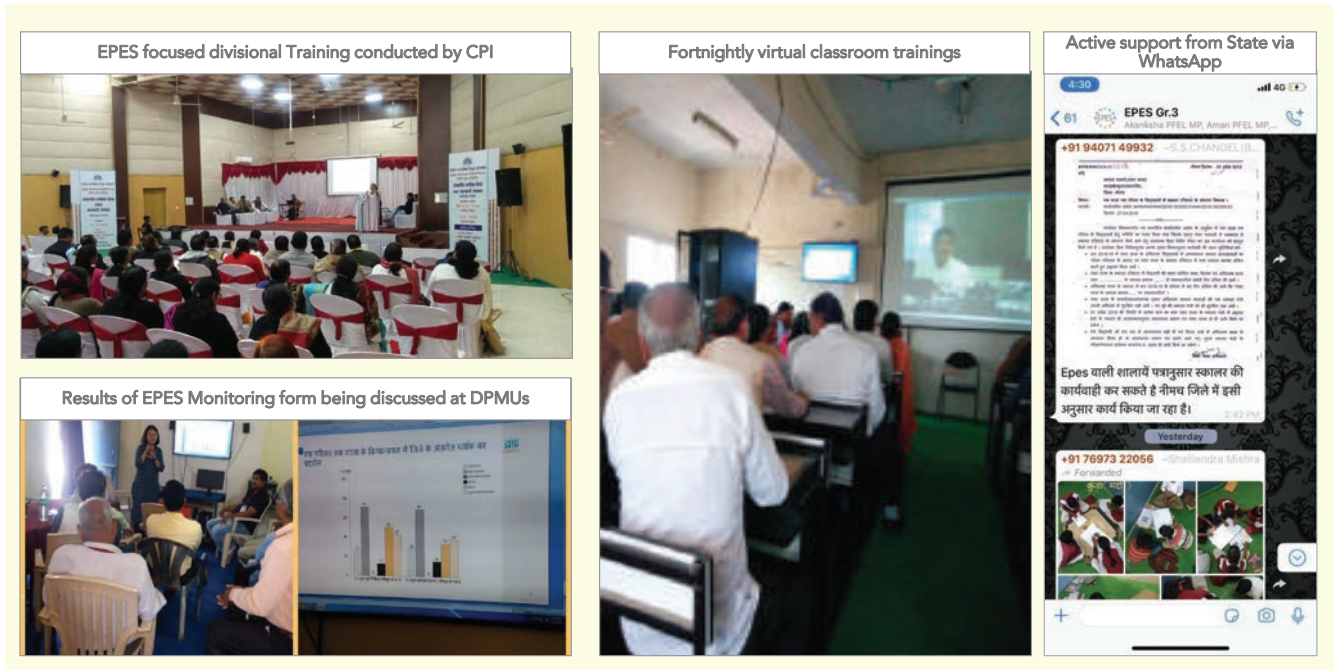


Exhibit 4.4.13: Snapshot of the different channels used for field engagement

- **Post-mergers tracking** – After being informed about the implementation of 'Ek Parisar - Ek Shala' mergers, school tracking was done through the State's school monitoring app system. Questions to judge whether the school had truly integrated were added to the monitoring form, e.g. whether:

- An integrated time-table involving sharing of teacher resources across PS, MS, HS/ HSS had been made
- A single school head had been identified and if the school head was now taking responsibility for all the schools within the campus
- The available infrastructure and resources (e.g. staff room, library, toilets etc.) were being shared effectively among the merged schools
- One common teacher attendance register had been created where teachers of all the merged sub-schools would mark their attendance
- The stock of all the different schools had been kept in a single room and maintained through a common stock register
- A new school board displaying the integrated classes in the merged school (eg. 1-8, 6-12 etc.) had been put up
- All students initially registered in all constituent schools were now registered as part of the combined school code in a common scholar register

Apart from the monitoring by the State's officials, regular field verification in sample schools by members of third-party organisations provided a check on the monitoring data and gave insights on the actual on-ground implementation.

	Metric	Field insights
51.1%	Integrated Infrastructure	• Different financers (for stock register) • Infeasible due to distance/separate floors (staff rooms, toilets etc.)
50.6%	Integrated School head	• Conflicts between HMs/ Principals/ In-charge • Confusion on the field regarding seniority • On-ground, EPES schools are not functioning as one entity yet
51.5%	Time - table/ teacher sharing	• Creation of time-table is challenge - especially for secondary schools and schools running in two shifts • Teacher from higher grades reluctant in teaching lower classes

Exhibit 4.4.14: Snapshot of an implementation tracker

Outcomes

- School merger: In MP, post verification a total of 35,113 schools were merged into 16,076 campuses, of which ~75% are elementary schools from grades 1 to 8. The following exhibit shares the details of the number of schools under different setup types post the integration.

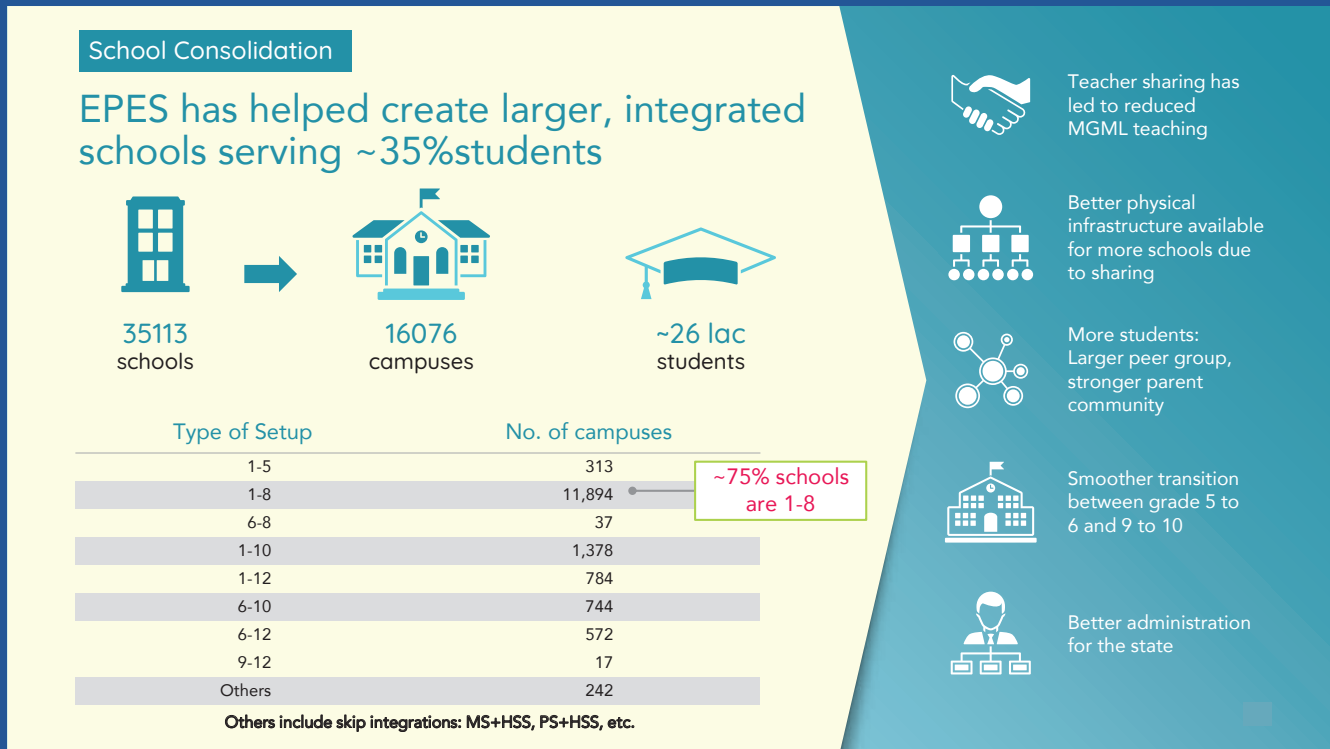


Exhibit 4.4.15: Snapshot of the post mergers impact in MP

Merging sub-scale schools yielded immediate academic and administrative benefits:

- **Improved teacher and HM availability, as well as better academic environment** – Mergers optimize teaching resources and allow for subject-wise, grade-wise teaching that is likely to result in improved learning compared to MGML (multi grade multi level) teaching scenarios. **In MP, teachers in only 21% of the merged EPES schools are, on an average, teaching more than 2 grades, as compared to 35% of the total schools in the State.** Moreover, post the mergers, 54.8% of the merged schools came under the supervision of a HM/ Principal as compared to only 20.4% schools earlier, leading to more efficient functioning.
- **Better resourced schools** – Larger schools are more likely to have better infrastructure due to resource sharing such as an integrated staff room, school-head room and storage room. This leads to more rooms being available for academic activities. Moreover, larger schools can afford support staff like computer assistants, MDM supervisors, clerks, sweepers etc. allowing teachers to dedicate more of their time to in-classroom teaching.

- **Improved governance** – Fewer schools improve the rate of monitoring and inspections which, as per most studies, is correlated to improved school performance. Obviously, it also reduces the time spent by block and district officials on administration processes. In MP, CACs are responsible for monitoring the majority of the elementary schools. The mergers reduced the number of schools to be monitored on average by 4 schools per CAC per month.
- **Improved attendance and reduced drop-outs** – Anecdotal data suggests that attendance tends to rise in merged schools because of greater academic rigor and discipline. Integrated schools also eliminate the need for the physical transition of students between Primary/ Upper Primary/ Secondary schools and can consequently help in reduction of dropout rates. Some of these benefits are yet to be seen in MP.

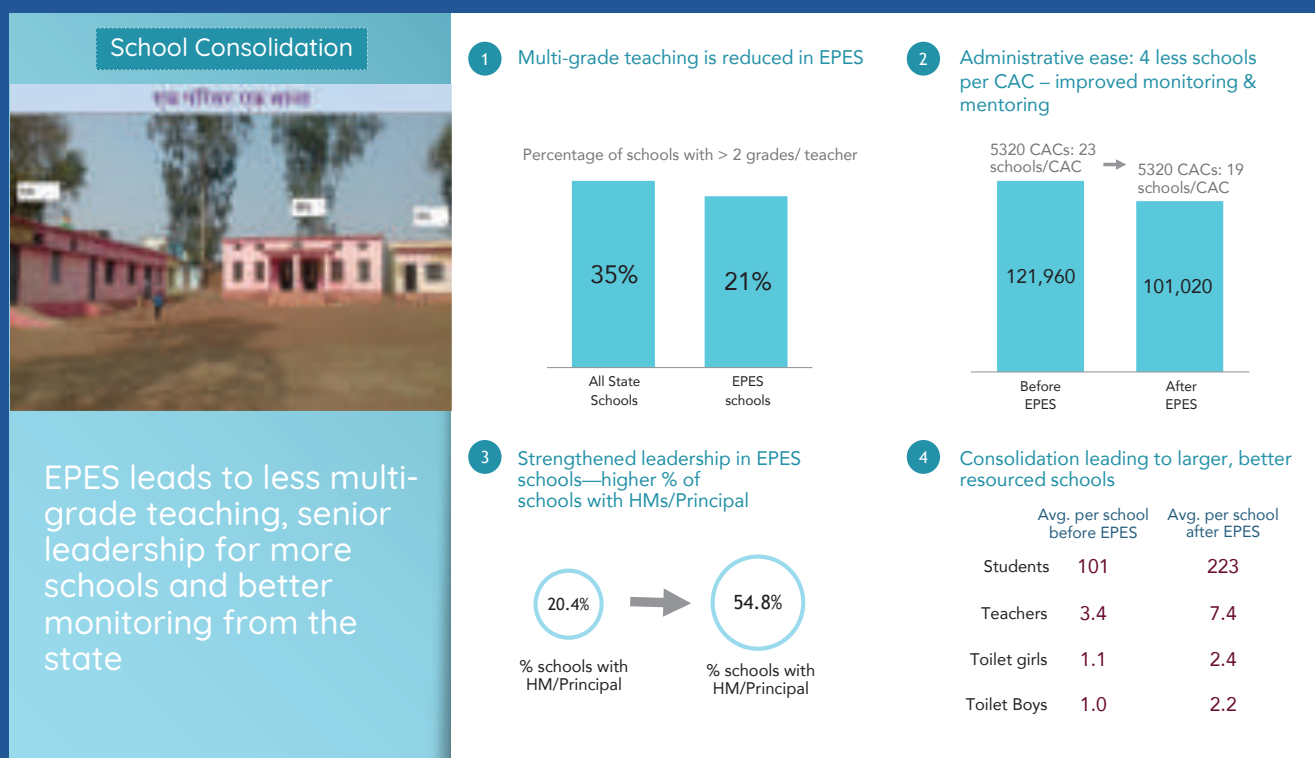


Exhibit 4.4.16: Snapshot of the post mergers benefits for MP



Supporting case study (Rajasthan)

Background

Rajasthan's scattered public-school network was difficult to sustain and inefficient due to poor enrollment per school and skewed teacher distribution. Resources such as classrooms, computers, playgrounds and sanitation were inadequate in these schools. There were 17,000 single-teacher schools and no schools which had all classes from 1 to 12. Many schools in the State were subscale, i.e. 35% schools had less than 30 students per grade and 11% had less than 15 students. There were more elementary schools per gram panchayat than required based on the distance norm prescribed under RTE. However, as students progressed through classes, they found fewer schools with senior grades and had to change schools at least thrice before reaching Class 12. Less than 40% of gram panchayats in the State had senior secondary schools. This led to poor student transition rates and high dropout rates in senior grades. To improve the quality of education and increase administrative efficiency, in 2014, the State decided to integrate unviable schools to create an integrated schooling system. The objective was to strike a balance between access and quality by pooling in resources and ensuring the availability of adequate teachers. The State also wanted to create at least one integrated school in each gram panchayat that had Classes 1 to 12 under the same roof.

Implementation

- **Identifying schools:** The school consolidation effort was led by a dedicated 20-member team at the State level. District level teams consisting of DEOs (District Education Officers) and DEEOs (District Elementary Education Officers) were established. Additionally, teams of Block Elementary Education Officers (BEEOs) were created at the block level and nine teams with Deputy Directors at the regional level. Since the school integration exercise was initiated in 2014, prior to the creation of the State MIS Shaala Darpan³⁶, existing UDISE data at the gram panchayat level was leveraged to scope the integration exercise. UDISE data contained a list of schools and their revenue village, gram panchayat, distance from each primary school to the nearest government or government-aided upper primary school and from each upper primary school to secondary school. The gram panchayat level team verified the UDISE data pertaining to the distance between schools and highlighted access problems due to highways or water bodies if any.
- **Criteria:** Based on RTE norms, the State set the following criteria for school integration:
 - **Distance:** Sub-scale primary and upper primary schools were integrated with secondary and higher secondary schools within the vicinity as per RTE norms, or where they operated as separate schools but within the same premises.
 - **Enrollment:** Schools with less than 30 children were integrated with a school situated within one kilometre and having higher enrollments.

Based on distance and enrollment data and the State criteria, BEEOs and DEEOs proposed schools to be merged to Director Elementary and Secondary Education respectively. The government finalised and approved the list of schools to be integrated.

- **Integration strategy:**
 - **Consolidation:** Multiple Class I-V and VI-X schools existed in proximity. Such schools were consolidated into one. This was done in one of two ways:
 - **Physical:** Where possible, schools with inferior infrastructure were physically consolidated and merged with schools possessing better infrastructure.
 - **Administrative:** Where physical consolidation was not possible, schools were consolidated to have common administration and shared infrastructure. For instance, the primary school may be run in one building and the secondary in the other. Teachers were also redistributed across classes.

Firstly, all schools in the same revenue village were consolidated. Schools with less than 15 enrollments were also consolidated. Next, sub-optimally functioning all-girls and all-boys schools running in the same neighbourhood were consolidated, physically where possible, else administratively, into co-ed schools. 2,866 primary or upper primary schools were consolidated with 2,997 primary or upper primary schools ensuring access as per RTE norms. Where primary and upper primary schools could not be physically consolidated, they were administratively consolidated with secondary and senior secondary schools.

³⁶ For more information on the State MIS, please refer to Administrative efficiencies through tech and data systems

- **Upgradation:** Primary, upper primary and secondary schools were upgraded to include more classes and create more secondary and senior secondary schools. These schools received additional infrastructure and at least one school with all Classes 1-12 in every gram panchayat was developed as an Adarsh or model school.

15,000 primary and 2019 upper primary schools were integrated with 8,000 secondary and 4,000 senior secondary schools leading to the creation of 3,953 secondary and 9,315 senior secondary schools. Integrated secondary or senior secondary schools would necessarily have all Classes from 1 to 12 or 11 - 12. For instance, if a school with Classes 9 to 12 was integrated with a school with Classes 1 to 5, it would have to create new Classes 6 to 8. To establish at least one school with all classes till grade 12 in all gram panchayats, 5,000 secondary schools were upgraded to form senior secondary schools. In some areas, subscale schools were retained to ensure access as per RTE norms. As far as possible, secondary and senior secondary schools were integrated in one phase. However, if the required student to classroom ratio was not met, integration was carried out in two phases.

Anganwadi's were integrated with schools to strengthen pre-primary education. 13,000 Anganwadi's were integrated with class 1 to 10 and 1 to 12 schools, 13,500 Anganwadi's with 1 to 8 schools and 30,000 Anganwadis with 1 to 5 schools. Integrating pre-primary classes helped improve preparedness for further school education. Anganwadis benefited from using existing school infrastructure.

- **Governance structure:** The integration of schools led to changes in the governance structure of the State's education system. The elementary and secondary education wings were integrated under the control of the Secondary Education Department and a single officer, a Chief Block Education Officer (CBEO). Previously, teachers of Classes 1 to 5 reported to the block officer and 6 to 10 principals. The separate reporting structures made effective accountability harder to enforce. This problem was further compounded for primary and upper primary schools which reported to BEOs and BEEOs, whose administrative and geographic separation from schools resulted in weaker supervision. After integration, all teachers reported to the principal of the integrated school with Classes 1 to 12, who was appointed ex-officio Panchayat Elementary Education Officer (PEEO) of all primary and upper primary schools. The PEEO is the academic and administrative in-charge for effective supervision of integrated schools.
- **Teacher availability:** The State had around 50% teacher and principal vacancies and poor distribution of staff by region, subject, cadre etc. The Department of Education defined staffing norms based on which existing teaching staff was rationalized across schools. The backlog of promotions was cleared, and additionally, new teachers were recruited. All schools up to Class XII now have a principal and primary schools have a headmaster.³⁷

³⁷ For more information on effective staff rationalisation, please refer to Teacher and Administrative Rationalisation

- **Transport vouchers:** A possible risk of consolidation is students dropping out of schools because of the new school being further away from their houses. Transport vouchers were introduced to mitigate this challenge. 4.5 lakh students received transport vouchers in 2018-19. The identification of beneficiaries and implementation of this initiative was carried out through the State MIS. Vouchers are sanctioned and funded by Samagra Shiksha Abhiyan and the State government. Funds are managed by schools at the discretion of the School Management Committee who may disburse money individually to students or collectively hire a vehicle to take students to the school and back. Vouchers are linked to each student's class attendance, thereby acting as an incentive for them to not miss school often. The voucher money is credited to the accounts of students at the start of the month. The amount credited for a month is adjusted based on the student's attendance the previous month. Annual cost of compensating a student for travel to the nearest school is Rs. 3,000 while it costs Rs. 48,000 per student to sustain a subscale Class I-V school with 15 students and 2 teachers. The eligibility criteria for receiving the transport voucher is as follows:

Classes	Enrollment criteria	Entitlement
1 to 5	Girls/ boys living > 1 km away from school	Rs. 10 per day of attendance
6 to 8	Girls/ boys living > 2 km away from school	Rs. 15 per day of attendance
9 to 12	Girls living > 5 km away from school	Cycle in class 9 or Rs.20 per day of attendance

Exhibit 4.4.17: Criteria and Entitlements for Transport Vouchers

- **Infrastructure:** Nearly 80% of schools did not have one classroom per class and hence multi-grade teaching was prevalent. Technology, electricity, water, playground and sanitation facilities were also inadequate in these schools. Since the integration exercise was initiated, Rs. 1,000 crore has been invested in school infrastructure. Multiple initiatives were launched to mobilize community contribution to schools; the key being Mukhyamantri Jan Sahabhagita Vidyalaya Vikas Yojana, a 60:40 State: community fund matching programme. The department also leveraged other schemes to improve school infrastructure such as Mahatma Gandhi National Rural Employment Guarantee Act, Border Area Development Program, Members of Parliament or Member of Legislative Area Local Area Development Scheme etc.

Roles and responsibilities

Stakeholders Roles and responsibilities	Roles and responsibilities
DEOs and DEEOs	• End-to-end ownership of school consolidation effort at the district level • Submitting proposal of schools to be merged based on distance, enrolment data and State criteria to Director, Secondary Education
BEEOs	• End-to-end ownership of school consolidation effort at the block level • Proposing schools to be merged to Director, Elementary Education based on distance and enrollment data and the State criteria
PEEO	• Verifying the UDISE data pertaining to distance between schools and highlighted access problems due to highways or water bodies, if any • Supervising effective integration of integrated schools
Samagra Shiksha Abhiyan & State government	• Approving final list of schools to be integrated • Sanctioning and funding transport vouchers for eligible students
School Management Committee	• Managing and disbursing funds for transport vouchers; they may disburse it individually to students or collectively hire a vehicle

Outcomes

Rajasthan's school merger initiative has led to an 8% growth in enrollments.

Appendix

- **Guidelines³⁸**: In July 2017, MHRD issued a set of detailed guidelines on the rationalisation of small schools across the States for better efficiency

³⁸ https://www.google.com/url?q=https://www.education.gov.in/sites/upload_files/mhrd/files/Guidelines%2520for%2520Rationalization.pdf&sa=D&source=editors&ust=1636654816471000&usg=AOvVaw0dyYpblEpyU_PvdGfnwVA7

5. Administrative Efficiencies Through Tech & Data Systems

Introduction and context

Many governance systems of different States rely on offline data collection modes across different initiatives and government programs. This creates a fragmented view for administration resulting in an ineffective governance setup. Furthermore, teachers, field officers, and district officers have to spend a substantial amount of time collecting, collating, and submitting data. This leads to reduced time available for teaching and learning. At the State level, the collected data also brings in compilation errors across different sources that reduce the reliability of the data.

MIS platforms are instrumental in resolving this by providing a unified view of the State on metrics across different initiatives. It builds a data source that can be used across different levels of administration for effective governance in the State and reduces the effort required in repeated data collection.

Expected objectives and outcomes

- Enable accurate and easily accessible data on students, teachers, schools that can be referenced as a single source of truth for a State.
- Reduce the amount of time teachers spend on non-academic activities through the use of technology and data systems for administrative tasks.
- Ensure all administrative/ HR processes are effectively using technology, which has systemic effects such as reduction in grievances, court cases etc.
- Enable data based reviews and accountability in the system.

Design of the intervention

A best in class E-MIS system should aim to deliver on three key objectives (Exhibit 5.1).

Vision: An Education MIS should enable 3 key objectives

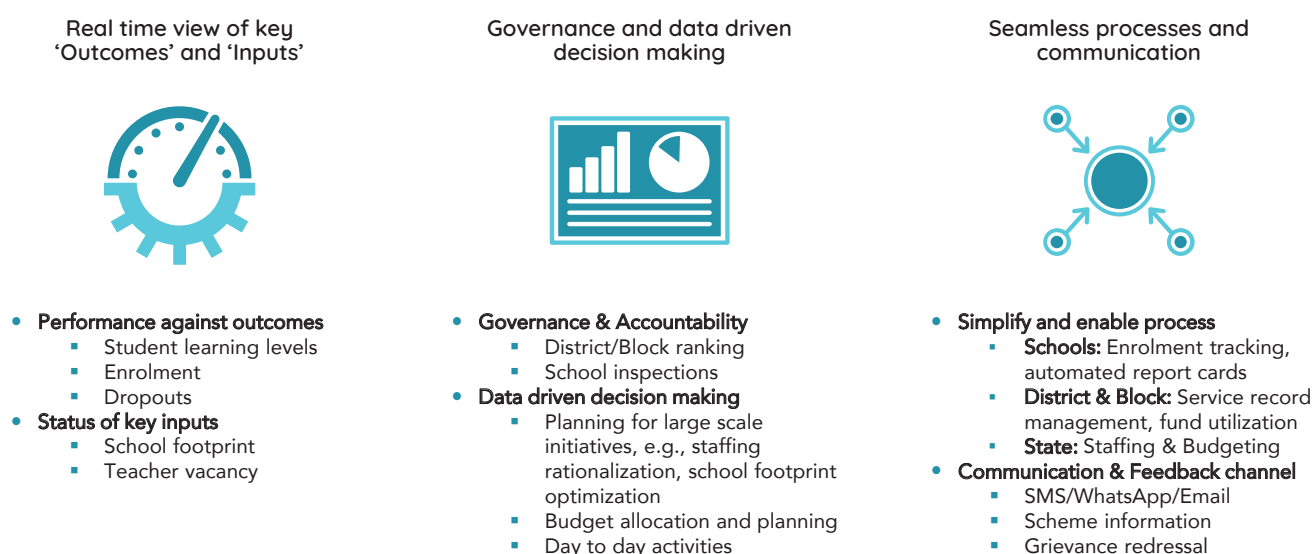


Exhibit 4.5.1: Vision and objectives of an E-MIS

The most critical use cases of an MIS include:

- **Central database:** The composition of MIS as a central warehouse of reliable data for school, staff and students is the most basic and primary use-case. E-MIS allows availability of accurate relevant real-time information. It also removes the duplicated data-collection efforts made by teachers and principals. The image below showcases the variety of use-cases that a single central database can solve, such as: student learning data, teacher profile data, school level data, data on beneficiaries of different entitlements provided by the State.



Exhibit 4.5.2: Use cases of MIS

- **Process automation:** E-MIS can completely automate time-consuming manual processes of data management across the school, district and State levels. The image below provides a listing of key processes that can be considered for automation. This can save time as well as build higher transparency in Government Departments. Some of the processes that can be automated are student progression database updating, teacher profile database updating based on transfer protocols, school database updating, etc.



Exhibit 4.5.3: Key processes that can be automated

Implementation Design of the Intervention Requires Making Critical Choices; Different Starting Points Across States

Once the State is aligned on the 'Vision for the E-MIS' and the most applicable use-cases, it is critical to make a few strategic choices as shown in exhibit 5.2, as States can have different starting points, considerations and constraints.

Implementation crossroads: Critical decisions for education MIS

MIS development Based on quality and compatibility of existing databases	Integration of existing Database/portals	OR	Greenfield development
Point of access Based on hardware footprint at schools or with field force	ICT infra at schools Computers, tablets or smartphones Real time information	OR	Devices for field force Based on school inspections frequency Atal Seva Kendra
Vendor selection Based on capability, cost, bandwidth	Government agency DoIT or NIC	OR	Private vendors
Contract Based on budget, nature of support required	Continuous support Resource and manpower	OR	Fixed support Project based

Source: BCG perspective

Exhibit 4.5.4: Critical Decisions for Education MIS

MIS development: States have a choice whether to develop a new, greenfield MIS system or integrate existing portals/ databases. Availability of existing systems followed by functionality and compatibility are key considerations while evaluating this decision. For example, in Odisha and Madhya Pradesh, the MIS connects several existing systems that were previously fragmented. On the other hand, in Jharkhand, a new greenfield MIS system had to be built and is called 'eVidya Vahini'.

Point of access, data entry: Most States have a fairly robust ICT infra at State, district and block offices. However, the penetration at the school varies. The availability of infrastructure at school level is a critical determinant that will drive what types and quality of data can be collated. Having ICT infrastructure – computers/ laptops or even smartphones/ tablets – at the school level is ideal. However, in the absence of this, the departments can explore other models where the field officers update data during school inspections or information is updated by schools via other channels e.g., Atal Seva Kendra network.

Vendor selection: The vendor's capability to deliver paves the way for success or failure of the Education MIS. The key factors to consider are capability, bandwidth and cost. The choices include working with the State's DoIT or NIC or engaging a private vendor via an RFP.

Contract type: The various choices to consider here include going for a resource and manpower support model, which can provide continuous support, but is often prone to ballooning costs and timelines. The alternative to this is a fixed cost or project-based model that offers much clearer timelines; however, it requires planning for maintenance support for the future – either via a private vendor or the government agencies.

Action charter for developing a State MIS

Define use case & scope of data	• Articulate the purpose of the MIS and use cases for each user • Define the scope, granularity, frequency of data collection at all levels
Select vendor & set-up PMU Provide Infrastructure Create modules & roll-out requests	• Work with NIC for in-house expertise & consistent support Create a 5-10 member MIS cell with end-to-end ownership
	• Provide access to computers, laptops and internet facilities at school or in nearby schools, e-Mitra Kendras, cyber cafes
	• Design and test user centric data collection forms • Roll-out requests gradually, based on agile approach
Train & collect data	• Train relevant stakeholders through videos, manuals, helplines • Data entry operators capture data on an annual or as per need basis

Monitor data completion	• Monitor status of data completion through reports on the MIS • Urge for completion in reviews and on WhatsApp/Telegram groups
Review data quality	• Check data accuracy via data discrepancy reports, school visit monitoring processes and linked administrative processes
Institutionalize usage	• Nudge adoption of the MIS by stopping offline data collection and discussing data in reviews

Challenges and mitigation

Phase	Challenges	Mitigation Strategies
Finalizing the vendor	Hiring vendors with lack of capability to build a flexible & modular architecture that allows for a robust MIS. Low cost vendors with lack of right experience and technical know how.	Robust selection criteria while floating RFP. Ensure QCBS selection criteria for RFP.
Design of the portal and data collection formats	Non flexible formats and architecture that doesn't allow for future customizations and advanced dashboarding.	Ensure terms of reference includes modular technical features including drag and drop reports, dashboard mockups and time series analysis. State to sign off on detailed mockups before going ahead with development.
Launch	Bugs and technical glitches	Pilot the launch with a small sample of schools and create an agile mechanism for resolving the errors. Ex: WhatsApp groups, Virtual Field Support.

Phase	Challenges	Mitigation Strategies
	Incorrect data entry	Regular orientation and training/ refresher Physical and virtual workshops for data entry operators. Verification and validation modules including hierarchy based verification.
	Delay in data entry	Highlight the delay in review meetings at the district and State level review meetings.
	Evolving requests for change of formats and functionalities	The design of the E-MIS should be kept flexible so that functionality and formats could be added at the nodal level.
Post Launch-Maintenance Phase	Bugs and technical glitches	Creating a continuous and agile support mechanism to resolve technical errors, should be the part of the vendor contract.
	Continuous non-technical & new requests by end users	Capacity building of MIS team at the nodal office to resolve non-technical queries and requests. Setup a coordinated roundtable with the vendor and State users, so that all requests can be centrally prioritized and communicated to the vendor.
	Low usage by users	Create a report for last used by and institutionalize a scorecard associated with the same for all officers.



Supporting case study (Jharkhand)

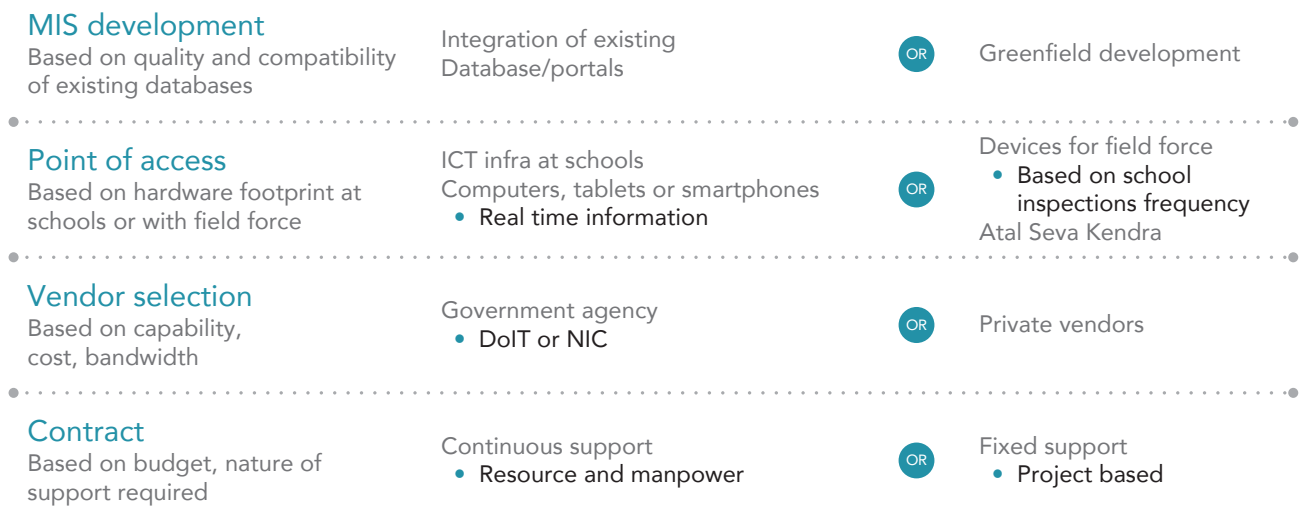
Background

Like many States in the country, Jharkhand did not have accurate data about students (personal details and assessment), teaching and administrative staff, schools, etc in a central database. If the State or district requested such data from teachers, they would spend several hours compiling reports based on largely offline, time-taking and cumbersome data collection processes. The manual data collection and entry processes were also prone to errors. This not only had an adverse impact on the time and effort teachers spent on teaching. In the absence of credible data on student performance, teachers were unable to measure or monitor progress and take effective decisions. To save time spent on administrative tasks, end offline data collection, and enable data-backed decision-making, a State-wide online portal was created in which real-time data was available. Jharkhand has been developing a comprehensive integrated education MIS platform called eVidya Vahini catering to multiple aspects of information gathering, validation and processing in the Department. eVV is facilitating data backed decision making at State, district, block and school level. eVidya Vahini has been envisioned as an integrated platform for all data requirements to accelerate decision making.

Implementation

- **Scope:** State wise MIS system across all schools to track 45 Lakh students, 1 Lakh teachers, 3000 plus State education officers and over 35,000 plus schools across Jharkhand to track assessments, progression, attendance, leaves, grievances, etc.,.
- **Approach:** The State education department onboarded a new vendor (CSM) in Oct'18³⁹. The scope for building 16 key modules for the State MIS was defined by an internal team of State MIS, along with the SATH-E team from scratch. The development was planned in three phases, and a 5-year maintenance contract thereafter (as depicted below).

Implementation crossroads: Critical decisions for education MIS



Source: BCG perspective

Exhibit 4.5.5: Phase-wise Development Plan for State MIS

Internally, the team prioritized the development of modules with high utility for the department. These included modules of Student Attendance, Teacher Attendance and Learning Level monitoring (Spot Assessments) amongst others. Modules were launched as and when developed after user-testing and field-testing. The internal MIS team was responsible to work with the vendor in designing and testing the modules along with the SATH-E team.

The MIS team also worked to regularly track and monitor bugs, field grievances, along with training of officials on usage. Regular efforts were made for field adoption of modules with follow ups to ensure sustained usage and compliance. An important component of successful implementation of MIS systems is to build a prioritized roadmap for development, which is aligned with stakeholders from all departments.

³⁹ The first version of eVV 1.0 (built by NIC) had an inefficient code and design, lack of personnel and bandwidth and hence was discontinued

- **Distribution of technology infrastructure:** The technology infrastructure which enables e-Vidya Vahini comprises tablets, smartphones, biometric devices, and the master databases. In 2018, 41,000 tablets and biometric devices were distributed to schools as well as to all Block Resource Persons (BRPs) and Cluster Resource Persons (CRPs). However, to streamline the data input, the system is now moving to a smartphone focused model in the field, and tablets are being phased out⁴⁰. All State, district, and block officials can also access eV data using the online platform.

The following section details 4 modules (out of total 16 modules developed), showcasing the MIS in action at the State level in Jharkhand:

— **Monitoring and spot testing:**

This module houses a set of questions, defined by the State, that are to be answered by officials (DEO, DSE, ADPO, BEE, BPO, BRP, or CRP) during their school visit. The questions have varying frequencies and are visible to the officer on the visit (as per designation of the officer). Each official is supposed to fill out the monitoring survey on the eV mobile application during a school visit. (S)he is also supposed to conduct a spot test by randomly selecting 3 students and testing them on a predefined set of competencies (more details on this can be found in the assessment landscape section of the report) for the subjects of English, Hindi, and Mathematics and fill the results on the eV mobile application. Data collected from the monitoring visits is used to check for the accuracy of data reported by schools and teachers (like student attendance, teacher attendance, infrastructure, textbook availability, facilities) and to drive correction actions.

Status: pre-covid, on average more than 2500 daily visits were conducted and recorded on eV mobile application.

— **Teachers:**

A unique ID is provided to all teachers at the time of registration and is used to track any changes in the profile of a teacher. A teacher profile, consisting of basic personal details, education and professional qualification etc., is mandatorily created at the time of registration. The database also stores biometric attendance records and changes in the service (transfer/ deputation etc). Digitization of teacher records can enable the State in decision making on matters like transfers, hiring, rationalization, etc. It also has the potential of linking salary disbursements with attendance and leaves.

Status: 1.2 lakh teachers of Department of Education schools have completed their registration and 88% teachers have been marking biometric attendance on eV mobile application.

— **Students:**

This module facilitates digital tracking student performance and their progression to the next academic session. A unique ID, provided to every student at the time of admission, is used for identification and tracking their academic course. The database consists of a student profile – admission year, parents' detail, benefits granted, annual attendance, and progression status. Digitization of progression records allows the school (and any official of State) to fetch the dropouts/ failed/ passed students in a given academic year at the click of a button. Daily class-wise attendance of each school is also recorded via eV mobile application.

Status: all student data for 2016-17, 2017-18 and 2019-20 is 100%, 98% and 90% present on eV. Remaining data for these years and the progression of students from 2019-20 to 2020-21 is underway.

⁴⁰ Working with tablets has posed several challenges: the lifespan of a typical tablet is three years, the contract with the vendor does not allow for tablet repairs, and in 2019 a State official encoded a political endorsement message into each tablet that automatically plays every time the tablet is switched on; this message cannot be removed and is against election regulations, and so tablets have been discontinued

- **Learning Tracking Format (LTF):** A competency-based assessment tool has been developed on eVV for student-wise tracking for the grades 1 to 8. Teachers will be entering student performance data on a monthly basis. The list of competencies to be evaluated is in sync with the Spot Testing Tool used for monitoring. This ensures that there is harmonization between the teaching module and assessment module. Status: The module is developed on eVV. Launch of the module is pending due to school closures in the wake of the pandemic. The module will be used once schools re-open.

Status: all student data for 2016-17, 2017-18 and 2019-20 is 100%, 98% and 90% present on eVV. Remaining data for these years and the progression of students from 2019-20 to 2020-21 is underway.

Roles and responsibilities

The following stakeholders were instrumental in building an effective State MIS system for Jharkhand:

Stakeholder	Roles and responsibilities
State MIS team	End to end responsibility for design, development, and management of eVV
External vendor	Development and maintenance of web portal, mobile application, backend datasets, data storage & flow across systems
State field officers (BRP/ CRP)	Regular monitoring, spot testing, daily school visits and ensuring proper usage of eVV
DEO/ DSE/ BEEO	Master data and profiles registration, adoption and proper usage while ensuring accuracy of data. conducting regular reviews at district/ block level
SATH Team	Supporting vendor onboarding, module design and testing, supporting State MIS teams on trainings, monitoring, ensuring field adoption & analytics to support decision making

The key stakeholders in the State education department (Secretary/ Director Primary/ Director Secondary/ SPD) were continuously involved in regular reviews & re-prioritization as per changing requirements in coordination with the State MIS team.

Key Success Factors:

Ensuring Successful Development, Roll-Out and Adoption of MIS

Jharkhand's success was a result of a well-tested nine-step process that details the key elements essential for the successful design, development, rollout and adoption of MIS.

Step 1: Define the purpose of the MIS and detail high-level business requirements:

A cross-initiative core team needs to be set up to lay down expected outcomes and key use-cases. Prioritization of use-cases for a phased rollout is also critical to ensure that the MIS meets the requirements of the department.

Step 2: Onboard a product team/ IT business partner to lead MIS development:

A team of relatively tech-savvy individuals who can translate business requirements into technical requirements. The team should be able to translate technical challenges into design feedback that is essential to lead MIS development. In Rajasthan, the Shaala Darpan Cell, composed of senior teachers and principals who have diplomas in computer science (or equivalent), plays the quintessential role of driving prioritization, leading MIS (module) design, monitoring development quality and incorporating feedback from the field.

Step 3: Automation/ digitization of key processes:

Digitization of processes across stakeholders; students (enrolment, TCs, etc.), teacher (staffing, performance management), school (board registrations, textbook), and administration (inspections, leave management, salary disbursement) ensures early adoption institutionalization of the platform. Linkage of fund transfers based on MIS data can also prove to be a driver of sustainability.

Step 4: Vendor selection and onboarding:

Vendor selection should typically involve experience, operating model (in-house vs. remote, T&M vs. project) and cost considerations. After vendor onboarding, clear reporting structures and meeting cadence must be laid out to ensure effective governance.

Step 5: Implementation roadmap and UI-UX design in consultation with the vendor:

The expected outcomes, in consultation with the vendor, should be phased out to create a logical development/ implementation roadmap. Additionally, the product team and development vendor should jointly design the UI-UX which is simple enough for the user, while complex enough to handle any requisite features.

Step 6: Define systemic process for MIS design and rollout:

Clear process map must be laid out for the product/ IT business partner team as well as the vendor to manage development/ amendments to any modules. A prioritization forum facilitates management of multiple requests from the department owners. In Rajasthan's case, these decisions are taken in a meeting of the Process and Certification Team, which comprises the product team, the development vendor and key initiative leaders. A well-defined testing protocol is essential before any module is rolled out.

Step 7: Monitor user-friendliness and data quality:

The MIS is only as good as the accuracy of its data. Structured steps as workshops, inspections, cross module validations, integration with UDISE, etc. must be taken to ensure high-quality data availability.

Step 8: Capacity building across levels:

For officers not used to digital processes, the transition to MIS might be difficult due to capability challenges. User capacity building is an mandatory requirement, which could take the form of training, VCs, FAQs, instructional videos, etc.

Step 9: Systematic tracking and usage monitoring:

Usage of MIS could also be a huge substitution cost for the users, leading to inertia in initial adoption. Top down push via tracking logins and report views could be helpful in driving initial familiarization with the portal.

Outcomes

Policy decisions need to stem from a careful analysis of relevant real time data, available through an easy to use MIS. A well implemented and widely adopted MIS in Jharkhand led to a more efficient and transparent system, and a culture of data led accountability. Moreover, it has allowed teachers to spend more time on teaching.

eVidyaVahini (eVV) | Data from eVV has been used extensively for decision making

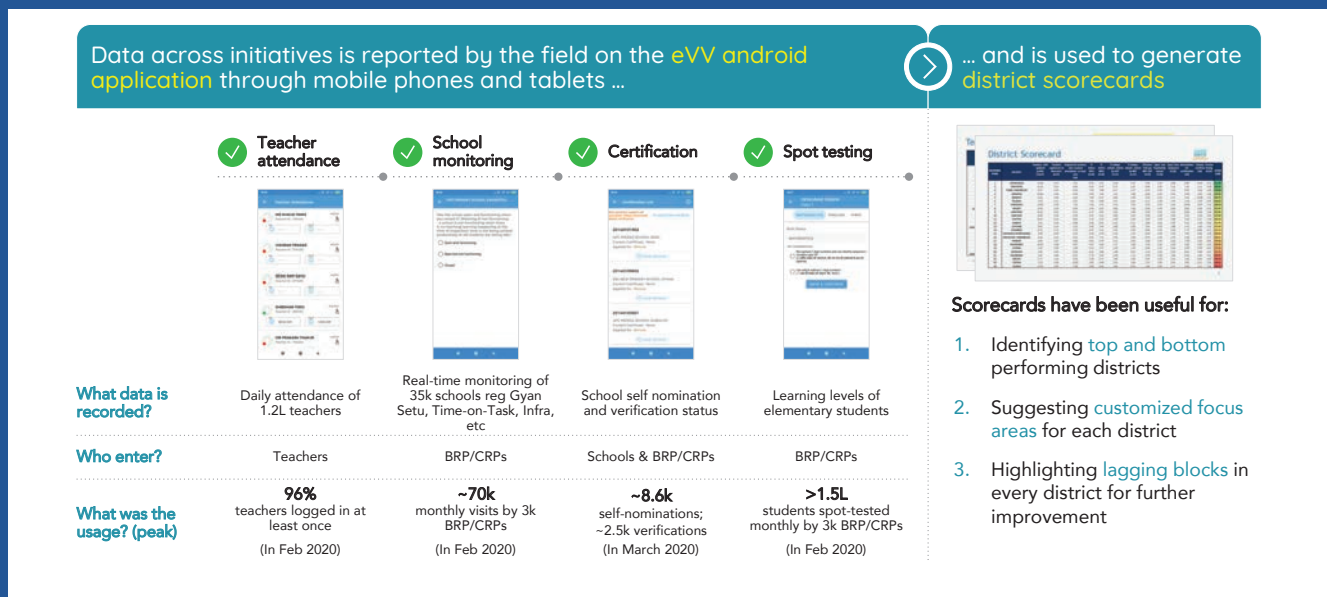


Exhibit 4.5.6: Usage of data from e Vidya Vahini

In **Jharkhand**, there is strong technology infrastructure in the field today with ~92% of the schools having a functional tablet and a biometric device which is being used daily for multiple activities. ~95% student profiles have been completed for 2018-19. This is effective data which provides correct details of students in terms of their grades, receipt of free uniform, school kits, textbooks etc. which in turn helps to correctly identify the enrolment levels in schools and dropout rates. Similarly, teacher data has been correctly updated for ~98% of government schools which facilitates correct identification of surpluses and vacancies in the system. The biggest impact of biometric registration of teachers of ~92% schools has been on their attendance. There has been a significant improvement in the accountability of teachers within the school premises. ~70% teachers (pre-covid) have marked their attendance regularly on a monthly basis on the biometric devices. Poor network areas have been provided with an option to mark attendance in an offline mode to ensure smooth operations.

An elaborate ecosystem of support has been created for the teachers in the form of a call center (with a toll-free number) and direct access to State MIS coordinator, NIC and UID development teams to facilitate attendance of teachers regularly. For effective monitoring and checks, continuous monitoring and spot testing activities are carried out by ~3000 CRP/ BRPs daily in the eVV app, helping to collect student level competencies & progression over time. Other modules for grievance redressal, MDM, leave management have also been designed and are being implemented across the State. Overall, Jharkhand has been ranked 3rd in teacher attendance in India according to ASER. eVV has been instrumental for getting live data for academic decision making, leading to district-level decentralized planning targeted at improving Gyan Setu (remediation support) implementation.

Appendix

The follow illustration provides a snapshot of the Learning Tracking Format that systematically captures learning outcomes data of each child assessed

The figure displays two screenshots of the Learning Tracking Format app interface, illustrating the process of tracking student performance.

Left Screenshot (Student Performance View): This screen shows the performance of a student named Gunjan Kumari, Class 3, in the Hindi subject. It lists various learning outcomes with checkboxes indicating whether they have been mastered. A "SUBMIT" button is visible at the bottom.

Right Screenshot (Student List View): This screen shows the "Learning Tracking Format" for Basic School, Bokaro Thermal. It displays a list of students, including Gunjan Kumari, Neha Kumari, Bandhan Kumar, Punam Kumari, Khushi Kumari, Puja Kumari, and Simran Kumari. Each student's name is followed by a "TEST" button.

Annotations and Flow:

- A box labeled "Click on Submit" points to the "SUBMIT" button in the left screenshot.
- A box labeled "Proceed to the next student" points to the "TEST" button next to Neha Kumari in the right screenshot.
- Dotted lines indicate the flow from the "SUBMIT" button to the "TEST" button for the next student.

Exhibit 4.5.7: Learning Tracking Format used to track student performance



Supporting case study (Rajasthan)

Background

Over the first decade of the new millennium, Rajasthan's education departments faced several challenges with their data systems. Intensive baseline studies and interviews with teachers, principals, administrators revealed several systemic issues, such as -

- Lack of basic information related to school, teachers, and students
- Redundant and time-consuming data collection processes
- Offline governance and monitoring mechanisms, leading to low accountability

These weak systems were limiting the department's access to real-time and accurate data for decision making. To remedy this situation, in 2014-15 the department conceived 'Shala Darpan' – an integrated MIS system capturing real time information for over 65,000 schools, 85 lakh students and over 4.15 lakh teachers. Specifically, data is captured across 4 pillars: (i) student information, (ii) teacher profile and processes; (iii) school information and processes; (iv) schemes and governance.

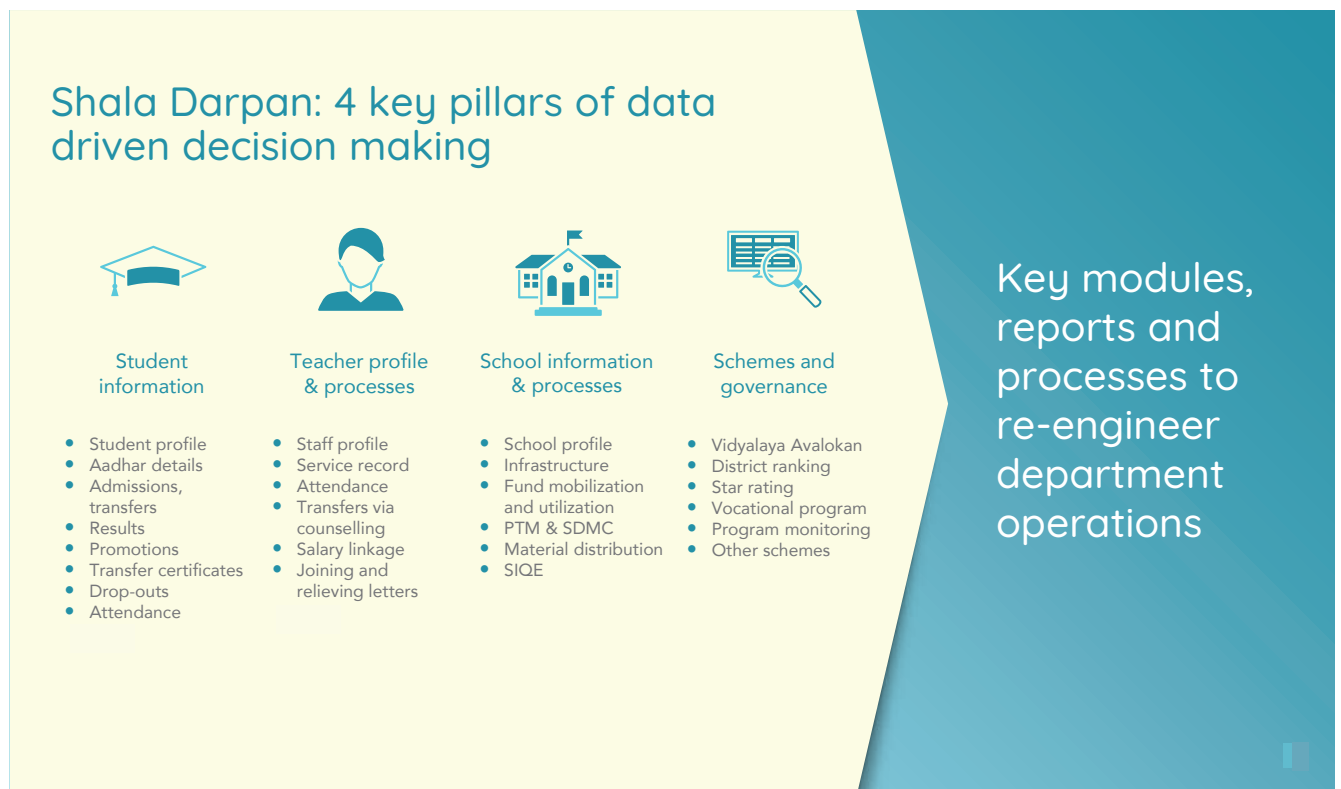


Exhibit 4.5.8: 4 pillars of decision making on Shala Darpan

Implementation

The implementation process had two major components: module development and data quality improvement. These have been detailed in this section.

- **Module Development:** An end-to-end system of data entry and corresponding reports was termed as a “module”. For example, “student profile” with the demographic details of each student. An overview of the steps pertaining to Shala Darpan module development are provided below:

— Baselining of existing modules/ use cases:

A detailed study of the existing set of modules and reports was carried out in order to understand gaps vis-à-vis department priorities.

— Systemic prioritization of modules:

Module development was undertaken in a phased manner. Once the basic modules e.g. student profile, teacher profile etc. were developed, key gaps were identified to prioritize modules for the next phase of development. For each decision area/use case, the required module was prioritized based on the status of the existing data, as shown in the exhibit below. Prioritized modules and associated timelines were aligned with the initiative leader to get the designs, associated data entry processes etc.

— Setting up a standardized module designing processes:

A standardized template was developed, which was used as the design of each module. This was designed in collaboration with the tech team.

- **Data quality improvement:** With increasing quantum of data on Shala Darpan, the need for systems and processes to ensure that the data is correct and updated regularly became critical. A detailed assessment of key fields on Shala Darpan was conducted to assess the quality of data and identify fields requiring checks/ clean-ups. An illustrative outcome of one such analysis is given below:

Data quality: 5 fields/categories require high focus on data quality improvement (1/2)

	Field/report	Challenge	Suggested corrective action
 Student	Student Attendance	1. Attendance > Enrollment 2. Attendance >> VA report	1. Include currently enrolled students only 2. VA ticket generation for mismatch cases
	Parents details	Parents mobile details missing for 60%+ students	Enforce data entry from school database
	Aadhar details	80% fill rate; limited accuracy	Enforce entry, Aadhar application; Verify enrollment
 Teacher	Teacher attendance	VA only source of data collection	Usage of location-based/biometric tracking
	Staff posting, details	Mismatch between Pay manager And Shaala Darpan	Salaries to be released by Treasury against validation of form 3A only
	Principal phone number, email	Potentially inaccurate data	Enforce OTP validation every 2-4 quarters
 School	School category (I-V, I-VIII etc.)	Inaccurate for ~10% schools	Correct category using enrollment data
	Infrastructure (functional, academic and ICT)	1. Low fill rates (60-80%) 2. Mismatch vis-à-vis VA data	1. Data users (initiative leaders e.g., monitoring, CSR) to push for fill rates 2. Ticket generation for mismatch in key infra elements; Resolution through R&R and DR
	Results	8 reports – 6 empty/incomplete	Declutter: Use 1-2 reports with appr. filters
		Quality validation pending	High priority field

Exhibit 4.5.9: Visualisation on areas for improvement

To correct school related data fields and to sensitize district officials towards data quality improvement, data correction workshops were conducted. In addition, data quality mechanisms were defined for most datasets and aligned with the initiative leader. The summary is presented below

	Dataset	Details	Updation frequency
School Profile ²	Profile	Block, Panchayat, GIS mapping, Adarsh, code etc.	One-time ¹
	Infrastructure	Classroom, furniture, ICT, internet, playground, boundary wall, toilet, drinking water, incinerators etc.	One-time
	Extra-curricular offering	Sports/arts/other activities offered	One-time
	SDMC details	Composition, meeting attendance, bank details	Annual
	Sanctioned & filled posts	Sanctions and staffed posts by grade, level and subject	As required
	Star rating	--	Annual
School Processes	80G certification	Application, status	One-time
	Additional budget	Communication of budget req. under various headers	As required
	Vidyalaya Avalokan	Report, tickets, resolution status	Annual
	PTA meeting	Attendance	Quarterly
	Staff review meeting ³	Attendance	Monthly
	SIQE certification	Application, status	Annual
	Ujiyari Panchayat	Application, status	Annual
	Community contribution	Donor details, amount, purpose	As required
Other Schemes and Programmes	Other	Enrolment targets, fund utilization,	Annual
	Schemes	Scholarship, cycle/ laptop/ scooty/ textbook distribution	As required
	Other programmes	Vocational program related reports, remedial outcomes	One-time

1. All datasets with one-time updation frequency can be updated real-time by dataset owners 2. To improve data quality for school profile, a workshop was held with district officers post which key profile related fields (block, rural/urban) have been locked & cannot be edited by field officers 3. To be developed

Exhibit 4.5.10: Data quality review mechanisms in the State

Besides, following steps were taken to drive seamless development and ensure sustainability of Shala Darpan as the School Education Department's single management information system.

- Mapping with initiative leaders: Clear mapping of business owners (Deputy Commissioners) and SD team program officers.
- Training: Post integration of RMSA and SSA to Samagra Shiksha Abhiyan at district/ block levels, orientation and capacity building was carried out for district and block officials.
- New users: Joining and relieving of all State, district and block officers were carried immediately post order release.

Roles and responsibilities

Stakeholder	Description	Responsibility
Samagra Shiksha	A separate cell was established in Samagra Shiksha comprising: 1 Deputy Commissioner Rajasthan Administrative Service (RAS) 1 Deputy Director (Principal) 1 Associate Director (Lecturer) 7 Program Officers (Sr. Teacher) 1 Upper Division Clerk (UDC)	Lead end-to-end module & report design including: - Regular field visits for requirement assessment - Research effort for module inputs: workshops, discussions & meeting Design pop-ups for regular data feeding basis priorities Lead PACT meetings – - Present module requests in Parents and Coaches Together (PACT) for appropriate prioritization - Publish (PACT) Parents and Coaches Together meeting minutes Develop training content to train & enable users to use Shala Darpan
Directorate	A separate cell was established in Samagra Shiksha comprising: 2 Deputy Director (Principal) 2 Associate Director (Lecturer) 7 Program Officers (Sr. Teacher) 1 Upper Division Clerk (UDC)	Lead regular data monitoring, ensure updation & drive validation - On call follow-up for data feeding - School data cross verification programs Query resolution through – - Shala Darpan based FAQ - Email/ Call facility
Process and Application Certification Team (PACT)	Representation from Samagra Shiksha, Directorate and NIC	Prioritization of requests coming from different stakeholders Assessment of status of requests
NIC	Development team	Provide support in: - Coding - Error correction - Data requests

Outcomes

The State's Shala Darpan team was awarded the e-governance award in 2019. The transformation in the State due to the development of Shala Darpan is illustrated below

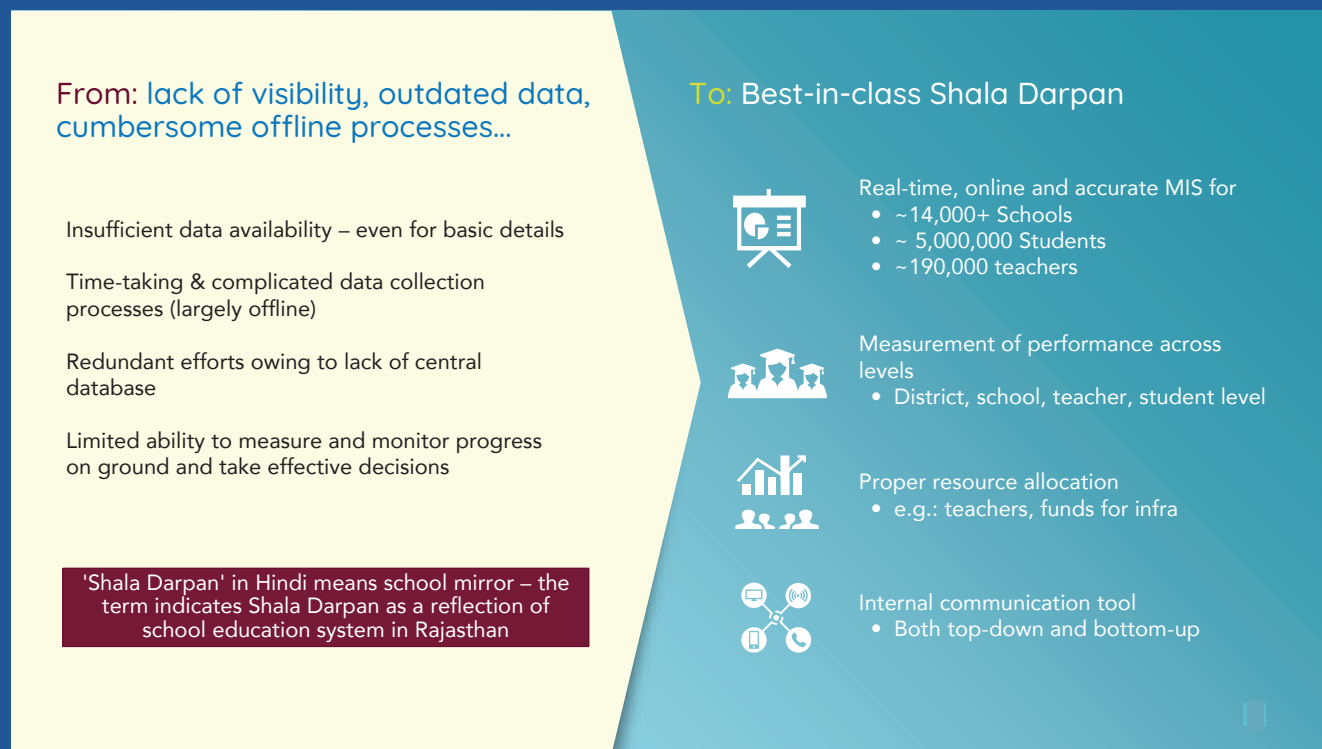


Exhibit 4.5.10: Impact of Shala Darpan

Appendix

Link to Shala Darpan portal: <https://rajshaladarpan.nic.in/SD2/Home/Public2/Default.aspx>

6. Organizational restructuring

Introduction and context

The education department is the largest employer in most State systems. For example, in Odisha, the Department of School and Mass Education employs nearly 2.5 lakh teachers and thousands of administrators in 16 directorates, 30 district offices and 314 block offices, with a budget of almost 15,000 Crore INR

Managing such a large organization and budget needs very strong management structures and clear processes. However, there are a few key challenges within the education organization elaborated below.

- **Structural challenges related to “lines and boxes”:** The structure of most State Education departments has evolved organically leading to several foundational challenges.
 - **Multiple directorates:** In Odisha the Department of School and Mass Education has 16 Directorates as opposed to the 8-9 in Jharkhand. This multiplicity is the result of mergers between departments (e.g. higher secondary and school education) and also the establishment of parallel bodies as per fund source (State vs central).
 - **Missing functions:** Another recurring challenge is missing functions across different parts of the department. For example, in most States, there is no dedicated function for edtech interventions, digital education or digital content in schools. There is an ICT function, often associated with MIS, which is responsible for planning the infrastructure, but there is no team responsible for deciding the type of content or the tools that will be most impactful (individual student devices, teacher aids, computer labs, etc.). More fundamentally, in several States, there are no sanctioned posts for academic matters within the field organization.
 - **Under-staffing:** Another challenge is that where functions do exist, they are often understaffed. Given the current load, officers are often not able to spend time on areas that should, in fact, be a high priority.
- **Many vacancies across the education system:** Education departments suffer from huge vacancies. For example, Jharkhand has a vacancy of 60%-70% in its Directorates. Most Directorates are running with 2-3 officers only and are barely managing to address the day-to-day issues leave alone taking on strategic work. The SCERT is nearly 90% vacant and Jharkhand Education Project Council (JEPC), the SSA project office is staffed by 29 members against a sanction of 72.
- **Poor role clarity and difficulty matching skills to roles:** Job descriptions do not exist or are severely outdated. For example, in most States, cluster resource personnel were intended to serve as academic mentors for teachers. However, given that they are the final point of contact between the education administration and schools, they are responsible for all school-point administration including data collection, scheme implementation, etc., over and above their core responsibility of academic mentorship. While poor clarity around roles and responsibilities and ad-hoc work is one part of the challenge, another challenge is the skill gap and limited know-how to perform the tasks required. For example, most teachers do not understand financial management, which is a key responsibility when they get promoted to Head Master or Assistant Block Education Officer (ABEO).

- **Lack of a culture of collaboration and excellence across the organization:** There are multiple examples of poor collaboration across teams, in part due to the stringent nature of file movement within departments but also due to a limited culture of cross-functional teaming. For example, for MIS and pedagogy to come together to create a cohesive ICT strategy and ensure that technology choices in schools match the academic needs of students will require a significant change in department culture.

Expected objectives and outcomes

- Help States create lean and efficient organizations with clear functional separation and alignment of responsibilities and hierarchies
- Map outcomes for the education departments along with required skills to achieve them
- Define job descriptions for all key roles with expected outcomes of each role
- Deploy processes to drive operational effectiveness of the organization
- Manage day-to-day performance through goal-setting and target monitoring
- Improve collaboration through greater transparency and two-way communication channels

Design of the intervention

To restructure the organization, it is important to first analyze the existing department structure and its ability to deliver against its academic and administrative goals. This involves comprehensively mapping all functions to identify any gaps or overlaps in responsibilities, studying the job descriptions and checking for alignment with KRAs and role expectations, comparing this to actual time on task and identifying opportunities to eliminate ad-hoc work, and finally, analyzing the number of people staffed and their skill levels against the expected workload. All this data needs to be studied in the context of the goals of the organization, which in the case of the education department are to ensure access and equity in education, quality improvements in learning outcomes and overall fair and transparent governance of the system. This will allow for a set of recommendations for changes that need to be made to functions, reporting lines, manpower norms, etc.

Restructuring the Organization



CLEAR FUNCTIONAL ALIGNMENT, SIZES AND COORDINATION

- Clear functional separation of academics from administration
- All key functions represented
- Each function is the right size
- Clear functional owner and hierarchy within the function
- All related functions sit together, even if funded by different sources



ROLE CLARITY AND AUTHORITY AT ALL LEVELS

- Clear job charts
- Job charts within a function are aligned, work distributed appropriately within a function across the hierarchy
- Right level of autonomy/ authority to do the job



RIGHT PEOPLE IN THE RIGHT ROLES

- Individual cadre skills matched with role requirements
- Upskilling of people / capacity building to fit the role
- All vacancies are filled

Source: BCG perspective

Exhibit 4.6.1: Principles of organization restructuring

In our work with State governments, we have typically found the greatest need for the following initiatives.

- **Strengthening SCERT and DIETs to ensure the State has the capabilities and manpower to deliver on the academic agenda:** SCERT is the core academic authority and needs to be adequately equipped to handle all academic matters. Strengthening SCERT involves a few key changes:
 - First, ensuring that SCERT has the right team managing all key academic activities. These teams or functions need to be separated from those handling any administrative matters (e.g. DIET faculty on HR matters), in order to ensure a dedicated focus on academics.
 - Next, ensuring that each of these teams or functions has the right number of people at different levels, including both core staff and support staff (data entry, clerks, stenographers, etc.).
 - SCERT staffing requires a mix of academics and practitioners with expertise in research, design, training, teacher education and school education. Ensuring the right balance between these and the right placement of individuals in various roles is another critical requirement.
 - Finally, restructuring the DIETs to mirror SCERT will enable effective implementation of all academic programs in the districts and improve the coordination across the system.

- **Restructuring and strengthening the field organization to ensure effective academic and administrative management of schools and staff:**
 - **Separate academic positions from administrative positions:** A common challenge is the lack of sufficient academic posts resulting in a lower focus on academic outcomes. A key element of the organizational restructuring is to introduce specific posts focused on academics and separate these from administrative functions. For example, in the district and block organization, the introduction of an Assistant District Education Officer (ADEO) or Assistant Block Education Officer (ABEO) specifically focused on academics can ensure the proper implementation of all academic programs in schools of the region under his/her purview. This person can be responsible for reviewing the district's learning outcomes and devising local strategies for improvement in conjunction with district pedagogy coordinators and DIET faculty.
 - **Streamline field structures and ensure they are the right size:** Often the field structures in State education departments are significantly depleted. To ensure effective administration and implementation of programs in schools, it is critical to ensure that the field organization is of the right size, equipped to manage the needs of elementary and secondary education (and higher secondary where integrated) and has enough posts across functions, including academic matters, implementation of schemes and establishment matters. Further, hierarchies and reporting lines need to be managed to ensure that they avoid multiple reporting lines and too many layers within a team. Wherever possible, the field structure should mirror the State structure to ensure seamless coordination.
 - **Merging departments or directorates at the State level to streamline similar activities and drive better convergence especially across elementary and secondary:** Several States have multiple directorates that perform similar functions; merging these can result in synergies and better governance. For example, across the country, there were separate project offices for elementary (SSA) and secondary (RMSA) education that were responsible for implementation of all programs in schools. This resulted in functions like planning or MIS being duplicated and lack of convergence across them both at the State and the field level. Further, it led to a significant challenge at the school point due to multiple administrators being responsible for managing school affairs and conflicting schedules. The central government recommended the merger of SSA and RMSA into Samagra Shiksha Abhiyan. Ensuring this is done at the State and mirrored at the field will result in a significant impact on school administration. Additionally, several other directorates that perform similar functions can be converted into a single entity e.g., integrating vocational education within secondary and higher secondary education or integrating all types of training entities into SCERT.
 - **Moving towards the Organization of the future:** In most private sector organizations, there are business units (e.g. geography or product line), there is a functional matrix of product/geography and separate cross-cutting functions like HR and MIS. However, in the education department, these cross-cutting functions sit within other directorates. **In the long term, a visionary change to the structure of the education department could be to merge common functions and create core functions within the department that report to the Principal Secretary directly.** The structure of the department could be drastically simplified to have Establishment, MIS and Technology, Policy, Academics, and Finance all as separate directorates reporting centrally. This would require a significant change in the ways of working and cross-functional collaboration at all levels.

- **Embedding a clear set of systems and processes to drive the performance of the organization. This involves a few key changes:**
 - **Goal setting and action planning have to become business as usual:** It is critical for the department to articulate what it wants to achieve at the end of the year in terms of specific and achievable goals – both outcomes as well as key inputs. Then, the department needs to create a single, cohesive roadmap for achieving those goals. Functional leaders and their teams need to create plans for the entire year for the specific interventions laid out in the roadmap. This plan needs to have a clear set of timelines that are realistic and take into account dependencies and potential delays. Individual names need to be assigned to manage different activities in the plan. Clear KRAs need to be set for each individual and everyone needs to be given sufficient clarity about their roles and responsibilities.
 - **A plan without regular reviews is not likely to be achieved:** Reviews need to be done at multiple levels – from State to district, block and cluster levels – and there needs to be alignment across the entire organization. It is important for the leadership to not just review but also to identify challenges preventing progress and help resolve these to the extent possible. Through the reviews, there needs to be constant prioritization and reprioritization to ensure that people are working on the tasks that will yield the highest impact or progress towards Stated outcomes.
 - **Everyone needs to be accountable for their own performance:** There needs to be accountability in the system for these KRAs – both for inputs/ processes as well as outcomes.

A critical success factor is to create **a shared sense of purpose around the vision** which needs to go hand in hand with the embedded ethos that all individuals will strive for excellence. This culture of excellence has a few key pillars:

- **Leading from the front:** A strong and stable leadership that can set a vision for the department and rally everyone around it is an important factor for overhauling the culture of the department.
- **Empowerment and building the bench:** In order to achieve the goals of the department, it is critical to create a second line of leadership that can maintain stability even with bureaucratic transfers.
- **Collaboration and eliminating silos:** Increasingly, the nature of work in the education department is becoming cross-functional; however, the systems and processes continue to be geared for functional silos. Eliminating these silos is critical to the effective functioning of the department.
- **Transparency and two-way communication:** In order to achieve a set of goals, it is critical for them to be 'shared'. Everyone from the Hon'ble Chief Minister and Hon'ble Education Minister to the junior-most teacher in the most remote school needs to understand the vision for the education sector.

Action charter

- Undertake diagnostics of the respective department/ organization to identify key roles, tasks, and inefficiencies.
- Prioritize 5-6 issues that require redressal basis diagnosis.
- Follow the principles to draft high-level organization structure, key functions, roles, etc.
- Identify and address gaps in terms of resource availability and skills required for the roles.
- Map financial implications of the restructuring and get internal buy-in/ approaches.
- Set review cadence to monitor progress of restructuring; undertake resource reallocation/ hiring as necessary.

Challenges and Mitigation

Challenges	Mitigation Strategies
Lack of political alignment	Align on plan with political officers at the outset – both on the vision as well as the extent and phasing of the changes. Set cadence for periodic alignment and buy-in (e.g. quarterly).
Low motivation due to early transition related challenges	Plan for a period of handholding to ensure smooth and seamless transitions so that the long-term benefits are not overshadowed by initial teething troubles.
Lack of buy-in amongst stakeholders	Set up a clear and transparent process for arriving at the changes, consulting stakeholders along the way. Communicate changes clearly and repeatedly to clarify all queries. Setup a grievance redressal system.
Regulatory barriers	Identify guidelines that are set in stone and where there is autonomy for States to deviate to better suit their requirements. Consult, periodically, a legal team to ensure that the changes are in line with the various rules around cadre structures, etc. to avoid litigation and other issues once the process is underway.



Supporting case study (Odisha)

Background

Odisha's central organization was amongst the most complex ones across States with 16 directorates and 6 Additional/ Joint Secretaries in the Department resulting in a span of control of ~20 for the Secretary. In 2018, a comprehensive proposal for restructuring the Education Department in Odisha was put together and submitted for approvals. Directorates and field offices were reorganized with an objective to improve administrative efficiency, drive synergies and convergence by merger of related directorates.

Implementation

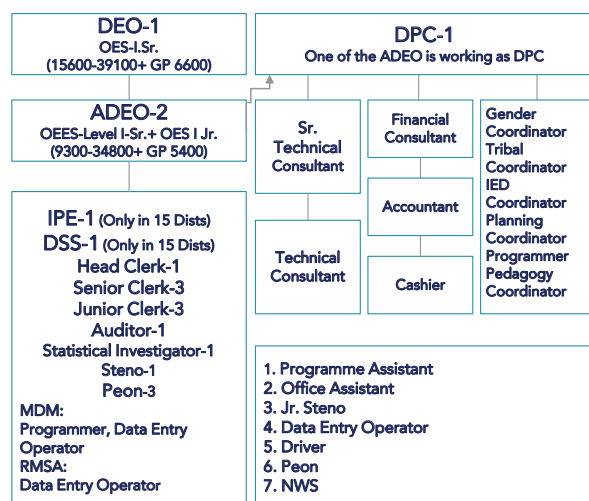
The restructuring involved two undertakings

- **Streamlined 16 Directorates into 11 Directorates:**

- Merged SSA (elementary) and RMSA (secondary) project offices to ensure consistency across the elementary and secondary branches, especially for integrated schools.
- Merged SCERT (responsible for elementary curriculum, pedagogy & training), ELTI (English Language Training Institute responsible for English curriculum and training) and SIEMAT (State Institute for Educational Management and Training of administrative officers); abolished SRC (State Resource Centre for Adult Education). The merged entity or SCERT was restructured internally to incorporate new posts and new requirements (e.g. training of middle managers) and ensure the merger was not simply set up as the sum of the parts but took synergies into account.
- Merged Higher Secondary and Vocational Directorates to ensure a singular approach to continuing education in secondary and higher secondary schools. This would also enable better integration of vocational curriculum into secondary schools and a logical continuation of vocational education from K-10 schools into higher secondary institutions (whether schools or +2 colleges).
- **Creation of a single district and block organization for elementary & secondary:**
 - DEO and DPC offices were merged for a unified, coordinated administration of elementary & secondary education at the district.
 - An additional ADEO was added in each district to manage all academic activities linked with pedagogy, teacher training, monitoring etc.
 - 314 Sr. BEO posts were created for improved administration at a block level

Reorganisation of the District; merger of DEO and DPC office

Existing



Proposed

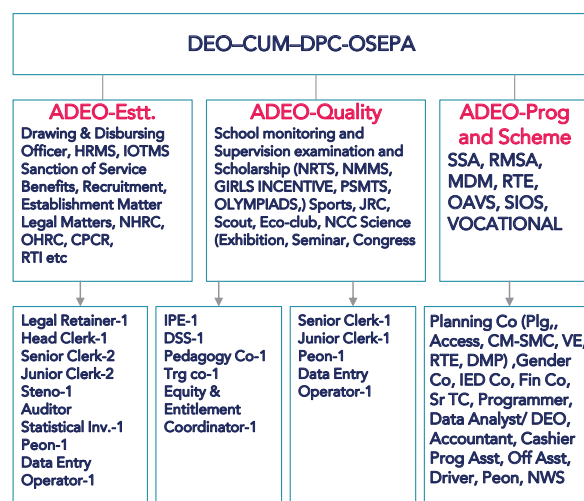


Exhibit 4.6.2: Existing and proposed re-organization matrix

Outcomes

The restructuring has resulted in a streamlined and more efficient administrative structure. In addition, it has also resulted in:

- Driving greater focus on quality education through separate administrative and academic functions
- Ensuring compliance with MHRD guidelines
- Creating a forward-looking organization focused on the delivery of outcomes

Appendix

[Odisha Education Department](#)⁴¹- This website contains the organogram of the School and Mass Education Department of Odisha along with the roles and responsibilities of various directorates.

[Restructuring of the cadre of Odisha Education Service](#)⁴²- Publicly available document mentioning details about the restructuring of the School and Mass Education Department Odisha along with the creation of additional posts to strengthen the directorates.

⁴¹ <https://govtpress.odisha.gov.in/pdf/2019/712.pdf>

⁴² <https://govtpress.odisha.gov.in/pdf/2019/712.pdf>

7. Communication streamlining

Introduction and context

Communication among States, teachers and administrative officers happens through traditional channels such as written letters. This leads to multiple inefficiencies such as delays in penetration of the messages and inaccuracies given that they may pass through multiple layers e.g., from State to district to block. Overall, traditional paper-based communication channels are a drain of resources and alternatives to the same would prove to be more conducive towards improving the quality of education⁴³.

Expected objectives and outcomes

- Reduce delays in communication and facilitate instantaneous and accurate information sharing.
- Make communication flow seamless between levels, i.e., from top (State) to bottom (Teachers) and vice versa.
- Make communication flow seamless across levels, i.e., between teachers or block-level officials, etc.
- Leverage technology to streamline communication.

Design of the intervention

To design this intervention, the following must be considered:

- **Identifying alternative channels of communication:** To ensure speed as well as accuracy in communication, States can increase the use of alternative channels such as:
 - Developing a dedicated SMS gateway for the Department of Education.
 - Creating organized WhatsApp groups at different levels in the administration.
 - Leveraging State MIS/ stakeholder dashboard effectively for communication. For instance, in Rajasthan, features have been developed for automatically highlighting new circulars and pop-ups for key actions on login pages of users.
 - Developing a database with accurate contact information of relevant stakeholders is a key input towards streamlining communication. While all States have databases, they are not comprehensive or accurate and are not periodically updated in a structured way. Various processes can be set up for doing this including leveraging existing databases that have contact information such as Mid Day Meals (MDM) databases and updating them.
 - Circulating an online form for officials at different levels and all teachers to provide their phone numbers. This should also be done on an ongoing basis, by appointing a nodal officer who takes up this task at regular intervals to ensure that an updated master database is always available.

⁴³ Winthrop, R., P. Williams, T., and McGivney, E. (2016), How overlooked innovations can streamline education systems; The Brookings Institution; <https://brook.gs/2XxMSEk>

- **Ensuring the use of communication channels for relevant information:** A critical part of streamlining communication is ensuring that channels such as WhatsApp are used specifically for discussing relevant academic matters and not for any other purpose. Nodal officers within each WhatsApp group can be appointed to be responsible for maintaining decorum within the group.

Action charter

Channels	Identifying alternative channels of communication (e.g., WhatsApp, SMS, IVR, State MIS dashboard /login page pop-up etc.)
Database	Developing a database with contact details of relevant stakeholders
SMS	Working with the IT department to set up a dedicated SMS gateway for departmental use
WhatsApp	Creating WhatsApp groups at the State, district and block level complimented with groups for specific initiatives that have clear nomenclature and defined usage norms
Maintaining the database	Appointing a nodal officer at each level to maintain the database with updated contact information of officers & teachers
Decorum	Appointing a nodal officer within each group to ensure it is only used as a platform for discussing academic matters

Challenges and Mitigation

Challenges	Mitigation Strategies
The use of both WhatsApp and an SMS gateway requires having an updated contact list of officials and teachers. Given the frequency of transfers and attrition, it is a challenge to ensure that only relevant stakeholders are in the contacts database and receive communication from the States.	A nodal person should be appointed in each group and at every administrative level to clean up the database - both addition and deletion of names & contact details.
Given the large number of officials and teachers on WhatsApp groups it is necessary to have in place mechanisms to maintain the decorum of the group. The groups should be forums for discussing only relevant topics related to academics, functioning of schools, etc.	One way of ensuring this is to identify officials/ teachers within each group to take up this responsibility. If they can keep the group active through relevant engagement and maintain the quality of discussions, other members will also model their behaviour.



Supporting case study (Odisha)

Background

As multiple interventions were rolled out to drive better learning outcomes in Odisha, the State faced significant challenges in implementation due to gaps in communication between the State and its field offices. Existing communication was primarily unidirectional, top down and decentralized; the State communicated instructions to district offices primarily through office orders and letters, which were relayed to block offices and on-ground officials through similar paper-based channels. This resulted in transmission loss.

Thus, the State adopted several key interventions to build a streamlined communication channel between the State and the field aimed at improving the quality of implementation.

Implementation

The communication streamlining strategy in Odisha consisted of three major elements, functioning in a complementary fashion:

- **Virtual Field Support (VFS) center for outgoing and incoming calls:** In September 2018, the VFS center with a dedicated 23-member team was set up under Project SATH-E with the objective of managing and executing effective communication between the State and the field. Some of the functions of the VFS are included below:

- **Outbound Calling:** The VFS team does outbound calling to field and administrative stakeholders for feedback and information dissemination on various State initiatives.
- **Inbound calling:** Inbound calling is done by field stakeholders for query resolution and information collection on various State initiatives. Interactive Voice Response System (IVRS) is used to route calls from the field to the concerned stakeholder for resolution. A team member helps troubleshoot the query which could be related to anything ranging from initiative guidelines to issues in operating State portals/ apps.

Odisha is now setting up its own VFS Centre with the help of SATH-E team, ISP and various vendors. Included below are the steps that were taken to step up the VFS:

- **Hiring of associates:** A recruitment agency was onboarded by the department for hiring of virtual support associates.
 - **Training:** Team members were trained by the SATH-E team on various aspects like using the CRM, awareness about State initiatives, etc. Detailed scripts for efficient communication were also created and shared with the associates.
 - **Technical infrastructure:** Call manager (with auto-dialer capabilities), CRM software, firewall, servers were set up with the help of vendors. The same vendors have also been made responsible for maintenance of the software and any required troubleshooting.
 - **Physical infrastructure:** Vendors were onboarded for procurement and setup of other equipment like LED TVs, laptops, telephones, headphone, LAN connection, CCTVs, etc. A physical space was also identified, where required furniture was installed.
 - **Standardizing procedures:** Standard operating procedure and a reporting structure was also designed to ensure smooth functioning.
- **SMS gateway:** Odisha uses the centralized SMS gateway of NIC Odisha. Bulk messages like OTPs are sent for all the digital products used by the Department of School and Mass Education. e.g. Odisha School Monitoring Application (OSMA) that manages the State's teacher transfer portal, etc. rely on these gateways. Maintenance of the gateway is done by NIC, and the cost associated with sending messages are disbursed from the State's Samagra Shiksha budget depending on the volume of messages sent through the gateway. The following steps were taken to setup the gateway in Odisha:
 - **Registration on Distributed Ledger Technology (DLT):** Odisha registered on DLT and got the SMS templates approved.

- **Create an SMS account with NIC SMS gateway:** An SMS account with the centralized NIC SMS gateway was created. Alternatively, States can also create an account with other telecom service providers of their choice.
- **API integration:** The gateway API was then integrated with the applications
- **WhatsApp groups:** Around 50+ WhatsApp groups have been created at the State, district and block levels. Around 31 of these are district specific groups, while the rest are initiative specific WhatsApp groups.
- **Initiative-wise groups:** These groups focus on specific initiatives. Examples include Groups with Centre of Excellence school HMs, Shiksha Sanjog groups for content and information dissemination to students/ parents, HM groups with SMCs, etc. Following are some brief details about Shiksha Sanjog which is the digital learning programme relying on WhatsApp groups that was initiated to engage students in teaching-learning activities during the COVID-19 induced school closure:
 1. WhatsApp groups were formed at different levels starting from DEO to students and study materials like PDFs of textbooks, question banks, video recordings, audio clips, worksheets for remediation are continuously shared with students.
 2. For systematic and smooth implementation of the program, a set of instructions, modalities and timetables are also shared with teachers and students to ensure online delivery of lessons in an effective manner to cover as many students as possible.
 3. Dissemination of teaching-learning material takes place in the following order:
 - RP Group (District Experts)
 - MRP Group (Block Experts)
 - Monitor Groups (DEOs)
 - Field Groups (ABEOs, BRCC/ CRCC)
 - HM Groups
 - Teacher and student groups
- **Groups of officials for key communication:** (i) District-wise WhatsApp groups are administered by DEOs/ DPCs with other members being BEOs, ABEOs, CRCCs, and SATH-E Nodal Officers. (ii) Block-wise and Cluster-wise WhatsApp groups are administered by BEOs and CRCCs respectively for easier coordination at the block and the cluster level.
- **Training and capacity building:** (i) Block-wise WhatsApp groups were created to facilitate capacity building and training administered by DIET faculty; other members include BEOs, CRCCs and HMs. (ii) Telegram group to share training content related to NISHTHA administered at State level; other members include SRG, DRG, and DIET faculty

In addition, the State has put a lot of effort into developing a quality database with reliable contact information. Each HM has access to the State Extended MIS system where they can update parent and student contact information.

Finally, the State has also instituted the practice of quarterly Parent-Teacher Meeting to discuss children's progress in the school and enable both parents and teachers to understand each others' need and help children to achieve the desired learning outcomes.

Outcomes

- Flow of communication across the education system has been significantly streamlined with messages reaching recipients instantly instead of the days and weeks that it used to take earlier.
- WhatsApp allows instant troubleshooting of queries regarding communication received and allows quick sharing of updates/ status of various interventions.
- Teachers and parents feel more integrated and connected.
- Timely communication of data requests and reviews such as digital penetration, access to TV, internet, textbook delivery, etc ensure that recipients have more time for data gathering and are also better prepared for reviews.
- WhatsApp groups provide a platform for sharing congratulatory and encouraging messages, sharing of best practices, peer-to-peer recognition, sharing of material in the form of photos, videos, etc. since it allows multimedia messaging.
- Targeted communications to nudge individual behavior, improve oversight by field offices and generate competition through relative performance analysis that is frequently shared on WhatsApp groups, combined with field level inputs on technology and usability, have significantly improved the quality of monitoring and support schools by cluster and block level officers.



Supporting case study (Himachal Pradesh)

Background

In 2015, an initial scoping and diagnosis exercise revealed that downward, upward and lateral communication flow within the education system was either inefficient or dysfunctional. Communication from the State was either reaching blocks with delay and/ or it wasn't clear. According to the diagnostic study⁴¹, nearly 25% of teachers surveyed did not communicate with block and district officials. Nearly 66% of surveyed teachers said that it took at least one month for their request to be heard by block and district officials. Broken upward communication channels meant that teachers couldn't reach out to officials higher up with feedback, questions or request clarifications regarding information or instructions received. Of the teachers who did not find existing communication channels effective, 73% thought that the response time of higher officials was very high. Poor lateral communication across districts, blocks or clusters prevents information sharing and learning between departments or teachers, and increases the potential for duplication of work.

⁴¹ Himachal Pradesh Diagnostic Study 2015

Implementation

Multiple efforts were put in place to streamline upward, downward and lateral communication.

- **SMS Gateway:**

- **Setting up the SMS gateway:** To ease communication within the State, a dedicated SMS gateway was developed for the Department of Education, in coordination with the Department of Information Technology. Login IDs were created for State, district and block level officials so that they could send bulk messages in addition to circulars. The design allows different levels of secure access for admin and users to avoid misuse of the system. This system is a low-cost mechanism to reach a large number of recipients with the capacity to send 10,000 messages at once. The cost per SMS is 3 paise.
- **Sending SMS updates:** are sent for different reasons like conveying urgent information, giving general updates, sending reminders and congratulatory messages. Message recipients include teachers, block officers, district officers and MDM-in-charges.
- **Conducting training of State officials :** To ensure the successful implementation of this initiative, multiple training workshops were conducted with State officials from both Sarva Shiksha Abhiyaan and Department of Elementary Education (DEE) to explain the functioning of the portal and its use. The gateway is used to send updates, circulars, congratulatory messages, teaching tips, reminders, etc.

- **WhatsApp Groups:**

- **Setting up WhatsApp groups:** WhatsApp groups at the State, district and block level were set up by the Samarth Cell⁴⁵ in the Department of Elementary Education. However, the responsibility of updating, maintaining and creating new groups has been transferred to the nodal officials at different levels. As part of this initiative, around 150+ WhatsApp groups at the State, district and block level (covering around 8,400 officials and teachers) and around 30 initiative-level groups have been created (eg: Khaas Shiksha, Review and Monitoring Group of District Research & Evaluation Coordinators). These groups are driven by the key stakeholders at each level. The Director of the Department of Elementary Education, the State Project Director, District Elementary Education Officers and Block Elementary Education Officers are part of the groups, along with teachers.
- **Sharing vibrant academic and administrative information:** WhatsApp allows teachers and officials to share multimedia content such as photos and videos of best practices, activity-based learning techniques, and documents, making the conversation more interactive and productive.
- **Ensuring timely and clear communication:** The use of an instant messaging app ensures that meetings with block officials can be held at short notice, as timely communication becomes possible. There is clarity in messaging and recipients are in a position to seek clarifications as well.

⁴⁵ The Samarth Cell works with the Directorate of Elementary Education (DEE) and Samagra Shiksha Abhiyan (SSA) to transform elementary education in the State.

Outcomes

- Through the SMS Gateway and WhatsApp, the flow of communication across the education system has been significantly streamlined. In the past, orders, letters and notifications could take weeks to reach remote parts of the State. Now, the same messages reach designated recipients instantaneously.
- Timely communication about data requests, such as on the number of toilets, textbook delivery, etc., ensure that teachers and officials have more time for data gathering and are also better prepared for review meetings. Delay in communication through traditional channels would leave teachers with little time to collect data. In some instances, they would even receive these requests post the deadline by which they would need to respond.
- WhatsApp allows for instant feedback/ clarification of queries regarding communication received and there is an improvement in compliance with respect to tasks, meeting deadlines.
- Teachers feel more connected to the State government because of direct interaction with officials. WhatsApp groups provide a platform for peer-to-peer recognition, motivation and sharing. Since it allows multimedia messaging, training material in the form of photos, tutorial videos, etc. can also be shared and discussed.
- Congratulatory and encouraging messages from State, district and block level officials ensures that teachers feel recognised and motivated. The State is also able to widely disseminate tips and best practices to teachers.

Appendix

Type	Example of Messages
General Updates	Proceedings of the meeting with all the Deputy Directors & Principal DIETs held on 10-11-2016 under the chairmanship of DEE has been uploaded on the departmental website of Elementary Education.
Circular/ Notice	MDM Scheme: Daily SMS based Automated Reporting System has become fully functional. Report no. of meals served via free SMS (e.g. for 20 meals send "MDM 20") to "15544".
Reminders	Review and Monitoring: BRCCs of Bilaspur, Kullu, Mandi, Lahaul-Spiti to send OMR forms by speed post to SPO (SSA) by today positively if not already done.
New initiatives	For textbook distribution concerns and queries you are requested to read the "New Textbook Distribution Mechanism for 2017-18" on the DEE website, under "Latest Updates".
Urgent Information	DPOs and BRCCs: For PRERNA endline please distribute complete sets of OMR forms to cluster schools (three forms minimum). In case of shortfall, coordinate between blocks. If there is still a deficit, ask remaining cluster schools to collect data in same format as PRERNA baseline, and share with you on excel - SPO(SSA).
Congratulatory	आदरणीय शिक्षक - शिक्षक दिवस पर आपको हार्दिक बधाई । - प्रा.शि.नि.
RTE / Centre Notices	All Govt. and Private schools are requested to fill up student data in excel sheet downloaded from www.dise.in/udise.html and send it to BRC/ BEEO or DIET please ignore if already done.
Teaching Tips	Dear Teacher, this is to inform you can see interactive teaching videos of Science and Maths for Classes 5th to 8th at www.khanacademy.org

Exhibit 4.7.1: Types and examples of messages sent through SMS Gateway and over WhatsApp

Level	Groups
State	There are separate WhatsApp groups for all the below officials. The Director of Elementary Education is in all these groups. • State Project Director • Deputy Directors • DPOs • BEEOs • DIET Coordinators • BRCCs
District	For each district there are separate WhatsApp groups with the below officials: • Deputy director of that district • BRCCs • BEEOs
Block	• Cluster Head Teachers of each block • Teachers group
Cluster level	Teachers of the 8-10 schools that form the cluster and the BRCC.

Exhibit 4.7.2: WhatsApp Groups at different levels

8. Recruitment and rationalization of teachers

Introduction and context

The availability and distribution of adequate number of teachers and administrative officials is a mammoth challenge across the country. As per UDISE 2016-17 data⁴⁶, 34.4% of schools in the country don't have the requisite number of teachers as per RTE norms⁴⁷. If an "elementary teacher" is defined as being any teacher (that is, teaching any section) in an elementary school, the average pupil-teacher ratio (PTR) across the country is 28.8⁴⁸. However, this average lies between two extremes--maximum PTR of 129.4 and a minimum of 4.4⁴⁹, clearly highlighting the disproportionate distribution of teachers across schools. In a written reply to Parliament in January 2019, Minister of State for Human Resource Development, Satya Pal Singh Stated that **"As per Unified District Information System of Education (UDISE), 2016-17 (Provisional), there are 92,275 single-teacher government schools at both, elementary level and secondary level"**.⁵⁰ **Additionally, the unwillingness of teachers to be posted in rural areas, leads to skewed distribution of teachers between rural and urban areas.**⁵¹

Further, availability of adequate number of administrative officials is also important to ensure effective utilisation of time and resources in a school. In the absence of administrative officials, teachers spend valuable teaching time on tasks such as data collection and coordination with the district administration. The fact that teachers are burdened with additional administrative responsibilities can adversely affect the learning process and students attaining grade-level competence.

Expected objectives and outcomes

- Ensure availability and optimal distribution of teaching staff across the State education system.
- Provide for suitable frameworks for defining ideal staffing norms, accurately mapping teacher shortages, identifying best practices for filling teacher deficits and resolving nuanced cadre issues
- Recognize the role of institutional structures such as recruitment cells
- Ensure long-term strategic approach to teacher promotions, teachers' rationalization and teachers' recruitment in the State

Design of the intervention

To design this intervention, the following must be considered:

- **Defining ideal staffing norms:** To begin with, States must define the ideal number of teachers that they require for every school:
 - States can leverage RTE norms for PTR as guidance and define their own norms. States may do so considering student enrolment in a school, number of classes in a school and, number and stream of subjects taught in school. This needs to be done carefully for secondary and middle grades where subject-wise requirements need to be taken into account.

⁴⁶ Unified District Information System for Education (U-DISE); <https://bit.ly/2BPZkXC>

⁴⁷ PTR ratio as specified by RTE norms: Primary- 30:1, Upper Primary- 35:1

⁴⁸ Getting the Right Teachers into the Right Schools; World Bank; <https://bit.ly/2TZEAE>

⁴⁹ Ibid.

⁵⁰ Govt admits there are nearly 1 lakh schools with only one teacher; India Today; <https://bit.ly/2ilpmx>

⁵¹ Bajpai, N. & Goyal, S. (2004); Primary Education in India: Quality and Coverage Issues; CGSD Working Paper No.11; <https://bit.ly/2BWRBHW>

- In the process, States should also examine teacher deployment policies to optimize teacher usage. In many States, teacher deployment policies are such that they inflate vacancies. For example, changing the deployment rules of high school teachers from grades taught to the number of hours taught could significantly reduce the requirement of middle school teachers in a State.
- **Methods to accurately identify status of teacher availability:** To accurately assess the status of teacher availability in every school in the State, education departments may use online or offline mechanisms. The States must look to capture information such as number of students, current teachers, classes, subjects taught, or any other information required as per the defined staffing norms.
 - Online mechanisms include methods like State MIS systems and any individual MIS system. In the absence of such systems, States may also choose to leverage payroll systems to know the current number of teachers at every level. States must decide the source of teacher data accordingly. These systems present the advantage of being faster. It is essential to have a “single source of truth” on staffing data.
 - Offline mechanisms include methods such as sourcing data directly from the ground. This may be done by requesting teachers/ HMs/ block officials to capture the required information in data proformas. Needless to say, online mechanisms are preferred. Offline data processes can be used as a means to validate the data and for analysis.
 - In parallel, accurate gap analysis measures must be undertaken. Analysis of teacher shortages must be conducted not just against sanctioned posts but actual requirements linked with school enrolments and RTE norms for PTR. This accounts for the number of posts which should have been sanctioned over the years but has not been done owing to multiple systemic issues. For instance, in Jharkhand’s elementary schools, teacher vacancies as per current number of sanctioned posts are 26,284; however, this number rises to 61,403 when shortage is considered against RTE norms and school enrolment numbers.
- **Methods to fill vacancies for deficit schools identified:** Most States in India have significant teacher vacancies. This is largely due to three reasons. First, historical court cases in the State are not resolved and hence block new recruitment. Second, poorly defined and delayed processes and lack of dedicated teams for monitoring and managing the recruitment and promotions pipeline prevent systemic improvements. Third, decision-making is not data-backed since it does not account for pending vacancies against sanctioned posts, retirement & attrition numbers, etc. Based on the staffing norms and the status of teacher availability, States may choose to fill vacancies using one or a combination of the methods below:
 - **Address historical court cases:** A special, one-time effort must be made to resolve those cases that are impeding recruitment of any cadre.
 - **Establish teacher recruitment cell and process:** A dedicated cell must be established within the Directorates to manage the recruitment & promotions process. A detailed annual process, in terms of timelines and milestones, should also be developed with necessary changes to recruitment & promotions policies as required.

- **Teacher promotions to fill senior positions:** Vacancies against sanctioned posts in senior positions have two-fold implications. Not only do they create a distorted PTR in classrooms, but they also deter clear mapping of openings in the system, which in turn leads to faulty gap analysis.
- **Teacher rationalisation:** Transfer of existing teachers from schools that have more teachers than required as per the staffing norms. Some key principles to guide this process are: (i) Follow a centralized process to ensure consistent norms are applied: Share a transparent set of guidelines and variables that will be used to identify schools that have vacancies or surplus (e.g., staffing norms that will be followed for each type of school – primary, upper primary, secondary and higher secondary; and variables such as seniority, length of posting etc. that will be used to identify surplus teachers). (ii) Adopt a transparent counselling process: To begin with, notify a prioritized list of surplus teachers organized by cadre, subject etc. Assign priority based on norms such as seniority. Then, notify a prioritized list of vacancies. Prioritization is important to ensure that teachers are meaningfully deployed to where they are most required. Finally, call all teachers for counselling in a structured manner. This process can happen physically or online. (iii) Rationalize teachers in ascending order of cadres: Often, states tend to rationalize state-level cadres first because it is easier. For example, if priority vacancies are filled by state-level cadres and block-level cadres do not have suitable vacancies left within their block, it will result in sub-optimal rationalization. Therefore, to have maximum impact and achieve optimal distribution of teachers, rationalization of state-level cadres should be done after panchayat/block/district level cadres. (iv) Inter-block rationalization should be attempted before intra-block rationalization: While this may not be palatable to teachers, intra-block rationalization does not result in significantly improved distribution. The largest gaps often tend to be localized to specific blocks that need to be targeted in a priority manner through inter-block transfers to maintain an equitable distribution of teachers in addition to efficient distribution. For example, if block A has 80% vacancy and another block B has 20% vacancy, it is desirable to conduct inter-block rationalization before further reducing vacancies in Block B through an intra-block transfer of surplus teachers. Similarly, inter-district transfers need to be attempted beyond certain thresholds as well if norms allow for it.

Besides an immediate improvement in PTR, States that have implemented this successfully have seen improved teacher satisfaction over time, as well as a significant jump in learning outcomes.

In the long term, States should develop a transparent transfer policy and an assigned team that undertakes rationalization every year within a specified time frame.

- **New recruitments based on identified needs of the State:** Annual recruitment planning based on accurate gap analysis, promotions and attrition mapping of teachers across subjects and grades must be undertaken.

- **Methods to address the issue of complicated State cadres:** Based on the State's context, long-term solutions to reduce cadre complexity should be explored to address the issues below.
 - While contract teachers fulfil immediate short-term needs, they are typically under-qualified (this varies across States). These teachers are usually deployed in primary grades, resulting in poor foundational learning. Secondly, contract teachers frequently go on strikes for increase in wages, crippling regular schooling.
 - Several States have many different cadres of teachers depending on the method and time of recruitment, as well as level/ qualifications of teachers. Each such cadre is usually paid a differentiated salary, has different posting/ transfer rules and its own set of legal hassles; all necessitating extremely complex HR management.
 - Any new initiative to recruit more teachers, via a new or existing cadre, must first address these long-standing concerns so as to be able to withstand legal scrutiny while also providing optimum opportunities linked with qualifications and suitable wages.

Action charter

Staffing norms	Define the ideal staffing norms for schools across the State
Current availability	Collect data from ground to understand current status of teacher availability and vacancy across the State
Promotions	Promote eligible teachers to fill vacancies in senior roles
Transfers	Transfers Transfer eligible teachers to fill vacancies
New recruitments	Recruit new teachers to fill vacancies
Cadre complexities	Resolve long-standing cadre issues to facilitate recruitment

Challenges and Mitigation

Challenges	Mitigation Strategies
Resistance from teacher unions	• Have clear and strong pre-alignment with political and bureaucratic leadership • Implement transfers with promotions and school integration and upgradation wherever possible • Implement this intervention simultaneously across the State for all cadres
Data management and quality	The ideal way to mitigate this is by leveraging an operational MIS in the State. In the absence of such a system, the data can be stored and shared via protected Excel files. In such cases, all edits must only be allowed at a central nodal point with designated authorities who can make any edits.



Supporting case study (Rajasthan)

Background

In 2014, approximately 50% of teaching staff positions across Rajasthan were vacant⁵². This not only meant that there weren't adequate number of teachers in the classroom, but even the existing teachers were overburdened. This problem was further compounded by the uneven distribution of teachers as many teachers preferred urban postings, while remote districts were left with a disproportionate number of vacancies.

In 2015, Rajasthan announced the integration of sub-scale schools and the creation of schools as Adarsh (which had all Classes from I-XII under one roof) in every gram panchayat. This further accentuated the need to solve for teacher vacancies, since the number of students in an Adarsh school was higher than in any individual school before integration, requiring an additional teaching workforce.

⁵² Rajasthan Diagnostic study (2015)

Implementation

- Staffing norms:** In an order dated 30.04.2015, the Department of Education of Rajasthan issued staffing norms for schools with Classes (I-XII), (VI-XII) and (IX-XII). The Department defined its own staffing norms based on:
 - Student enrollment in each class
 - Number of academic streams (Science, Commerce, Arts) and subjects offered in a school
 - PTR as per RTE norms (Primary- 30:1, Upper Primary- 35:1)
- Data Collection:** The Department of Education began by taking stock of its current teachers, their distribution across schools and the number, types and location of vacancies. The Department collected data through offline and online methods.
 - First, the Department used an offline mechanism to capture data wherein it leveraged its block officers to visit schools and record the number and type of teachers in each school, classes and subjects taught etc. This data was then shared with the Department and maintained in detailed Excel files. All edits to this file were only allowed at one central location but could be used by officials as required.
 - Once the Department had a well-functioning, up-to-date MIS-Shaala Darpan, all necessary information such as the number and details of teachers in every school across the State became available in a single online portal. The Department made the shift to Shaala Darpan as the offline method of data collection was susceptible to errors and time consuming. Shaala Darpan, on the other hand, contained real-time data that could be used to generate reports and allowed the Department to take data-backed decisions.

1

The screenshot shows the Shaala Darpan web application interface. At the top, there is a navigation bar with various menu items. Below it, a header indicates the current page is for 'स्वीकृत-कार्यरत पद हमारी (पपन 3A के अनुसार)'. The main content area features a filter section titled 'उचित का चयन करें' (Select appropriately) with options for 'DD wise' and 'District Wise'. Below this, there are checkboxes for different school types and phases, and dropdown menus for 'जिला' (District) and 'ब्लॉक' (Block). A 'Go' button is present. Below the filter section, a table displays the teacher vacancy data for six districts in Rajasthan.

क्र.स.	जिला	कुल विद्यार्थी	स्वीकृत पद		कार्यरत		रिक्त	
			शिक्षक	कर्मचारी	शिक्षक	कर्मचारी	शिक्षक	कर्मचारी
1	AJMER	282	5308	1168	3953	816	1355	353
2	ALWAR	512	8463	1910	6722	1065	1741	825
3	BANSWARA	345	6687	1416	4154	570	2533	845
4	BARAN	221	3669	733	2590	220	1079	513
5	BARMER	489	7685	1581	5153	364	2532	1217
6	BHARATPUR	374	6250	1291	4851	792	1399	499

Exhibit 4.8.1: Teacher vacancy list generated by Shala Darpan

- **Identification of target schools:** Armed with the current staffing data and the ideal staffing norms for each school, the Department could identify schools with surplus and deficit teachers, their exact numbers and locations.

The Department used this information to eliminate teacher vacancy in three ways:

- **Promotions:** Pending promotions were expedited on priority. Some of these promoted teachers partially filled vacancies for higher grade teachers (XI-XII).
- **Transfers:** Teacher transfers were the most difficult step to carry out. Teachers preferred to be stationed in urban locations. If they were transferred to rural areas, they would obtain a stay-order from a court. As a result, teacher vacancies in rural areas remained a persistent problem. To successfully implement transfers, the Department did two things:
 - Leveraging the high morale and energy in the system created due to promotions, the Department transferred promoted teachers to rural locations. As teachers did not want to turn down a promotion, they would also accept the location to which they were transferred. Consequently, the Department did not face much resistance to transfers.
 - The leadership of the Department prioritised the resolution of all court cases pertaining to transfers. They did so by dedicating additional Department personnel and setting up cells dedicated to staffing in Rashtriya Madhyamik Shiksha Abhiyan and Directorate.

The identification of teachers due for promotions, transfers, or involved in court cases was done through Shaala Darpan. Consequently, very little human intervention was required to collect, clean or analyse data.

- **Recruitment:** Promotions and transfers did not by themselves solve for all staff vacancies across the State. As a result, the Department also recruited new teachers to fill the remaining gap. Recruitment happened across Classes, i.e., I-VIII and IX-XII. The recruitment process was as follows:

The Department announced vacancies for around 10,000 Class II teachers, around 40,000 Class III teachers and around 17,000 lecturers. Depending upon the teacher category, minimum qualifications were announced:

Teacher category	Minimum Qualification
Class II teachers	Class II teachers
Class III (Level 1)	12th + Basic School Teaching Certificate
Class III (Level 2)	Graduation + B.Ed
Lecturers (XI-XII)	Masters' degree

All interested candidates meeting the minimum qualifications appeared for a written examination administered by the Department. Based on academic qualifications and the score secured in the written examination, candidates received points. In addition to the above criteria, additional points were awarded for candidates such as widows, differently abled, etc. Based on the total points secured by a candidate, a merit list was declared. This was followed by a transparent, online counselling process, wherein based on the merit list, candidates were invited to give their preferences of location, school, etc

Roles and responsibilities

Stakeholders	Roles and Responsibilities
State education department	• Ensure political and bureaucratic buy-in • Define ideal staffing norms • Leverage State MIS or create data collection templates to source recent and accurate data • After data collection, identify schools with surplus and deficient number of teachers • Issue orders for promotions and transfers • Conduct new recruitments
Block officers	Collect/ verify information about teacher availability in schools

Outcomes

Since 2015, Rajasthan has made significant strides in ensuring availability of teachers through promotions, transfers and recruitment. In a period of 3-4 years, the department reduced staff vacancies from >50% to ~15%. As of 2018, Rajasthan had around 78% of all teaching positions in Adarsh schools staffed⁵³. Over 3.5 years, around 1,23,000 teachers were promoted through the counselling process, of which around 85,000 were promoted within 1 year. Around 50,000 teachers were transferred through a counselling process over 2 years. Around 67,000 teachers were freshly recruited and went through the counselling process.

Appendix

[This Staffing norms for schools](#)⁵⁴ - This document captures the norms defined by the Rajasthan Education Department for teacher staffing needs for every school. It defines the number of teachers required in every school while considering the level of school (i.e. primary, upper primary, secondary etc), number of students enrolled, number and stream of subjects offered (eg. Science, Commerce, Arts), and the PTR as defined.

⁵³ Shaala Darpan

⁵⁴ http://education.rajasthan.gov.in/content/dam/doi/assets/education/school%26secondaryeducation/Secondary%20Education/Departmental-Governmentorders/januarydecember2017/GO_Staff_Pattern_30_04_2015.pdf

9. Teacher Training and Mentoring

Introduction and context

Poor results from a training needs assessment (TNA) conducted by BCG in a State in India triggered a reflection exercise into the current structures in place to support teachers – specifically in-service teacher training programs. The biggest challenges identified with current programs are:

- **Purely pedagogy focused:** Most teacher training programs are not designed to increase teacher ability, as they focus only on pedagogy and fail to address the competency gap.
- **Standardized training:** The training delivered is the same for all teachers irrespective of individual ability.
- **Dilution in training due to cascade:** Due to multiple levels of training deployment (usually from State to district to block to cluster to teachers), training received on the ground is significantly diluted in quality.
- **Limited days of training:** The current training of 5-10 days a year has a very limited impact in terms of bridging the capacity gap, especially in subjects like English.

A fundamental shift, therefore, was required in the way training was conceptualized, designed and delivered at the State level. In order to make this happen, a new model of in-service teacher training that had four main characteristics was conceptualised:

- The training should include subject matter content as well as general pedagogy training.
- Personalized training delivered to teachers to cater to their actual competencies and professional needs.
- Reducing the number of cascades by training a cohort of full time Master Trainers.
- Significantly improving delivery mechanisms and training time through a blended model of physical and tech-based training modules.

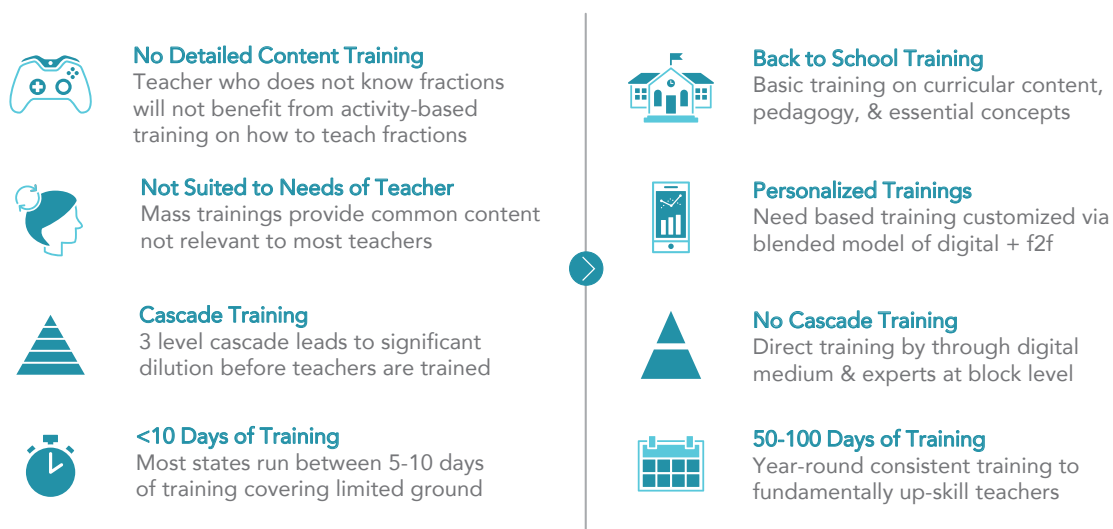


Exhibit 4.9.1: Jharkhand Teacher Training: Theory of Change

Expected objectives and outcomes

- Design and provide training to teachers that is relevant, of adequate quality and on an ongoing basis.
- Make training more accessible and customised to the needs of teachers and students.

Design of the intervention

What was required was a fundamental shift in the way training was conceptualized, designed, and delivered at the State level, as explained in the following exhibit.



Exhibit 4.9.2: Shifts required in training and capacity building of teachers

To make this happen, training should be delivered through personalized, tech-based systems rather than the current classroom-based model. There are several organizations working on capacity-building for teachers using digital systems, with some focusing on content knowledge, and others on creating peer-learning communities and how to share best practices.

An integrated system, whereby a teacher can take a self-assessment and then be guided through a personalized learning journey is required. The assessment should evaluate the teachers' subject knowledge (appropriate to the level of students that they are teaching), as well as their pedagogical understanding, thereby determining their starting point and the gaps in their understanding that need to be filled. The system should then provide relevant content to fill these gaps, and opportunities for continuous assessment of the progress being made. States can also consider providing certification based on the completion of certain milestones, which could make the teacher eligible for rewards and recognition, merit-based promotions, etc.

Action charter

Content	Develop training content based on preferences and needs of teachers.
Delivery Mechanism	Assess and fix the number of cascades through which training is delivered, based on scale.
Ongoing Training	Supplement annual, in-person training with ongoing training through video content available on a website or an app.
Feedback	Collect feedback from teachers to ensure training content is relevant and useful.

Challenges and mitigation

Challenges	Mitigation Strategies
Quality of trainers and continued difficulties in delivery of cascaded offline trainings	Continuous capacity building of teachers and having a rigorous selection process for trainers and teachers.
Poor quality of digital training content	Onboarding experts in SCERT on deputation/ contract if needed or hiring external organizations via RfP process to build high quality digital training courses.
Since ongoing training is not mandatory, teachers might not be sufficiently motivated or interested in accessing training content through technology platforms.	In such cases it might be necessary for the Department of Education to communicate the need and benefits of ongoing training to teachers. Teachers need to be supported to feel comfortable with technology. Incentives/ positive motivation need to be enforced.
If the monthly courses available as part of ongoing training are not mapped to the curriculum followed in school, the content ceases to be relevant for teachers and they might be discouraged from accessing it.	Ensuring course content is customised and made available to teachers based on their needs in the classroom.



Supporting case study (Jharkhand)

Background

Building the capacity of teachers was recognized as a key imperative in Jharkhand. Teacher trainings are conducted for about 1.2 lakh teachers from over 35,000 Department of Education schools in Jharkhand to improve their subject knowledge, pedagogical, and technical skills. However, a sharper and more personalised plan, aligned to each teacher's training needs, was required.

Implementation

A **Training Needs Assessment** was conducted in 2018, where teachers were asked to solve 45-50 multiple choice questions on their mobile phones after they were trained in the block resource center for the student-remediation program, Gyan-Setu. Approximately, 80 teachers attempted questions that evaluated their pedagogical ability and subject/ content knowledge every week over 5 rounds until most of the teachers were assessed. Moreover, teachers were also asked to fill a survey to explain their training preferences. Consequently, around 89,000 elementary teachers attempted the TNA. While primary teachers performed well on Mathematics and General Ability, they struggled with language content. Upper primary school teachers performed the best across all subjects.

Post this exercise, the idea was to build a year-round blended training model however due to Covid-19 and fully online system, it has been executed so far as follows:

- **Content selection:** Various online teacher training platforms/ content creators such as Swayam, the TeacherApp, Chalklit, Peepul, Ekstep, Firki, and Meghshala were identified, and their teacher training courses/ lesson plans were evaluated on three criteria:
 - Whether these link to the NCERT learning competencies from grades 1-8.
 - Whether the training content is engaging and provides summary to increase absorption.
 - Whether the training content provides explicit takeaways with relevant examples that could be directly implemented in the classroom.
- **Grouping and sequence of content:** Each course was categorized into groups of 3, each containing 1 language, 1 pedagogy and 1 mathematics course. This group of 3 courses was called a package. This was done to ensure regular exposure to all subjects to all teachers.

Here is an example package:

Course	Content	Subject	Time (mins)	Toolkits used in package
Understanding of Place Value	1. System of Place Value 2. Numbers in System 3. Important Teaching Tips	Maths	41	• Chappal se abacus
Emergent Literacy Behaviour	1. Understanding of Emergent Literacy 2. How to support as teachers	Language	57	• Jod ki adhunik aakriti
Multi-Grade Multi Level Teaching	1. Types of classes 2. Problems with conventional classes 3. Multi grade multi level teaching 4. Strategies	Pedagogy	63	• Kada feko

Exhibit 4.9.3: Illustrative content package

- **Peer-learning:** To ensure that teachers don't just watch courses but also regularly meet and learn from each other (either online or offline in less number with social distancing), Shaikshik Samvaads were created. Shaikshik Samvaads included centrally designed lesson plans which were used by resource group teachers to conduct monthly peer-learning sessions with 30-40 teachers at a cluster level to discuss what they learned from this month's courses and how they will implement their learnings inside classrooms.
- **Assessments:** To gauge the learning of teachers, a baseline assessment and a midline assessment was designed. These were designed to not only know the total scores of teachers but to also understand what are the major misconceptions that teachers have.
- **Length of program:** About 50 hours of content watching and assessment filling time was allotted for the DIKSHA TPD program. The program was envisioned as an 8-months long program in which teachers had to complete 2 packages per month. This ensured that teacher time investment was spread out in a way that reduced the teacher workload on any given day.

The designed teacher training program was conducted through a 5-pillared approach:

- **DIKSHA platform:** All the selected courses from the TeacherApp were uploaded on DIKSHA, packaged together according to the structure explained above, and then made available to all teachers in Jharkhand. All the teachers were to register on the DIKSHA platform. Based on the 2 packages/ month timeline decided, a particular package was made available for only 15 days to ensure excitement and high enrollment in each package.
- **Online teacher assessments:** The baseline and midline assessments for the program were conducted for the elementary teachers over google-forms. In the baseline assessment conducted on September 24, 2020, approximately 77,000 teachers participated and, in the midline assessment conducted on January 18, 2021, approximately, 97,000 teachers participated. After conducting the midline assessment, all teachers were given detailed feedback on every question asked to ensure that teachers learn from the experience. None of the assessment scores were made public and the main purpose of the test was to understand the gaps in learning.
- **Peer-learning (Shaikshik Samvaad):** The State has identified two resource groups – 4-membered District Resource Group (DRG) per district and 3-membered Cluster Resource Group (CRG) per cluster. These consist of teachers with proficient digital skills and strong academic performance. JCERT creates Shaikshik Samvaad SessionPlan – a self-reliant document that any teacher can use to conduct a discussion with relevant proportions of reflection, fun, and camaraderie.
- **Governance & Structure:** District ResourceGroups(DRGs) and Cluster Resource Groups (CRGs) are important institutions created primarily for the flawless implementation and monitoring of Shaikshik Samvaads coverage and quality, in turn ensuring better learning for the teachers.
- **Monitoring and Review:** Improvement in teacher training requires regular monitoring and feedback structures. The current TPD program tracks DIKSHA registrations, course enrolments, course consumption, monthly assessments, and shiksha samvaad attendance.

Roles and responsibilities

Following are the defined roles and responsibilities of the key stakeholders in the program:

Stakeholders	Roles and Responsibilities
Teachers	Registration, active participation in the courses, monthly assessments, and attendance in Shaikshik Samvaad.
DRG (District Resource Group)	JCERT training participation and attendance, CRG teacher training and progress monitoring.
CRG (Cluster Resource Group)	Coordination with cluster teachers for Shaikshik Samvaad, digital tool capacity, monitoring forms, monthly calls with cluster teachers and ensuring teacher attendance.
CRP (Cluster Resource Person)	Track teacher attendance in Shaikshik Samvaad, information dissemination to teachers, technical assistance, and proper conduct of Shaikshik Samvaad.
VFS (Virtual Field System)	Verification of teacher registration, teacher monitoring, compliance of registrations/ progress updates given by JCERT via calls.
BEEO (Block Education Education Officer)	Coordination with BRPs/ CRPs for registrations and implementation, review CRG working and regular reviews.
BRP (Block Resource Person)	Coordination with CRPs for teacher registration, Shaikshik Samvaad implementation and attendance, tracking at-risk teachers, attend block-level review, etc.
DEO (District Education Officer)/ DSE (District Superintendent of Education)/ ADPO (Additional District Program Officer)	District responsibility to review and measure performance across all key stakeholders.

Outcomes

The efforts to train teachers on the DIKSHA TPD program were quite successful. Over 1.1 lakh teachers (93%) registered on the DIKSHA platform and over 90,000 teachers enrolled in all the DIKSHA TPD packages. 89% of the enrolled teachers would complete the courses offered. Continuous improvement in teacher scores by over 20 percentage points from 35% in Baseline Assessment to 55% in the Midline Assessment was observed. Jharkhand also ensured that over 5 Shaikshik Samvaads were conducted by 90% of the clusters in Jharkhand. Majority of the teachers who attended Shaikshik Samvaad mentioned that participating in the Shaikshik Samvaad improved their understanding of the DIKSHA TPD courses.

Appendix

The following illustration captures a plan for decentralized teacher peer learning sessions. Typically, teachers are expected to go through and follow this structure to ensure learning objectives of a particular session is met.

3	शैक्षिक संवाद सत्र की रूपरेखा
	Package 3 एवं 4 - शैक्षिक संवाद
उद्देश्य	यह कॉल प्रथम शैक्षिक संवाद की अगली कड़ी है जिसमें शिक्षक TPD बेसिक कोर्स 3 एवं 4 में शामिल पाठ्यक्रमों में से दो महत्वपूर्ण पहलुओं के बारे में अपनी राय साझा करेंगे।
शैक्षिक संवाद के प्रतिफल	संवाद पूर्व आवश्यकताएँ
- शिक्षकों को पैकेज 3-4 की बेहतर समझ मिलेगी। - शिक्षक विभिन्न कार्यान्वयन रणनीतियों का उपयोग करेंगे। - शिक्षक ज्यादा बेहतर तरीके से जूम कॉल / गूगल-मीट का उपयोग कर सकेंगे।	- जूम कॉल / गूगल मीट एप्प। - माइक और वीडियो मुद्रों को संबोधित करने और सुविधाओं का एक मूल परिचय। - संवाद सम्बंधित महत्वपूर्ण जानकारीयाँ दर्ज करने के लिए एक नोटबुक / डायरी। - CRG की प्रतिक्रिया की निगरानी के लिए एक गूगल मोनिट्रिंग फॉर्म।
समयावधि	2 घंटा

खंड 2 - पाठ्यक्रम चर्चा: 1 घंटा 20 मिनट

{स्लाइड नंबर 4 खोलें}

“चर्चा शुरू करने से पहले, मैं चाहता /चाहती हूँ कि हर कोई अपने साथ एक कॉपी और पेन रखे। मैं यह भी चाहूँगा /चाहूँगी कि जब आप नहीं बोल रहे हों तो हर कोई अपना माइक्रोफोन बंद रखे ताकि कोई गड़बड़ी न हो। यदि आप आगे बोलना चाहते हैं, तो बस हाथ उठाएं और मैं आपसे पूछूँगा। हर कोई कृपया इसके लिए अपने वीडियो को ऑन रखें और जब कोई बोल रहा हो, तो उन बातों पर ध्यान दें, जो आपके लिए उपयोगी हो सकती हैं, अन्यथा हम जो कुछ भी सीखते हैं उसे भूल सकते हैं”

प्रिय शिक्षकों, टीपीडी बेसिक कोर्स - 3 में हमने चर्चा की थी कि जब छात्रों को किसी विषय पर बात करने के लिए कहा जाता है तो, वो खुद को अभिव्यक्ति अच्छे से क्यों नहीं कर पाते हैं। क्या आप में से कोई इसके कुछ कारण बात सकते हैं?

{शिक्षकों से जवाब लेने के बाद आप दुबारा जरूरी बिन्दु बात सकते हैं - जैसे स्कूल और घर में अलग-अलग भाषाओं का बोला जाना, छात्रों को घरों में ज्यादा बोलने / व्यक्त करने की अनुमति ना दिया जाना, बोलने के कौशल की सटीकता पर शिक्षक का बहुत अधिक जोर देना आदि।}

आप में से कोई भी शिक्षक /शिक्षिका इस पाठ्यक्रम से या अपने अनुभव से बताएं कि क्या-क्या तरीके हैं, जिनसे छात्रों के बोलने के कौशल में सुधार लाया जा सकता है?

{स्लाइड नंबर 5 खोलें}

चलिए "विकासशील मानसिकता " पाठ्यक्रम की बात करते हैं।

क्या आप में से कोई जड़ मानसिकता और विकासशील मानसिकता के बीच में अंतर बता सकता है?

{केवल एक या दो प्रतिक्रिया लें}

Exhibit 4.9.4: Illustrative plan for decentralised teacher training



Supporting case study (Himachal Pradesh)

Background

Approximately 40,000 elementary school teachers in Himachal Pradesh are trained every year under the Sarva Shiksha Abhiyan. Because of the scale at which the training is conducted, the government follows a cascaded model of training delivery. Master trainers are trained at the State level by experts, who in turn, train a resource group at the district level and that continues as a process at each level. The training curriculum is finalized at the State level with the help of members from District Institutes for Education and Training (DIETs) and the State Resource Group (SRG), and occasionally, in collaboration with external organisations. The existing training architecture of the State had several challenges and design flaws.

- **Inefficient cascaded model:** Due to different levels of cascades, the quality of the content deteriorated, and teachers were not satisfied with the training.
- **No assessment of training needs:** The curriculum was designed with little input from teachers with respect to what they wanted to learn. Systematic training needs assessment of teachers did not take place every year.
- **Inefficient model for continuous training:** Post one-time in-person training ended, there was no mechanism to ensure continuous learning for the teachers.
- **No feedback model:** There was no feedback mechanism in place to assess whether teachers found the training provided to them satisfactory, what they would want changed, etc.

Implementation

Following were considered as part of Himachal Pradesh's revamp of teacher training and mentoring design

- **Preference assessment:** Through a Google form, questions related to pedagogy, skill requirements, etc., were asked and circulated through SMS. Approximately, 17,000 teachers in the State filled the survey.
- **Need Assessment:** Along with the data from preference assessment, National Achievement Survey and Summative Assessment-II data were used (which was recorded in the Student Assessment Dashboard) to identify weaker competencies across the State. Training content was then designed accordingly.
- **Delivery:**
 - **In-person, one time training:** The cascaded model of training previously had a high number of cascades with different districts having different numbers of cascades. This was revamped to reduce and standardize the number of cascades. Moreover, the Master Trainers (MTs) were previously selected subjectively but this process was changed to select high-performing teachers who used innovative practices in the classrooms under the name of 'Khaas Shiksha Teachers.
 - **Ongoing training:** Himachal Pradesh has partnered with a third-party teacher training application to provide continuous training. Once teachers register themselves on the teacher training application, they get access to a monthly training package developed with the following components: (i) concept-based training courses of about one-hour worth of content (ii) short 2-3 minutes long training videos on facilitating activity-based learning. For example, how to teach students the names of States and capitals through an activity (iii) podcasts focused on explaining learning outcomes, making classrooms interactive, etc.

- **Sharing of content and completion:** On a monthly basis, a content package (with concept-based videos, toolkits and podcasts) is shared with the teachers and they are required to complete the assigned courses within the month.
- **Feedback and Monitoring:**
 - **In-person one-time training:** This includes 2 aspects: (i) digital feedback forms were created to collect feedback from teachers at each level who attended the training. Attendees could anonymously give feedback on multiple aspects such as how useful they found training for different subjects, if they found the training to be better than the previous year, how they would rate teachers, etc. (ii) a monitoring mechanism was designed to manage the implementation of training at scale and collect data. Officials of the Teacher Training Institute fill a tracker detailing the number of resource persons trained (SRG and DRG), number of teachers trained, etc. This data is filled at the district-level.
 - **Ongoing refresher training:** Whenever required, refresher training is also conducted. The usage and completion of the monthly training modules are tracked through the application's backend database. Moreover, Cluster Head Teachers (CHTs) are supposed to meet around 5-7 teachers in their clusters on a monthly basis. The agenda for the cluster meetings is created centrally and shared on the teacher training application. During these meetings training content is discussed and teachers can share their feedback as well as any challenges they faced in accessing or understanding content.

Outcomes

- Training curriculum was mapped to weak learning outcomes of the State and in-line with the needs of the teachers.
- The number of cascades was standardized across districts to maintain quality of training delivery.
- Video-based content was included to supplement in-person training. Based on feedback from teachers, 96% of teachers found video-based training useful, with an average rating of 4/ 5 given by teachers to teacher training App.

10. Academic Monitoring and Dashboard Reviews

Introduction and context

A governance system aiming to deliver high-quality public services must foster a sense of accountability at all levels. In the context of education, a system must be created, where:

- Teachers feel accountable for students' learning and well-being.
- Middle management in Blocks and Districts feel accountable for ensuring well-run schools and an efficient organization.
- Senior management at the headquarter/ State feel accountable for continuously improving the overall State of the education system, delivering a higher value proposition to the students while running a smooth-functioning education system.

In the education system, to monitor progress towards the satisfactory attainment of student learning outcomes, two types of data are required:

- Student assessment data,
- Data collected through academic monitoring of schools.

Existing monitoring programmes were found lacking on various fronts⁵⁵. To begin with, it was found that schools were not visited regularly by designated officials. Secondly, it was found that even when schools were visited, the focus of the monitoring exercise skewed heavily in favour of infrastructure (such as availability of toilets, electricity and boundary walls) and administrative questions (such as delivery of uniforms and administration of Mid-Day Meals). Questions on academics were not included. Also, most States did not have appropriate mechanisms such as review meetings in place to hold administrative officials responsible. Given the paucity of data on academic performance, even if reviews did take place, their focus was largely on infrastructure and administrative issues.

Expected objectives and outcomes

The overarching objective of this intervention is to make all stakeholders within the education system (such as teachers, block officials and State officials) accountable for the attainment of student learning outcomes. This objective is achieved by:

- Ensuring the availability of accurate, real-time and regular data
- Creating mechanisms for data-backed reviews of the system

⁵⁵ Bhatti, K., and Saraf, R. (2016); Does Government's Monitoring of Schools Work? A Study of the Frontline Education Bureaucracy in India; <https://bit.ly/2tXfOZE>

Design of the intervention

Academic Monitoring

Any accountability initiative must:

- **Be pervasive across the system:** The major stakeholders within the education system are teachers, Block/ District/ State officials as well as parents. Each of these stakeholders needs to be individually addressed. In most cases, parents tend to be the missing link in the accountability chain. Very few States have managed to effectively bridge the gap between schools and parents/ communities.
- **Select the right metrics:** Data to be collected should be prioritized in advance and follow these high-level principles.
 - **Linked to a clear roadmap:** For example, a State may choose to prioritize metrics related to Pupil Teacher Ratio (PTR), teacher distribution, etc., if it aims to rationalize its teacher and school footprint or track micro-level learning outcomes if a major learning enhancement program is initiated. On the other hand, while student attendance is usually a uniform metric in most indices, it may be deprioritized if it is not part of a clear action plan. The choice of metrics should also incorporate a judicious mix of inputs, outputs, and outcomes, which reflect the declared action plan of the State.
 - **Objective, well-defined, and easily quantifiable:** It is tempting to incorporate nuanced indicators of teacher performance (e.g. demonstrates conceptual clarity, listens to children patiently, etc.) based on classroom observations but such metrics tend to be subjective and difficult to measure. Simple binary indicators like 'group by learning level or not' will be far more effective. Accountability can only be enforced when stakeholders have a clear, objective and uniformly understood metric to work towards.
 - **Consist of a select number of actionable metrics:** The aim of data-based accountability is to drive targeted action based on defined metrics. The larger the number of metrics, the more likely that priority actions will take a backseat. Districts must have a view of their performance metrics that don't change frequently (e.g., every 6 months). However, monthly dashboards should have metrics that the district can influence in the short-term.
 - **Disaggregated to reflect ground realities:** A metric should only be chosen if it is reflective of the ground reality in a school. For example, standardized metrics such as PTR tend to hide ground realities. States with 30:1 PTR often have sub-scale schools or schools with inadequate subject-teacher availability. Metrics such as the percentage of schools that meet PTR norms, therefore, capture the disaggregated reality of education more comprehensively.
- **Provide an accurate measurement:** A constant trade-off needs to be made between the amount of data being collected and their utility. That said, irrespective of the data being collected, effort must be made to ensure its accuracy and reliability. This can be achieved through a combination of measures as Stated below.
 - **Live digital data collected directly from the source and updated on a regular basis:** For example, the Vidyalaya Avlokan process in Rajasthan ensures that all schools are visited, and their data re-validated during randomly allocated surprise inspections. This disincentivizes schools from reporting false data and creates a single digital source of truth that all stakeholders refer to. However, in the absence of an MIS, any live data collection and updation via Google forms or dashboards that do not allow for end-user changes is a feasible alternative.

- **Removing conflicts of interest in data collection:** One of the biggest reasons for inaccurate data in the social sector is misaligned incentive structures. The person who collects the data is also often held accountable for poor outcomes, creating a conflict of interest in reporting the truth. To solve this, States may need to invest in a layer of third-party monitoring or communicate very clearly that field inspectors who monitor schools will only be held responsible for the accuracy of reported data and not for outcomes.
- **Multiple layers of verification:** If field officials begin to believe that the data is not truly reflective of their efforts and performance, the motivation to improve metrics will rapidly disappear. Therefore, it is essential to create a permanent process of data cleaning and verification via third parties, call centers and field visits so as to build a performance system that has the buy-in and support of all stakeholders as illustrated below.
- **Be transparent with adequate channels of communication:** To achieve a set of goals, it is critical for them to be 'shared'. Everyone from the Hon'ble Chief Minister and Education Minister, to the junior-most teacher in the most remote school needs to understand the vision for the education sector. This needs to be regularly communicated, along with plans to achieve that vision. Our experience in the field has shown that a lack of clarity around programs is a key driver of their failure. It is also critical for there to be two-way communication, so feedback and suggestions can be regularly shared to strengthen the approach of the department and grievances can be managed proactively.
- **Be linked to real consequences:** While dissemination of accurate data by itself is a powerful tool for accountability, linking it to a carrot-and-stick approach is a force multiplier in terms of impacting outcomes. A variety of different options are available to policymakers:

 - **Incentives:** While every State has some version of rewards systems, two key principles enable such systems to be truly impactful: (i) any reward must be reasonably achievable for more than 75% of teachers, schools, or frontline officials for it to act as a true incentive for the system (ii) recognition should not be a one-time process that can be manipulated but should provide continuous benefits that encourage stakeholders to strive for improvement.
 - **Ranking based systems:** Most often implemented as District rankings, these are comprehensive indices that aim to hold districts accountable through robust data-based results. Depending on the use-case, these rankings may flow down to Block and school level as well. While not explicitly linked to incentives, ranking systems generate enormous momentum and competition purely through transparency and data dissemination. They also allow administrative units to easily identify gaps and develop customized action plans for the same. Typically, the design of ranking based systems across multiple States is similar in a few respects: (i) Incorporates a limited set of 20-30 carefully chosen and prioritized indicators with a clear action agenda for improvement in each metric. (ii) Focuses on strong outcomes with academic indicators and learning outcomes being accorded significant weightage.

Jharkhand district report card

District Name	Gyan Setu (25)	Average BRP/CRP visits (25)	Teachers' biometric (25)	Student Portal (25)	Total Score (100)	January (W1) Rank	December Rank	Change in ranking
Godda	17.9	14.4	25.0	19.2	76.4	1	-	-
Paschimi Singhbhum	22.7	19.2	21.3	9.9	73.0	2	-	-
Dhanbad	13.5	16.9	22.3	18.2	71.0	3	-	-
Purbi Singhbhum	15.1	18.2	18.8	18.9	70.9	4	-	-
Jamtara	16.6	25.0	15.8	12.1	69.5	5	-	-
Deoghar	19.6	16.9	17.2	14.2	68.0	6	-	-
Garhwa	20.0	24.4	13.8	9.6	67.7	7	-	-
Ramgarh	23.6	20.5	19.1	4.0	67.3	8	-	-
Khunti	13.6	16.6	16.7	19.7	66.6	9	-	-
Saraikela	14.8	20.4	17.9	12.2	65.3	10	-	-
Kodarma	18.3	16.7	15.7	13.1	63.8	11	-	-
Lohardaga	11.6	13.5	21.0	17.2	63.3	12	-	-
Bokaro	17.3	15.0	19.4	11.3	63.0	13	-	-
Ranchi	14.3	20.7	19.6	6.8	61.4	14	-	-
Latehar	18.9	8.9	12.8	19.9	60.6	15	-	-
Pakaur	19.2	11.2	19.8	9.5	59.6	16	-	-
Palamu	16.8	20.7	15.7	3.5	56.7	17	-	-
Giridih	15.7	20.1	15.2	5.4	56.4	18	-	-
Gumla	16.7	4.6	15.4	17.2	53.8	19	-	-
Dumka	13.6	14.3	17.1	7.6	52.6	20	-	-
Hazaribagh	17.9	8.3	19.8	4.4	50.5	21	-	-
Sahibganj	17.8	12.4	13.4	4.8	48.3	22	-	-
Simdega	17.6	14.4	2.3	11.4	45.7	23	-	-
Chatra	11.0	13.1	10.6	5.9	40.6	24	-	-

Orissa District report card

District	Academic Performance	Governance	Infrastructure	Other indicators	Grand Total	May Rank	April Rank	Change
Dhenkanal	25.2	53.9	78.7	70.2	228.0	1	1	0
Jagatsinghpur	29.2	49.6	83.9	64.6	227.4	2	2	0
Khordha	27.9	46.5	83.7	67.2	225.2	3	4	1
Sundergarh	28.0	50.3	73.2	66.3	217.9	4	3	-1
Sambalpur	26.1	44.1	77.4	67.4	215.1	5	5	0
Deogarh	25.0	43.6	72.3	71.0	211.9	6	9	3
Cuttack	26.0	45.3	78.6	60.3	210.1	7	6	-1
Bhadrakh	28.6	49.6	71.1	60.3	209.6	8	7	-1
Angul	28.1	42.2	76.9	62.2	209.3	9	10	1
Jharsuguda	27.7	36.3	79.3	65.7	209.0	10	13	3
Balasore	28.5	43.3	75.0	61.9	208.7	11	12	1
Mayurbhanj	26.8	49.2	67.4	61.6	204.9	12	8	-4
Kendrapada	28.5	34.7	75.2	65.0	203.4	13	16	3
Nayagarh	26.0	44.0	67.8	64.3	202.0	14	11	-3
Jajpur	28.4	33.8	73.3	60.1	195.8	15	20	5
Ganjam	27.3	33.5	74.2	59.9	194.8	16	15	-1
Kandhamal	25.7	36.5	66.6	65.8	194.7	17	18	1
Keonjhar	28.6	34.3	68.7	60.4	192.0	18	19	1
Nawarangpur	28.2	33.7	72.8	55.4	190.2	19	14	-5
Kalahandi	27.9	23.0	73.9	64.3	189.1	20	17	-3
Koraput	26.9	26.7	69.8	63.8	187.2	21	21	0
Gajapati	24.4	22.7	67.5	72.1	186.7	22	23	1
Baragarh	27.7	26.3	76.0	53.7	183.7	23	24	1
Malkangiri	24.7	20.4	71.8	66.5	183.3	24	26	2
Bolangir	28.1	23.1	67.6	60.7	179.6	25	29	4
Rayagada	25.4	23.2	65.6	64.5	178.7	26	30	4
Sonepur	26.3	25.6	70.0	56.2	178.0	27	25	-2
Boudh	24.2	24.6	73.7	53.7	176.1	28	27	-1
Nuapada	26.9	19.3	65.0	62.0	173.2	29	28	-1

Exhibit 4.10.1: Illustration of district ranks in States

Madhya Pradesh District Report Card - Heading

जिला	% शिक्षक जिन्होंने आज 5 विद्यार्थियों / मेंटर्स से फ़ोन पर संपर्क किया	कक्षा 3-8 के कितने % विद्यार्थियों को एक पेज का लर्निंग प्लानर प्राप्त हो गया है	% शिक्षक जिन्होंने अपने कक्षा समूह का निर्माण अकादमिक सत्र 2021-22 के विद्यार्थियों के अनुसार कर लिया है	Total Score
HARDA	30%	100%	81%	57%
ANUPPUR	5%	100%	100%	57%
MORENA	43%	90%	92%	52%
KHANDWA	45%	83%	100%	51%
DHAR	22%	99%	89%	51%
KHARGONE	35%	94%	83%	51%
NEEMUCH	30%	91%	88%	50%
NARSINGHPUR	38%	84%	91%	49%
SHAHDOL	60%	76%	77%	48%
BALAGHAT	14%	100%	66%	48%
ASHOKNAGAR	13%	88%	98%	47%
SEHORE	26%	87%	82%	47%
JABALPUR	37%	81%	79%	46%
DEWAS	23%	92%	69%	46%
BHOPAL	40%	68%	94%	45%
UJJAIN	35%	71%	86%	43%
SINGROULI	12%	100%	32%	43%
UMARIA	24%	69%	89%	42%
BETUL	28%	63%	97%	41%
REWA	36%	72%	63%	40%
RAISEN	35%	68%	67%	39%
RAJGARH	36%	63%	76%	39%
SEONI	21%	67%	81%	39%
JHABUA	18%	69%	80%	39%
GWALIOR	13%	75%	72%	39%
AGAR MALWA	17%	75%	66%	38%
MIDISHA	18%	71%	65%	37%

जिला	% शिक्षक जिन्होंने आज 5 विद्यार्थियों / मेंटर्स से फ़ोन पर संपर्क किया	कक्षा 3-8 के कितने % विद्यार्थियों को एक पेज का लर्निंग प्लानर प्राप्त हो गया है	% शिक्षक जिन्होंने अपने कक्षा समूह का निर्माण अकादमिक सत्र 2021-22 के विद्यार्थियों के अनुसार कर लिया है	Total Score
BARWANI	27%	59%	80%	37%
INDORE	32%	69%	55%	37%
HOSHANGABAD	29%	64%	66%	37%
GUNA	28%	55%	81%	36%
KATNI	36%	68%	47%	36%
SATNA	18%	66%	62%	35%
MANDSAUR	19%	48%	90%	34%
SIDHI	31%	57%	57%	33%
CHHINDWARA	40%	49%	61%	33%
SHIVPURI	25%	56%	60%	32%
MANDLA	30%	46%	75%	32%
ALIRAJPUR	15%	42%	97%	32%
BHIIND	15%	33%	100%	32%
DINDORI	19%	47%	77%	31%
DATIA	16%	41%	90%	31%
RATLAM	17%	51%	68%	31%
BURHANPUR	18%	27%	49%	20%
SHAJAPUR	1%	11%	86%	18%
SHEOPUR	3%	22%	48%	16%
NIWARI		81%	83%	
PANNA		70%	81%	
SAGAR		49%	53%	
TIKAMGARH		54%	59%	
CHHATARPUR		59%	65%	
DAMOH		77%	75%	

Exhibit 4.10.1: Illustration of district ranks in States

- **Disincentives:** While linkage to service conditions may prove politically untenable in the short run, objectively egregious performance of officials must be actively disincentivized by the State through judicious use of tools like show-cause notices, departmental inquiries, suspension of salary etc. Frequent and transparent dissemination of data, to continuously highlight poor performers also has a galvanizing effect.

All the data systems and related incentives/ disincentives should fall in place, a systemic review cadence should be set up where data-based evidence is used for reviews and decision making with the following considerations.

- **Define the following for review meetings:**

- **Levels:** States must define whether meetings will be held at State, district, block, or panchayat levels. A State may decide its smallest unit for reviews depending on the size of its unit. For instance, a large State may choose to have the smallest unit for reviews as a panchayat, while a smaller State may choose the same to be at block level.
- **Frequency:** States must decide the frequency of review meetings. They may be held at different frequencies at different levels such as monthly at district level while once in two months at State level. States may make this decision based on the availability of stakeholders as well as how fast they wish to implement schemes on ground.
- **Attendees:** States must decide who attends the review meetings at each level. This is a critical step to ensure that meetings are effective and efficient while optimising for the time of its attendees. For instance, States may choose to have block officers present at district level meetings, but not at State level meetings.
- **Modalities:** States must decide whether meetings will be in-person or over Virtual Conferences (VCs) - video or telephonic. States may choose different modalities for different meetings, again with the view of optimizing for the time of its attendees. For instance, block level reviews may be in person, while State reviews may be via VC. States must consider the provision of facilities for VC such as cameras, screens, and high-speed internet at all attendee locations before deciding on that as a modality.

- **Identify the data that will be reviewed regularly and its sources:** To ensure that review meetings are effective, States must identify the different types of data that will be reviewed regularly. This must include data from academic monitoring of schools, student assessment data as well as progress on key schemes being implemented at the time. In addition to identifying the data points, States must also identify the sources where this data will be gathered from. Data should be customized from time to time to ensure relevance for field action.
- **Create templates to facilitate implementation:** To ease the process of conducting reviews while maintaining quality, States must create templates to facilitate the implementation of review meetings. These templates may be for the agenda of the meeting, data collection, presentations for use during review meetings, attendance sheets, etc.
- **Design methods to monitor compliance:** Filled in data in pre-decided templates must be reviewed regularly by the State officials. Compliance may be monitored by checking the date of review meetings while quality may be assessed through minutes of the meeting, next steps captured, or any outputs created during the meeting.

Action charter

Questions, cadence, and reporting	Design an academic monitoring system with questions/ parameters, a review cadence (who will visit and how often), and reporting format (e.g., what metrics are tracked/ reported in dashboards etc.)
System/platform	Build the system for school visit/monitoring and for dashboards to be reviewed by field officials
Incentive structure	Finalize necessary incentives/ disincentives and monitoring systems
Reviews and documentation	Set up review system leveraging the data/ dashboard for discussion Track compliance and quality of reviews/ meetings Dynamically update review meeting minutes linking to State priorities

Challenges and mitigation

Challenges	Mitigation Strategies
Poor quality of data captured	To ensure that data captured is usable and accurate, questions on proformas must be carefully and clearly articulated. To ease data analysis, wherever possible, States should provide objective questions with selectable options instead of open text boxes
Data misrepresentation	To prevent misrepresentation of data, mobile apps must allow capture of GPS location during school visits as well as photographic evidence.



Supporting case study (Odisha)

Background

Odisha was faced with limited accountability across levels for student learning outcomes and no common vision or goals. This was due to:

- Lack of structured review cascade from State to cluster.
- No standard agenda or data available for review.
- Lack of follow up on decisions taken during meeting.

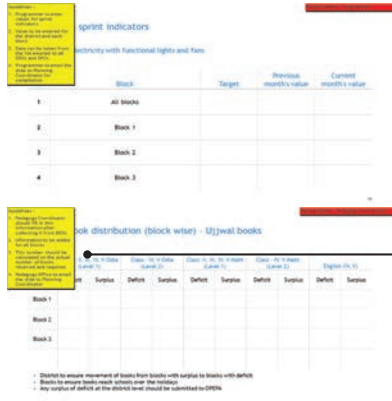
A structured process has been introduced to improve accountability throughout the system and make review meetings more effective by focusing on:

- Establishing a regular review cadence at State, District and Block level.
- Centralized agenda and roll out of tools such as monthly district scorecard.
- Central collection and review of minutes and Action Taken Reports.

Implementation

- **Review cadence and model:** A cascade model has been set up to ensure regular reviews from State to district and block level with standard templates for reviews/ minutes.

Centralized PPT template & format to capture minutes shared for DRMs



Sprint Indicators

Block	Target	Previous month's value	Current month's value
1. All blocks			
2. Block 1			
3. Block 2			
4. Block 3			

Book Distribution (block wise) - Ujjwal books

Block	Surplus	Deficit	Surplus	Deficit	Surplus	Deficit	Surplus	Deficit	Surplus	Deficit
Block 1										
Block 2										
Block 3										

Guidelines on how to prepare the slide (data source etc.)



Minutes of Meeting Form

Please select the name of your district *

Please enter your name and designation *

Enter date on which meeting took place *

Please select the chairperson of the meeting *

Minutes of the Meeting

Sr.	Topic	Decisions taken	Responsible	Follow up
1				
2				
3				
4				
5				
6				
7				
8				

Decisions submitted in google form for any meeting visible on the dashboard

PPT template to be used during reviews

Google form and dashboard to capture decisions taken during the meeting

Exhibit 4.10.2: Cascade Model for Reviews

- **Data backed reviews:** Several tools have been rolled out to conduct data backed reviews including initiative specific dashboards which are included in the review templates for ex: school consolidation. District scorecard has also been rolled out to ensure improvement along metrics through competition by enabling:
 - Data backed action focus by prioritizing low performing districts and action areas to drive timely actions.
 - Better strategic planning and organizational alignment with the complete district and all its blocks working towards a common goal.

Scorecard launched to give a one-shot view of district performance, set priorities & take action

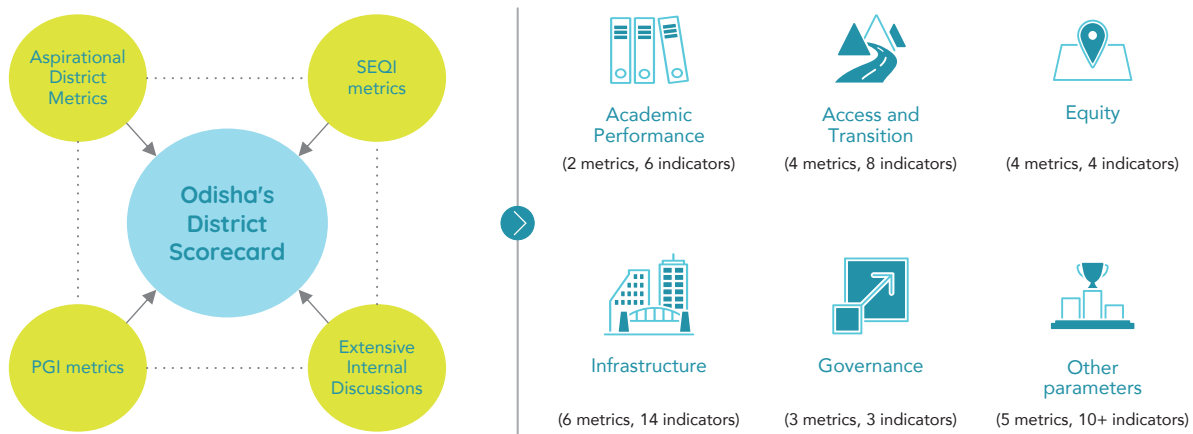


Exhibit 4.10.3: District Scorecard constituents

Scorecard metrics are changed regularly depending on the initiatives operational in the State. Scorecard sprints are used to pick 3-4 metrics with targets per quarter and focus on one theme to ensure improvement through the scorecard

- **Change Management:** Various change management activities have also been conducted to ensure adoption and drive outcomes.
- **Capacity Building:** (i) Rigorous Training of DLOs, BLOs & CRCCs on indicators of scorecard and school monitoring. (ii) Helpline call center support by VFS to CRCCs & BLOs. (iii) Orientation of District Programmers/ District Planning Coordinators on the DRMs/ BRMs agenda template. (iv) 1 on 1 meetings with District Collectors to sensitize them on their district's position based on indicator wise achievement percentage and overall score in district scorecard.
- **Improving Data Quality:** (i) School visits by SATH team to a few selected sample schools to verify data entered. (ii) Verification of data shared by districts via sample calling through VFS call centre. (iii) Sharing data mismatch findings at DRM & BRM and with other State officials for corrective action.

Extensive support given to districts to make the scorecard actionable

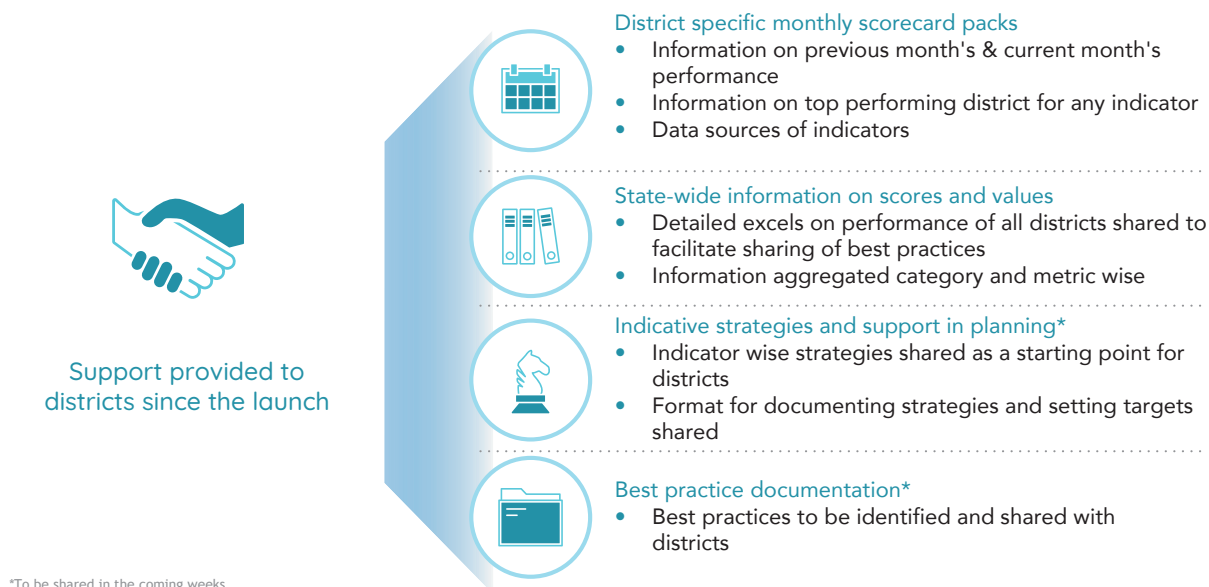


Exhibit 4.10.4: District Support Mechanism

- **Roles and responsibilities:** The reviews are conducted in a 3-tier structure as indicated below:

Cascade model set up to ensure regular reviews till district level

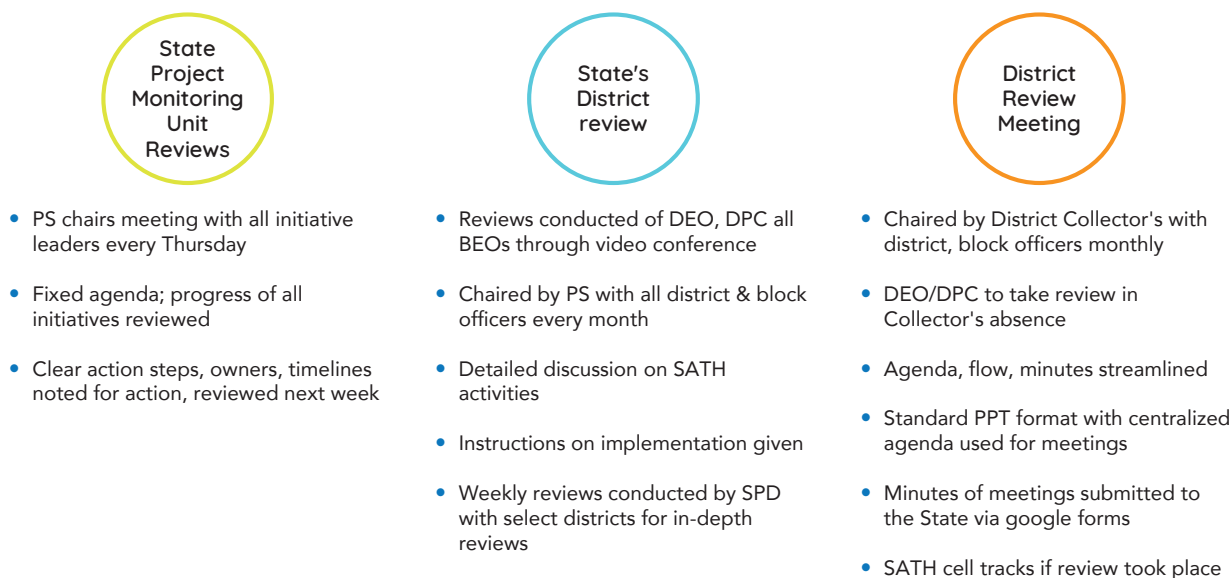


Exhibit 4.10.5: Review guidelines at all levels

Key roles and responsibilities of other stakeholders for enabling efficient District Review Meetings are detailed out below:

Stakeholders	Roles and Responsibilities
District planning coordinators	• Overall responsibility of preparing the presentation, sharing of slides with the relevant stakeholders one week before the district review meeting • Ensure that decisions taken during the meeting are recorded and minutes of meeting are prepared
District Education Officer	• Review the presentation shared by the Planning Coordinators and lead the discussion during the DRM and ask various stakeholders relevant questions to track progress of implementation of initiatives
Block Education Officers	• Prepare the slides with support of block MIS planning coordinator and present them in the DRM and BRM

Outcomes

These initiatives have helped transform the State monitoring mechanisms and make them more effective and robust:

- Districts are regularly updating databases (Teacher Information System, MDM etc.) to ensure progress is captured and reflected in scorecards.
- Percentage of reviews being chaired by DCs has increased constantly which has helped drive initiatives.
- Submission of Minutes of Meeting to State is close to 100% now with more than 95% districts using the prescribed PPTs for the reviews.

All of this going forward is expected to lead to an improvement in annual indicators such as transition rate, drop rate etc.

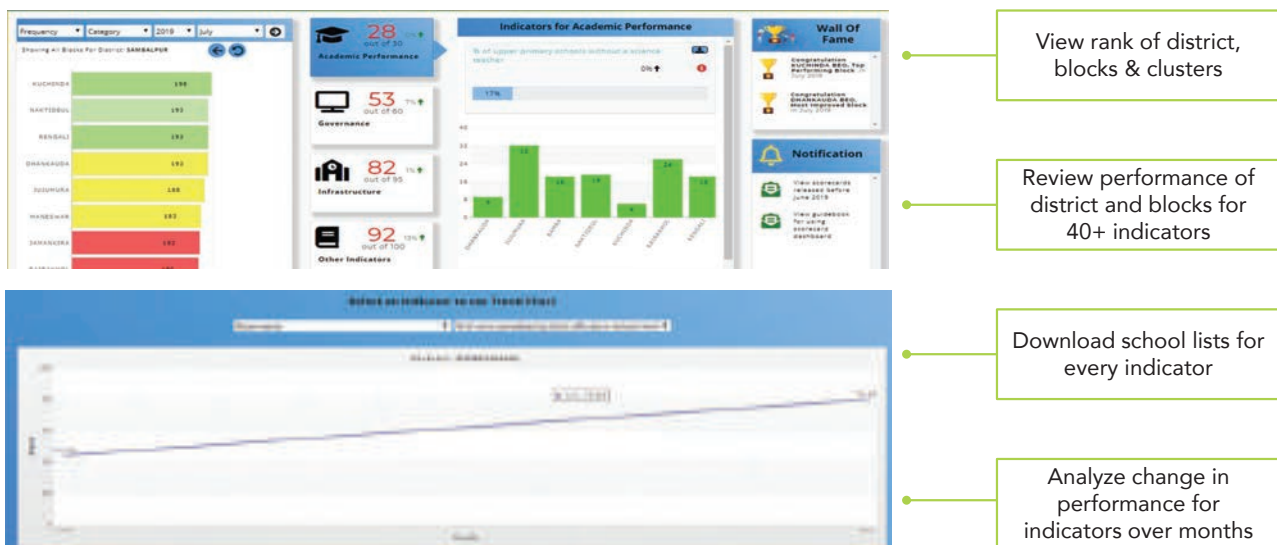
Appendix

Academic	Attendance	• % Average student attendance
		• % Average teacher attendance
	Learning Outcome	• % Schools Qualified For Bronze In Garima Award
		• % Schools Qualified For Silver In Garima Award
	Teacher Distribution	• % Single Teacher Schools
		• % Upper Primary Schools With Only Two Teachers
		• % Upper Primary School Without Science Teacher (Excluding +2 Science)
		• % Upper Primary School Without Science Teacher (Including +2 Science)
Governance	Legal	• % Court Cases Complied With PWC Or Disposed Off (Block)
	Monitoring Visit Compliance	• % Court Cases Complied With PWC Or Disposed Off (Block)
		• % Schools That Have Not Been Monitored Even Once
		• % Visits Completed By Block Officials In School Monitoring App
		• % Visits Completed By CRCCs In School Monitoring App

Infrastructure	Drinking Water	% Schools With Functional Drinking Water Facility
	Electricity	% Elementary Schools With Functional Electricity Facility
	Toilets	% Schools With Separate Functional Girls' And Boys' Toilets
Other Indicators	Learning Enhancement Program	% Schools That Conducted Ujjwal % Schools That Conducted Utthan
	School Merger	% Schools That Have Completed Mergers
	School Operations	% Schools With SDP/ SSP
		% Schools That Have Constituted A SMC/ SMDC

Exhibit 4.10.6: A sample district scorecard for Odisha

Scorecard dashboard launched for you to monitor performance of the entire district education department using one platform



Link – bit.ly/ScorecardPortal User ID – dc_<district name> Password – dc#1234

Exhibit 4.10.7: A scorecard dashboard was also launched to help monitor performance of the entire district education department using one platform



Supporting case study (Haryana)

Background

Till 2015, student assessments in Haryana were not standardized for quality and frequency. As a result, the quality of assessment data generated was poor. Additionally, the State did not have a centralized tech portal to capture the data that was generated. This data was collected by the Department of Education through paper-based formats or Excel files. Academic monitoring of schools was irregular and there was no mechanism to consolidate or analyse data across the State or use it to draw any actionable insights to improve the system.

The objective of Haryana's intervention was to ensure the availability of accurate, regular, and timely data focused on student assessment and from academic monitoring of schools.

To provide regular, accurate and timely data collected from school monitoring, Haryana launched the Academic Monitoring System (AMS) in 2016.

Implementation

The AMS is applicable to all 14,300 schools across Haryana.

- **Establishing academic monitoring cadre and cadence:** The monitoring cadre includes officials from the Department of Education. Additionally, other members of the bureaucracy such as Deputy Commissioners (DCs) and Sub-Divisional Magistrates (SDMs) are also actively involved in monitoring schools. All visiting officials are divided into three groups:
 - **Mentors:** These include around 500 Block Resource Persons (BRPs), Block Resource Centre Coordinators (BRCCs), Assistant BRCCs and DIET Faculty. They are responsible for visiting 10 schools every month. They observe teachers in the classroom, based on which they provide feedback on matters such as pedagogy, teaching aids and methods.
 - **Monitors:** These include around 200 District and Block Education Officers and DIET Faculty. They visit 4-8 schools each per month and record their observations on matters like student learning levels.
 - **School LEP Owners (SLOs):** These include around 8,600 primary Head Teachers who fill data for their own schools pertaining to the distribution of students as per different learning levels.
- **Designing Academic Monitoring proforma:** Haryana has four separate proformas for officials to record school observations.
 - **Mentoring proforma:** This focuses on the implementation of Learning Enhancement Program
 - **Monitoring proforma:** This captures additional details such as the maintenance of teacher diaries, lesson planning, quality of Teaching Learning Materials and quality of classroom engagement. This proforma also allows the capturing of photographic evidence
 - **SLOs proforma:** This proforma is used by School LEP Owners (SLOs) captures information such as the distribution of students according to their learning levels or the type of training, infrastructure, TLM support required by the school
 - **Fourth proforma:** The fourth proforma focuses on recording the prevalence of cheating during assessments.
- **Creating a data collection platform:** Given that internet and smartphone penetration is high in Haryana, and the officials display comfort with using smartphones, Haryana built a mobile-based AMS App⁵⁶ to capture data from academic monitoring visits. All reports and dashboards generated through this exercise are also available on a web-based platform⁵⁷. The key features of the AMS App are:
 - GPS location of the monitoring visit is captured
 - Offline sync option is available
 - Evidence such as photographs or documents can be attached

⁵⁶ <https://play.google.com/store/apps/details?id=com.sbss.ams&hl=en>

⁵⁷ <http://117.239.178.88/AMSWeb>

- **Collecting data and analysing it:** Using the AMS App, officials capture insights from their school monitoring visits in their respective monitoring proforma. This data is collected and analysed automatically by the App and made available on a web-based dashboard. Mentors and Monitors have separate dashboards that capture information such as LEP compliance and SAT results. This data helps them identify issues in their schools and districts.
- **Ensuring regular school visits:** To ensure regular school monitoring visits, the dashboards above are used as trackers. They provide information such as the number of monitoring and mentoring visits conducted in a month in each district of Haryana. Additionally, they also provide information such as the types of issues and their resolution rate. This information is used by senior State and department officials at district and State level review meetings.

Outcomes

The app has enabled effective school visits, at least thrice a year, to each school. Separately, academic monitoring has supported the implementation of other intervention on ground such as the LEP. With strict monitoring and mentoring in place, more than 90% schools were found to be conducting the program regularly.

Appendix

Relevant Documents:

Academic Monitoring System:⁵⁸ Overview of key academic monitoring statistics that aid review

⁵⁸ <http://117.239.178.88/AMSWeb>

11. Competition framework

Introduction and context

A systemic transformation of the education system is predicated upon all actors within the system having an aligned vision and being motivated to perform their role to the best of their abilities. However, in the absence of positive reinforcement, such as recognition and incentives from the State leadership, it is difficult to spur varied stakeholders into action.

It is also equally important, if not more, to link such recognition to credible improvement in performance. Giving teachers and administrative officers a tangible objective to aspire to and plan for, in terms of grade-competency levels that students must achieve, motivates them to align their efforts towards achieving that target. Building a competitive spirit between schools, blocks and districts to attain grade-level competency for their students makes critical actors within the system take initiative to perform better to achieve tangible targets.

Expected objectives and outcomes

- Generate momentum at the district, block and school levels to improve learning outcomes of students by creating a sense of healthy competition and motivation linked to incentives.
- Ensure that the data used for such a certification/ assessment has an authentication system in place to ensure high credibility and process transparency (e.g., fully third-party managed certification/ assessment or random sample-based authentication etc.)

Design of the intervention

- **Defining the goalposts:** Establish the criteria (academic/ non-academic) and achievement thresholds for these metrics at which a block/ school will get certified and institutionalize the unit for certification (number of students vs. number of schools; mapping at school level vs. at block level)
- **Creating the assessment design:** Develop the mode and format of the assessments in terms of written vs. oral; shortlisting of subjects; decision on number of items to be tested, aligned with the purpose of the assessments and difficulty levels to be covered.
- **Developing assessment processes:** Determine how the assessment will be conducted (spot checks, random sampling, etc.) and by whom (State government officials, independent third-party agencies, etc.). Involving an independent, third-party to conduct all assessments (including the baseline assessment) is a vital element of ensuring that the process is transparent and credible.
- **Defining role of stakeholders:** Clearly articulate the role of varied stakeholders (school principals, nodal teachers, DIET officials, SCERT, etc.) and ensure all stakeholders are well-versed and trained on their responsibilities.
- **Conducting baseline assessment:** A baseline assessment test must be conducted to gauge the baseline learning levels in the State at that point. Setting tangible targets thereon for the State to achieve helps the system focus on pursuing that objective effectively.

- **Defining scale for testing:** The State should determine how many schools should be assessed at one time and how they should be chosen. There are two options in this respect:

- Testing all schools across the State at the same time.
- Allowing self-nomination.

Here, it is important to recognize how a competitive assessment model is distinctive from regular student assessments, which are also equally important. A competitive framework that rewards schools/ blocks/ districts for taking initiative and achieving targets spurs the entire system into action. If the State chooses to adopt the self-nomination method, the next step in the process is to make the assessment more robust through shortlisting of schools/ blocks/ districts based on certain performance parameters.

- **Administering the test:** Effective implementation of such an assessment has multiple logistical requirements.
 - The State must decide on the competencies, learning outcomes and syllabus that will be tested.
 - The State must determine the mode of assessment (oral vs. written; offline vs. online).
 - The State must determine the budgets, payment flow processes etc. for concerned officials.
 - Special arrangements need to be made to ensure there is no cheating during the examination.
- **Checking Data Validity:** Data collection, storage and analysis mechanisms should be well-vetted so that results are not questioned. A rigorous monitoring system should be adopted to ensure that the system is functioning as per design.
- **Recognition:** A well-charted rewards and incentives framework may be developed to motivate schools/ districts/ blocks to meet the certification criteria and keep aspiring for higher levels of certification. There should be constant engagement and involvement from the top leadership of the State (both political and bureaucratic), in not only encouraging districts and blocks to improve their performance, but also in providing recognition to those that do well. Such encouragement and recognition is key to this intervention.

Action charter

Defining goalposts	Establishing criteria, thresh-holds and the unit for assessment
Assessment Design	Developing mode and format of assessment, aligned with the purpose, difficulty levels envisioned
Assessment processes	For conducting the assessment and identifying the assessment agency
Defining role of stakeholders	Articulating role of school principals, nodal teachers, DIET officials, SCERT, CRCS, BRCS etc. and training them on the same
Conducting a Baseline	Determining the baseline learning levels of students
Scale for testing	Determining how many schools should be assessed at the same time and how they should be chosen
Logistics for administering the test	Determining the learning outcomes and syllabus to be tested, provisioning for testing equipment, ensuring no cheating
Evaluation	Rigorous evaluation mechanism, enforced by a well-developed monitoring system
Recognition	Providing recognition to schools, blocks and districts that become certified

Challenges and mitigation

Challenges	Mitigation Strategies
Carrying out the assessment requires coordinating with multiple stakeholders. This includes block and district-level officials, schools, teachers and the third-party assessor.	Establishing two-way communication channels through WhatsApp with all stakeholders to provide timely updates and clarifications at each step of the process is useful.
Managing the logistics of the assessment such as ensuring assessment officials are equipped with adequate testing equipment, have means to reach the schools, and ensuring correct sampling is a challenge.	This can be mitigated with advance planning, clear communication of deadlines and instructions.
Ensuring the sanctity of the exam is a challenge but critical to the success of this intervention.	A 'No cheating campaign' can be run with the State leadership asking schools/ blocks to desist from any malpractice. Key stakeholders such as DIET principals, lecturers can be trained to prevent cheating at the time of student assessments.
This assessment is based on self-nomination by schools/blocks. There might be some schools/blocks that are laggards and do not nominate themselves for assessment.	In such cases, it is important for the State's leadership to communicate with the district, block and school administrations and motivate them to work harder towards nomination and achieving certification. Blocks and districts are also incentivized and receive awards on percentage of schools certified.



Supporting case study (Odisha)

Background

The State of Odisha built significant momentum in 2017 & 2018 through two key initiatives – Learning Enhancement Program (LEP) focused on remediation and Odisha School Monitoring App (OSMA), an app-based school monitoring system formed the basis of block and district level reviews. Building on this, to recognize and reward best performing schools in terms of Learning Outcomes and motivate the rest to improve performance, the State decided to launch the School Certification Program in 2019.

Implementation

- The Garima School Certification program:** This was designed to motivate HMs and teachers to bring students to achieve grade-level competencies. The following were the key objectives of the program:
 - To identify good performing schools based on academic performance.
 - To encourage schools to help students accomplish grade-level Learning Outcomes.
 - To generate healthy competition amongst schools in the block/ district.
 - To recognize and reward these schools' HMs and Teachers.
 - To recognize and reward schools, clusters and blocks that are ensuring students at appropriate learning outcomes.
- Metrics for certifying schools are based on Learning Outcomes:** Schools are assessed only on learning outcomes to get certified & rewarded. There is a pre-verification exercise to check accurate reporting of a few important data points in the School Monitoring App, as well as attendance of the teacher and students. The learning outcomes of students are assessed by assessing 12 basic competencies in Language (Odia, Urdu, etc.) and Mathematics for grade 2-5 students. For grades 6-8, 17 basic competencies in Language (Odia, Urdu etc), English and Mathematics are assessed. The schools who qualify after the pre verification process are assessed by a district team consisting of DIET faculty & students, DEO (or his/ her representative) and BEO of another block. This team conducts the assessment from the question paper prepared by the DIETs and DEOs/ BEO.

School certification program to be launched

Category	School level parameters		Criteria for Cluster/Block
	Academic Parameters	Non-Academic	
 Bronze	• 80% Grade 2-5 at basic competencies • 80% Grade 6-8 at Grade 3 competencies	• Verification Key Infra and Academic on monitoring app • >70% Avg. Teacher attendance	>70% Schools in Bronze/Silver/Gold Category
 Silver	• 80% Grade 2-3 at basic competencies • 70% Grade 4-5 at Grade 2 competencies • 70% Grade 6-8 at Grade 5 competencies	• All parameters for Bronze • >80% Avg. Teacher attendance • >70% Avg. Student attendance	>60% Schools in Silver/Gold Category
 Gold	• 70% of ALL students at grade level competencies	• All parameters for Silver • >80% Avg. Teacher and Student attendance	>60% Schools in Gold Category

Academic test only happens if the Non-Academic parameters are met

Exhibit 4.11.1: School level metrics to be tested

- **Engagement of all stakeholders:** All elementary (and primary + upper primary section of secondary) schools were eligible to get certified. When a certain percentage of schools gets certified, the relevant cluster & block will also get certified.

Category	Criteria for Cluster/ Block
Bronze	More than 70% Schools in Bronze/ Silver/ Gold Category
Silver	More than 70% Schools in Silver/ Gold Category
Gold	More than 70% Schools in Gold Category

Exhibit 4.11.2: Criteria for each category of certification

- **3 levels of Certification:** Certification was given at three levels- Bronze, Silver, and Gold, with increasing levels of difficulty. Three levels will help the State:
 - Keep motivation up by making schools see quick successes
 - Break down the ultimate goal into clear milestones for a clear pathway
 - Identify high performers early and handhold them to achieve higher level of certification
- **Unbiased assessment:** Certifications were provided basis a centrally prepared assessment for the nominated school. This assessment was conducted by a team composed of DIETs and its faculty of the same district, along with BEO of another district as an unbiased assessor for the Bronze and Silver levels, and by a third-party assessor for Gold-level certification.
- **Rewards & incentives:** To motivate officials, it was proposed that tangible rewards be linked to each level of Certification. While certificates and letters of appreciation will be sufficient for Bronze certification, physical and monetary rewards were considered for Silver and Gold levels.

Level	School – Level Rewards	Cluster and Block Level Rewards*
Bronze	Certificates & Felicitation at District level	Certificates for CRCC and Block Office
	Three stars outside school	
	School name included on Block Hall of Fame	
Silver	Certificates & Felicitation at SPD and/ or PS level	Certificates for CRCC and Block Office
	Four stars outside school	SPD grant of INR 50,000 to Block Office
	School name included on District Hall of Fame	
	School Grant Award - additional INR 20,000	
Gold	Certificates & Felicitation at Principal Secretary level	Felicitation of CRCC & BEO by Principal Secretary
	School Grant Award - additional INR 50,000	SPD grant of INR 100,000 to Block Office
	Five stars outside school	
	School Name included on District Hall of Fame	
	Media article in local newspapers	

Exhibit 4.11.3: Rewards and incentives structure

- **Fully online process:** The entire application, pre-verification and result reporting was done through an online portal, developed by the Government with the help of NIC, Bhubaneswar

Outcomes

- One of the key aims of Garima school certification was to shift accountability from tracking inputs to tracking learning outcomes – and it managed to achieve that in the first year of certification itself in 2019.
- The first cycle created a Jan Andolan on Learning Outcomes and genuine excitement in the field. Multiple schools and blocks were seen doing mission-mode preparation for the tests. Many BEOs (e.g. Ambhabhona, Subdega, Barapalli) were helping all schools prepare, as a result getting more than 75% nominated schools certified.
- Rewards and recognition played a key role in fuelling this Jan Andolan. All the Bronze schools were felicitated by the Collectors and DMs in the district and immense press coverage and public excitement followed, as depicted in the exhibit below.

6,000 schools to get awards for improving performance

Minati.Singha
@timesgroup.com

BHUBANESWAR: As many as 6,248 government schools across the state have been chosen for the bronze category of Garima awards for showing improvement in the learning outcome of their students.

The state government had launched the Garima awards for schools to identify and recognize them on the basis of achievements in improving learning outcomes.

All the schools were first pre-verified by a block education office team. Then, a detailed assessment of all students in the schools was conducted by the respective District Institute of Education and Training (DIET). After the block-level verification, 18,353 schools were tested by the DIETs. Then, a total of 6,248 were chosen for the bronze category of the award, said B S Poonia, state project director, Odisha School Education Project Authority.

Individual certificates will be provided to these schools during the district-level children's day programme, Suravi-2019.

The Garima programme has three categories of awards—gold, silver and bronze. For the bronze category, 23,500 schools had nominated themselves in August this year. Very basic learning skills of the student in these schools were tested in this category. Schools where the students achieve



All the schools that will be awarded were first checked by a block education office team.

“Other blocks and clusters should emulate the best practices of these certified blocks and clusters and get recognized in the upcoming cycles. The bronze awardees will be tested for silver category award in December”
B S POONIA

State project director, Odisha School Education Project Authority

sheets to verify results and ensure quality.

Under the programme, special recognition has been envisaged for blocks and clusters where 70 per cent of the schools get recognised under a certain category. In the bronze category, two blocks—Subdega in Sundargarh and Bhandar ipokhari in Bhadrak—and 58 clusters have been recognised.

“Other blocks and clusters should emulate the best practices of these certified blocks and clusters and get recognized in the upcoming cycles. The bronze awardees will be tested for silver category award in December,” Poonia added.

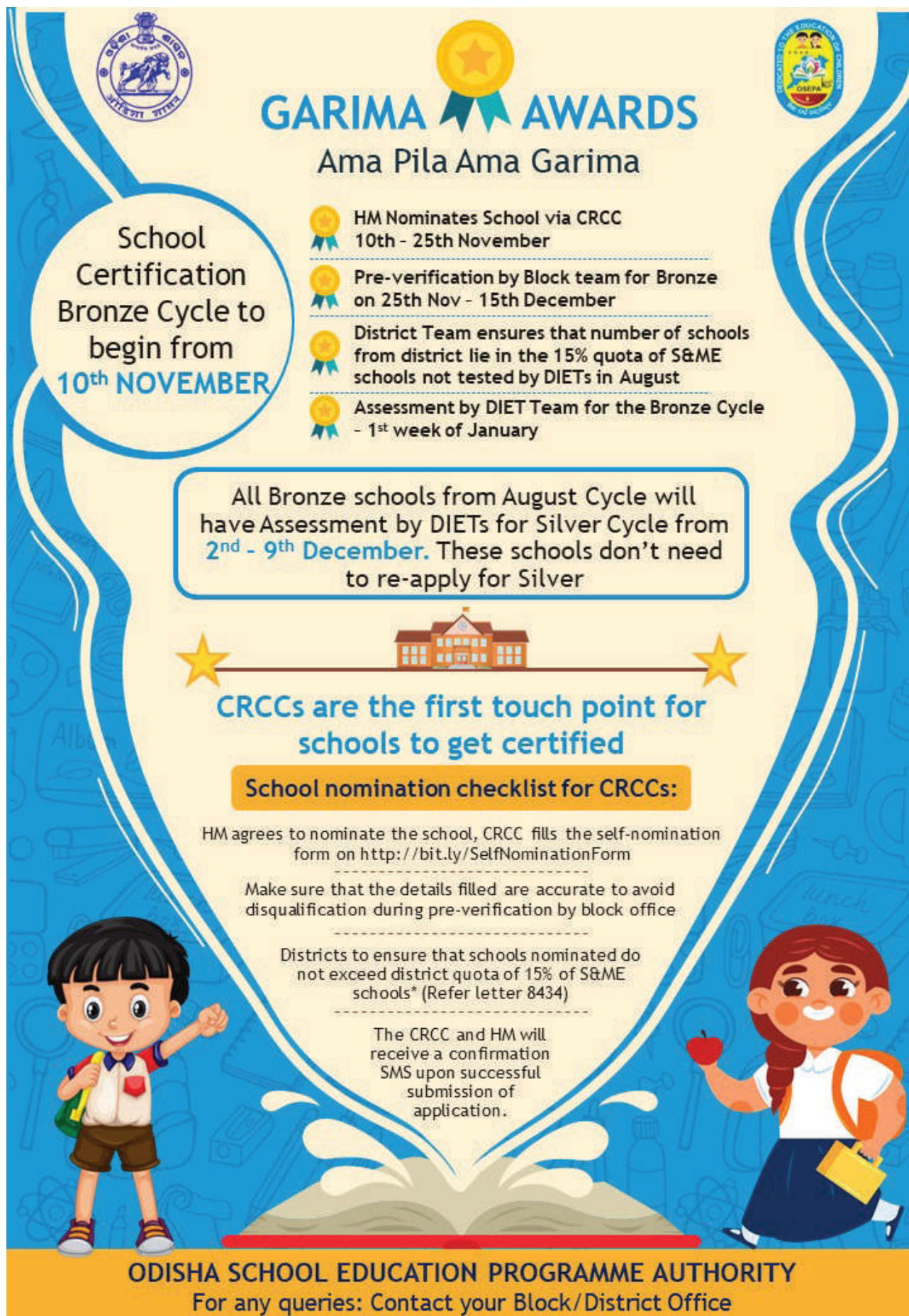
grade-appropriate learning outcomes will be included in the silver and gold categories. The department has also done sample checks of answer

Exhibit 4.11.4: Garima School Certification covered widely in the press

Appendix

- **Garima Awards-** Odisha School Certification Program:⁵⁹ Public document containing detailed information about the nomination process for School certification and the learning outcomes which are tested for each grade
- Extensive communication and awareness campaigns were carried in the field. A few examples of collaterals used are shown below

⁵⁹ <http://govtpress.odisha.gov.in/pdf/2019/1680.pdf>



The poster is titled "GARIMA AWARDS" with a star icon, and "Ama Pila Ama Garima" below it. It features logos of the Odisha School Education Programme Authority (OSEP) and the Odisha State Education Board (O.S.E.B.) in the top corners. A central shield-shaped area contains the main information. On the left, a circular callout states "School Certification Bronze Cycle to begin from 10th NOVEMBER". The central shield lists four steps: 1. HM Nominates School via CRCC (10th - 25th November), 2. Pre-verification by Block team for Bronze (25th Nov - 15th December), 3. District Team ensures that number of schools from district lie in the 15% quota of S&ME schools not tested by DIETs in August, and 4. Assessment by DIET Team for the Bronze Cycle (1st week of January). Below this, a box states: "All Bronze schools from August Cycle will have Assessment by DIETs for Silver Cycle from 2nd - 9th December. These schools don't need to re-apply for Silver". A section titled "CRCCs are the first touch point for schools to get certified" includes a "School nomination checklist for CRCCs:" with three items: HM agrees to nominate the school, CRCC fills the self-nomination form on <http://bit.ly/SelfNominationForm>; Make sure that the details filled are accurate to avoid disqualification during pre-verification by block office; and Districts to ensure that schools nominated do not exceed district quota of 15% of S&ME schools* (Refer letter 8434). It also states: "The CRCC and HM will receive a confirmation SMS upon successful submission of application." The bottom of the poster features illustrations of a boy and a girl, and a large open book. The footer reads "ODISHA SCHOOL EDUCATION PROGRAMME AUTHORITY" and "For any queries: Contact your Block/District Office".

School Certification Bronze Cycle to begin from 10th NOVEMBER

- HM Nominates School via CRCC
10th - 25th November
- Pre-verification by Block team for Bronze
on 25th Nov - 15th December
- District Team ensures that number of schools from district lie in the 15% quota of S&ME schools not tested by DIETs in August
- Assessment by DIET Team for the Bronze Cycle
- 1st week of January

All Bronze schools from August Cycle will have Assessment by DIETs for Silver Cycle from **2nd - 9th December**. These schools don't need to re-apply for Silver

CRCCs are the first touch point for schools to get certified

School nomination checklist for CRCCs:

- HM agrees to nominate the school, CRCC fills the self-nomination form on <http://bit.ly/SelfNominationForm>
- Make sure that the details filled are accurate to avoid disqualification during pre-verification by block office
- Districts to ensure that schools nominated do not exceed district quota of 15% of S&ME schools* (Refer letter 8434)

The CRCC and HM will receive a confirmation SMS upon successful submission of application.

ODISHA SCHOOL EDUCATION PROGRAMME AUTHORITY
For any queries: Contact your Block/District Office

Exhibit 4.11.5: Communications and awareness building collaterals for Garima Awards



Supporting case study (Haryana)

Background

In 2014, only 40%⁶⁰ of all elementary school students in government schools of Haryana were grade-level competent. To substantially improve this number, the State government initiated the Saksham Haryana campaign with the objective of making 80% of the students in the State grade-level competent. Towards this end the Saksham Ghoshna campaign was launched in December 2017 which devolved ownership and accountability to blocks for ensuring that 80% of students in each block became grade-level competent. Blocks that meet the bar are declared Saksham and felicitated. By introducing a competitive framework among blocks to attain Saksham status, the State government has been able to generate momentum on the ground and spur multiple stakeholders in the system to work towards improving learning outcomes.

⁶⁰ Diagnostic Assessment of Student Learning in Government Schools of Haryana (2014-15); Educational Initiatives

Implementation

- **Baseline assessment:** A baseline assessment test was conducted by an independent, third-party assessor in November 2017 in 20 blocks across 15 districts in Haryana. The objective of this test was to assess the baseline competency in the State at that point. The assessment found that around 60% of the students were grade-level competent.
- **Self-nomination:** At the start of every round of assessment, the State's education department declares the nomination window for Saksham status open. Blocks which believe 80% students in their respective blocks are grade-level competent nominate themselves to be evaluated.
- **Shortlisting:** The department then assesses their nominations based on certain parameters (described in the Design section above). The shortlisting result for the nomination is announced at least one month before the test date. The shortlist of blocks that are selected is shared with the District Collector's Office and then with the third-party at least two-three weeks before the exam is scheduled. The third-party assessor then identifies a sample to be evaluated.
- **Sampling:** A minimum of 500 students are taken as sample from every block. Approximately 25 students per grade are selected to be a part of the sample. School response rate (attendance) should be a minimum of 80% on the day of the test. Replacement schools are identified as a backup in case the selected schools do not reach this level. The schools are selected through a method known as "stratified sampling". As per this method, all the schools of the block would be divided into certain groups on the basis of variables such as school level, size, location (urban/ rural), etc. Schools are then randomly selected as samples from each of these groups. The sample is usually 1/3rd of the schools in the block. To maintain complete transparency in the process, the sampling is carried out by the third-party assessor without any involvement from the State government or districts.
- **Syllabus:** The questions for the test are based on competencies that have been taught till the last Student Assessment Test. The competencies are defined by SCERT in a learning outcome framework, Saksham Taalika, for the respective classes.
- **Test structure:**
 - The test is conducted for three Classes- III, V and VII
 - Subjects: Hindi and Mathematics are assessed
 - Question type: Multiple-choice questions
 - Answer submission: Tick mark for Class III and OMR for Classes V and VII

Class	Subjects	Number of questions	Duration (mins)
III	Hindi, Mathematics	30	60
V	Hindi, Mathematics	35	75
VII	Hindi, Mathematics	40	90

Exhibit 4.11.6: Assessment Design for grades III, IV, V

- Printing:** Printing of assessment question papers is done by the Haryana Education Board with high security in two weeks. The papers are kept in the Deputy Commissioner's Office. One day before the test, the printed and sealed packages with question papers are handed over to field invigilators (typically, DEd and BEd students studying at DIETs) and the invigilators deliver the papers to schools on the day of the test. The test instruments are given directly to the staff trained for monitoring. After the test, the papers are brought to the regional collection centers and shipped to the data processing centre in Hyderabad.
- Administration and Monitoring:** Non-teaching staff (under-training teachers of the District Institute for Education and Training from other districts) are trained 3-5 days prior to the assessment on how to administer the test. The Department of Education pays travel and dearness allowance to the staff. Measures are taken to ensure the sanctity of the test instruments as well as to curb cheating during the assessment. This includes sending in flying squads on the day of the test. DCs, ADCs, SDMs, DEOs, Deputy DEOs, BEOs and BEEOs (from other blocks), DIET principals, lecturers, CMGGAs and Saksham Haryana team members are all part of flying squads. All the answer sheets undergo an advanced post-test data check which identifies patterns and flags tests which indicate the possibility of cheating.
- Report:** Once the results are compiled, a comprehensive report is created by the third-party assessor. The report indicates the sample size, percentage of students at grade and below grade-level, comparison with State average and performance of students by question type. Levels have been defined based on level of competency to be known by a certain grade student. The performance of the students is measured and assessed on this scale for consistent mapping across the blocks. The index of this result is also available by area – rural vs. urban; and gender – boys vs. girls.
- Cut off:** The third-party assessor sets cut-offs and establishes a measurement scale. If at least 80% of the students achieve the cut off (ranging from 55%-65% depending on subject and class), the block is declared 'Saksham' or grade-level competent.

Roles and responsibilities

Stakeholder	Roles and responsibilities
Third-party assessor	• Conducting baseline assessment • Providing inputs for setting the target of grade-competence • School sampling • Evaluation of answer sheets • Analysis of results
Saksham Haryana Cell	• Helping with shortlisting of blocks after self-nomination • Ensuring blocks are preparing for Ghoshna assessment by tracking compliance on specific educational initiatives • Coordinating logistics for test administration • Ensuring no cheating during assessment
DCs, ADCs, SDMs, DEOs, Deputy DEOs, BEOs and BEOs (from other blocks), DIET principals, lecturers, CMGGAs	• Part of flying squads which check for cheating on the day of the assessment
DEd and BEd students studying at DIETs	• Invigilators during the assessment

Outcomes

Since December 2017, seven rounds of assessment have been conducted. After seven rounds, 94 blocks of 119 in Haryana have been declared Saksham, which is nearly 80% of all blocks in the State.

Round	No. of blocks assessed	No. of blocks declared Saksham
December 2017	9	2
February 2018	13	1
May 2018	15	4
August 2018	23	11
September 2018	30	3
November 2018	25	5
February 2019	93	68
Total	208 (non-unique blocks) 119 (unique blocks)	94 (unique blocks)

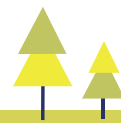
Exhibit 4.11.7: Identification of Saksham blocks across the State

- Nine districts in Haryana are now Saksham as all their blocks have achieved Saksham status.
- Through this assessment, learning levels of students are measured and tracked, and block and district-level performance can be compared.
- Low-performing blocks are identified for targeted interventions and resource allocation. Consequently, block and district-level strategies are formed to improve learning outcomes.
- When teachers and administrative officials are rewarded for innovative practices and achieving good results, they are automatically motivated to sustain their performance or improve it. This translates into each individual stakeholder having more skin in the game and knowing that their glory is in their hands. A mechanism of self-nomination puts the onus solely on blocks and teachers to do well.
- An overarching benefit of providing recognition to teachers and blocks is through a demonstration effect. Blocks that are lagging are also motivated to do better so that they can achieve Saksham status in subsequent assessment rounds.



नीति आयोग

National Institution for Transforming India
Government of India



Visit our site for more information
www.niti.gov.in