Michael & Susan Dell FOUNDATION

CSSL

ConveGenius™ INSIGHTS

CENTRAL SQUARE FOUNDATION

Large-scale Assessments In India

Table Of Contents

List of Figures

List of Figures

List of Figures

List of Charts

List of Tables

List of Tables

List of Abbreviations

AP	Andhra Pradesh
ASER	Annual Status of Education Report
BITE	Block Institute of Teacher Education
BRC	Block Resource Coordinator
CGI	CG Insights
CMO	Chief Minister's Office
CRC	Cluster Resource Coordinator
CRP	Cluster Resource Person
CSSL	Centre for Science of Student Learning
CTT	Classical Test Theory
DIET	District Institute for Education and Training
EI	Educational Initiatives
GoAP	Government of Andhra Pradesh
GMI	Gray Matters India
HP	Himachal Pradesh
IRT	Item Response Theory
LO	Learning Outcome
LOF	Learning Outcome Framework
LSA	Large-scale Assessment
MHRD	Ministry of Human Resources Development
NAS	National Achievement Survey
NCERT	National Council for Educational Research and Training
NCF	National Curriculum Framework
NEP	National Education Policy

List of Abbreviations

PARAKH	Performance assessment, review and analysis of knowledge for holistic development
PISA	Programme for International Student Assessment
SA	Summative Assessment
SCERT	State Council of Educational Research and Training
SIQE	State Initiative for Quality Education
SLAS	State Level Achievement Survey
ULOF	Unified Learning Outcome Framework

Foreword

Vyjayanthi Sankar, Founder and Executive Director, Centre for Science of Student Learning

As India moves towards meeting the UN's sustainable development goals for quality education, and implementing the new National Education Policy (NEP 2020), assessment of learning outcomes will play a key role in determining our progress.

To shift the system from rote learning to higher order thinking, NEP 2020 ushers in many initiatives, such as assessment of higher order skills[1] ; board exam reforms; census state exams at end of grades 3, 5 and 8; sample-based national assessment surveys; census state assessment surveys; public disclosure of school performances; and capacity building programs for teachers on assessments. As the policy maker and the system tries to design and implement these assessment-related initiatives, it is important to acknowledge the strong relationship between the institutional capacity for assessment and its quality mechanism. Several Sarva Shiksha Abhiyan (SSA) joint review mission reports point out the gaps in the high levels of technical expertise required to design, conduct, analyze and use assessments. While there are a lot of high-stake tests in India, we do not have institutions that train for large-scale assessments. In such a scenario, it is a challenge for the states to successfully leverage the assessment mechanism to reach the desired learning outcomes.

The most common approach to assessments is usually on the number of passing candidates and their scores against what was learnt and how well they grasped concepts, leading us to an array of questions:

- Are such assessments useful?
- Is it possible to design large-scale assessments that provide a clear picture of not only where we are but where we want to go?
- Can assessments lead to meaningful insights that can strengthen the teaching-learning process?
- How can assessments be used to improve learning outcomes for the learner?

This collaborative report lays down a useful starting point for the policy makers and education administrators to understand the 'what' and 'how' of large-scale assessments. It is an attempt to learn about some successful assessment-led initiatives leading to improved learning outcomes, and long term excellence in assessment capacity. The accompanying 'self-evaluation' framework is expected to support the states in conducting learning assessments that provide as actionable insights, which can be fed back into the education system to improve learning outcomes.

[1] NEP aims to prepare our youth for the foundational skills of literacy and numeracy, and higher order cognitive, social and emotional skills.

Sridhar Rajagopalan, Co-Founder and Chief Learning Officer-Educational Initiatives

The goal of an education system is not merely for children to attend school, but to learn holistically to thrive in the larger economy and society. The term Isomorphic Mimicry describes the phenomenon of an organism or system copying some of the external features of another organism or system without adopting the core underlying characteristics those external features are supposed to represent. In the context of education systems, practices like teachers receiving 10 days of training a year or computers being available in schools are meant to help achieve quality education, but often don't get implemented in the way that they are meant. 'Rote' learning itself (in which children and teachers go through all the motions of teaching-learning but do not learn meaningfully) is the ultimate example of isomorphic mimicry. How can senior officials, parents or even concerned citizens know what is happening beneath these reassuring 'markers'?

The answer lies in large-scale assessments. When developed and executed well, they provide a low-cost and easy way of obtaining a true picture of how well a system is functioning. We call them "large scale" because they sample a large number of students or area and, thus, provide a reliable snapshot that cannot be easily manipulated. Large scale assessments can provide evidence to sharpen relevant educational policies and strategies.

At one level, this is a simple solution. In fact, it is why assessments like the Programme for International Student Assessments (PISA) or the Annual Status of Education Report (ASER) provide a remarkably reliable picture of learning and are not very expensive to conduct.

Yet there are some important prerequisites that are needed for large-scale assessments to truly work.

The first sounds tautological but is critical - the assessments themselves must be of good quality. The assessments must measure aspects of learning that are more important (like conceptual understanding and transferability of learning) as against recalling of facts and focus on narrow types of questions). What distinguishes an assessment providing insights from another is usually the quality of the questions in the assessment.

Creating high-quality questions and assessments is both an art and a science. Questions that identify learning gaps effectively often rely on the creativity of the question maker. Yet there is also a whole science that identifies the questions that have worked effectively and helps systematically identify learning gaps in different groups of students. This assessment capacity needs to be built and developed in a system. Successive assessments build on past learning data and deep understanding of the learning ecosystem. Assessment capacity includes the ability of various stakeholders – notably teachers - to understand and interpret assessment results. NEP 2020 announces the creation of a national assessment center (PARAKH) to house this assessment capacity of large-scale assessments.

Finally, it is necessary that both learning and assessments in the larger educational system be focused on students' understanding. For this to happen, a key pre-requisite is that school-leaving exams (Board Exams) are aligned to testing understanding and not recall. This challenge can be understood in the context of a test like PISA, which measures the ability to apply their knowledge and skills to meet real-life challenges.

Today, there are national initiatives for large-scale assessments, generation and consumption of education data, and the commitment to building assessment capacity at the national level. The NEP makes a strong case for assessment-led reform.

This publication details key principles of large-scale assessments and includes a number of cases from India and abroad. Initiatives like the World Bank-supported Strengthening Teaching-Learning and Results for States Program (STARS) programme are expected to give a new fillip to efforts on Large Scale Assessment over the coming years. This is, therefore, a very timely publication on large-scale assessments and I hope it will be of use to the larger education community and help achieve quality learning for all students.

Sowmya Velayudham , Advisory Consultant, ConveGenius Insights

Large-scale assessments have an extraordinary power, more than any singular intervention to move the needle forward on the learning outcomes across an entire state. A well-designed assessment process can help a state focus on the right levers of change for maximizing impact rather than guessing on the right interventions to implement. In addition, ensuring dissemination of results to all stakeholders, combined with target setting and continuous monitoring of growth in learning can shift the learning outcomes of a state forward by leaps. We have seen this happen in Haryana and it is possible to replicate it in every state.

The framework and toolkit presented in this report are created based on the immense learnings of successfully implemented large-scale assessments programs. They act as easy-to-use checklists that can help every state to rally the necessary resources and start a large-scale assessment program, without having to go through a steep learning curve.

Introduction

Authors

This report is co-authored by India's three premier assessment agencies - Centre for Science of Student learning, CG Insights, and Educational Initiatives alongside Michael & Susan Dell Foundation and Central Square Foundation. The report was compiled by KPMG Advisory Services Private Limited.

Centre for Science of Student Learning

Centre for Science of Student Learning (CSSL) is a research-based educational organisation working towards quality improvement in schools and school systems. Their mission is to build capacity for high-quality assessments and research into the science of student learning.

CSSL works with the Ministry of Human Resource Development (MHRD), Govt of India (as a technical advisor to develop learning outcome indicators and to improve national and state learning achievement surveys), NITI Aayog, and several state governments in projects related to measuring student learning outcomes, technical support for achievement surveys, school certification programs, teacher assessments and in setting up assessment cells. CSSL regularly partners with the World Bank, UNICEF, UNESCO, Dell Foundation, Tata Trusts, Central Square Foundation (CSF), ICICI Bank, and several NGOs and with organizations for corporate social responsibility initiatives.

CSSL's assessment cell is the only assessment capacity-building course program recognized by MHRD in 2017 for a scale up across different states through its regional workshops.

ConveGenius Insights (CGI)

ConveGenius Insights (CGI, formerly known as Gray Matters India) believes in the power of data and assessments to unlock the potential of millions of children and make them future-ready. Over the last six years, CGI has adopted a highly nimble approach to understanding the education sector and developed contextualized and customized solutions that bridge the gaps in the Indian assessments space. It is one of the fastest growing assessments company in the country. In the last two years, CGI has collected a few billion data points from learning and assessments data of over 10 million children and worked with about 16 state governments to identify learning gaps from students all over the country. Some of these states include Himachal Pradesh, Madhya Pradesh, Uttar Pradesh, Rajasthan, and Gujarat.

The organization has pioneered models to develop modern measurement techniques in education that are actionable on the ground and contextualized to the diversity of India. From conducting parent surveys to actively seeking client feedback, it is committed to raising standards for education data and customer service.

With a deep focus on functional technology CGI plans to tap on to the growing number of smart phones in the country to create meaningful learning fingerprints of every child to reduce learning gaps. They have administered over two million (2,000,000+) assessments for over 50 interventions across 15,000 schools in 18 Indian states.

Educational Initiatives

Founded in 2001, Educational Initiatives Private Limited (EI), is India's leading assessment research and educational technology organization, working with the vision to create "a world where children everywhere are learning with understanding". EI regularly conducts large scale assessments both in government and private schools while its education technology learning programme, Mindspark is used across India, by over 300k students.

Over the past two decades, EI has undertaken over 100+ projects with 50+ government and civil society partners (16+ languages, 40+ detailed studies published) across geographies, socio-linguistic backgrounds in India and abroad, for more than 10 million students across different grades.

EI has offices in Bangalore and Ahmedabad in India, with 400+ staff members specializing on different aspects of assessments, technology, training and project management. The top executives at EI serve/have served as advisors on boards of several educational commitees for State and Central Government of India.

Central Square Foundation (CSF)

Central Square Foundation is a non-profit organization working with the vision of ensuring quality school education for all children in India. They are driven by their mission to transform the school education system by improving the learning outcomes of children, especially from low-income communities. By building an effective and inclusive education system, CSF ensures that all children get equal access to opportunities needed for leading a better life.

To achieve their goal, CSF works with the government to execute scalable, sustainable projects. They also collaborate with other ecosystem stakeholders to build public goods and create effective proven tools around critical issues such as early learning, technology in education, classroom instruction methods and school innovations.

KPMG Advisory Services Private Limited

KPMG in India's dedicated education practice is part of a global network of education practices across 15+ countries. In India, the team is comprised of 100+ professionals working on education and skill development. The practice has provided cutting-edge solutions to the vast and challenging problems faced by clients through 500+ engagements in the education sector.

They have built our presence in the education and skilling ecosystem through our work with key nodal agencies, central and state government departments, as well as donor organizations. KPMG deploys multi-domain and cross functional expertise across teams to inform strategy development, planning, program management, due diligence, monitoring and evaluation, impact assessment in the education sector. They have demonstrated experience of handling large scale projects and driving end to end systemic transformation for central and state governments, in order to enhance the effectiveness of public-school education.

Michael & Susan Dell Foundation

The Michael & Susan Dell Foundation in India is focused on enabling children and youth in aspirational India to reach their goals through quality education and employment opportunities. This focus is driven by investments in education; jobs and livelihood; and financial inclusion. With over USD200 million in investments over the past 14 years, the foundation has impacted the lives of over 12 million children and families in the country.

Acknowledgements

This report would not have been possible without the valuable contributions of numerous people and institutions. We would like to acknowledge this support and thank them for their time and effort.
In writing this report, the following people have been invaluable:

Boston Consulting Group:
Ruchita Brajabasi

Centre for Science of Student Learning:
Vyjayanthi Sankar

Central Square Foundation:
Aditi Nangia
Bikkrama Daulet Singh
Prakhar Singh
Rahul Ahluwalia
Ruchika Singh

CG Insights:
Sandeep Kavety
Shikhar Gupta
Sowmya Velayudham

Educational Initiatives:
Nishchal Shukla
Pranav Kothari
Raghav Rohatgi
Sridhar Rajagopalan

KPMG Advisory Services Private Limited:
Kavita Rajagopalan
Narayanan Ramaswamy
Neha Rajpal
Poornima Kharbanda
Tejaswini Mani

Michael & Susan Dell Foundation:
Amrit Ahuja
Prachi Jain Windlass
Samar Bajaj
Sharvi Dublish

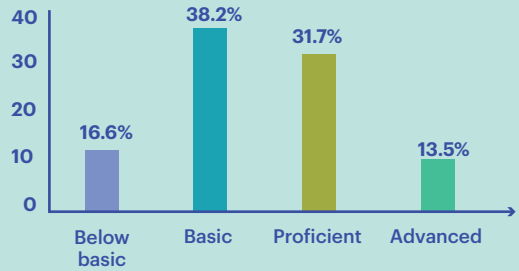
Samagra Governance:
Ankur Bansal
Mohit Bahri
Pragya Mathur

Executive Summary

Chart 1. Percentage of students at different performance level in NAS 2017

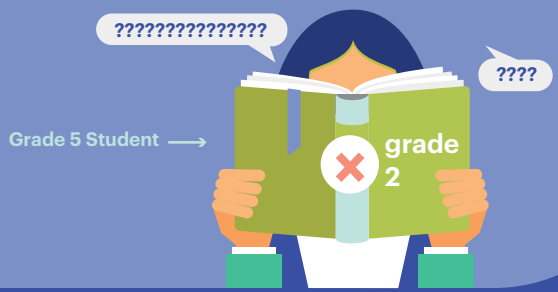
In the last decade, learning levels in India have remained low.

Almost 55% of students in 3rd, 5th and 8th grade in government and government-aided schools are at basic or below basic performance levels across subjects[2]



ASER 2018:

Half of 5th grade students in rural India cannot read a grade 2 level text[3]



The National Education Policy 2020 (NEP) prioritizes assessments as a critical tool for improving quality of education. The focus on competency-linked assessments and regular monitoring through key stage exams can accelerate India's growth in learning outcomes. When done well, large-scale assessments (LSAs)[4] can be used as diagnostic tools to improve grade level competency by:

- guiding curriculum development
- improving instruction quality
- enabling effective resource allocation[5]
- establishing a marker for system level performance

As of 2016-17, 27 states in India were conducting sample or census-based assessments[6]. However, only a few of the assessments provided actionable insights. Most states do not have the required infrastructure, governance, or technical capacity to design and implement effective LSAs.
This report outlines a self-evaluation framework for states that can be used to:

- determine readiness to conduct effective LSAs
- identify and bridge gaps in capacity
- rationalize existing assessments

[2] MHRD, NCERT, UNICEF. (2017). National Acheivement Survey: Class III, V, VIII - National Report to inform Policy, Practices and Teaching Learning (p. 137). Retrieved from: https://ncert.nic.in/pdf/NAS/WithReleaseDate_NPPTL.pdf
[3] ASER Centre. (2019, January). Annual Status of Education Report (Rural) 2018 (p. 41). Retrieved from: https://img.asercentre.org/docs/ASER%202018/Release%20Material/aserreport2018.pdf
[4] Large scale assessments(LSAs) cover a representative sample of students in a region or are census based. In this report we focus on the value of low-stakes (for students) LSAs, and a detailed description of a high quality LSA can be found in Chapter 1.
[5] UNICEF. (2019). Every Child Learns - UNICEF Education Strategy 2019-2030: India Report.
[6] The World Bank. (2018, August). Implementation Completion And Results Report, India: Elementary Education III Project. New Delhi: Education Global practice, South Asia region, The World Bank. Retrieved from: http://documents1.worldbank.org/curated/en/397001536766146941/pdf/ICR4464-PUBLIC.pdf

The framework has been developed in partnership with CG Insights[7], Centre for Science of Student Learning (CSSL) and Educational Initiatives (EI). Having collectively implemented LSAs in 24 Indian states, these organisations are well-versed with the pre-requisites for conducting high-quality LSAs. The framework has been enhanced using best practices from global assessment frameworks[8] such as the World Bank Group's SABER framework and Australian Council for Educational Research's (ACER) framework[9].

Figure 1: Key drivers of LSAs

Clear policy and objectives

Build an aligned vision backed by leadership support along with a comprehensive competency framework

Strong governance

Build accountability systems with clearly defined responsibilities for test administration and results

Enabling resources

Budget for regular assessments. Build internal capacity or partner with third-party technical experts for design and implementation

Technical capacity

Invest in high quality questions and test design. Ensure data collection is reliable.

Data usage

Democratize data availability. Disseminate assessment insights with parents, teachers, schools as well as cluster, block, district and state officials to drive action

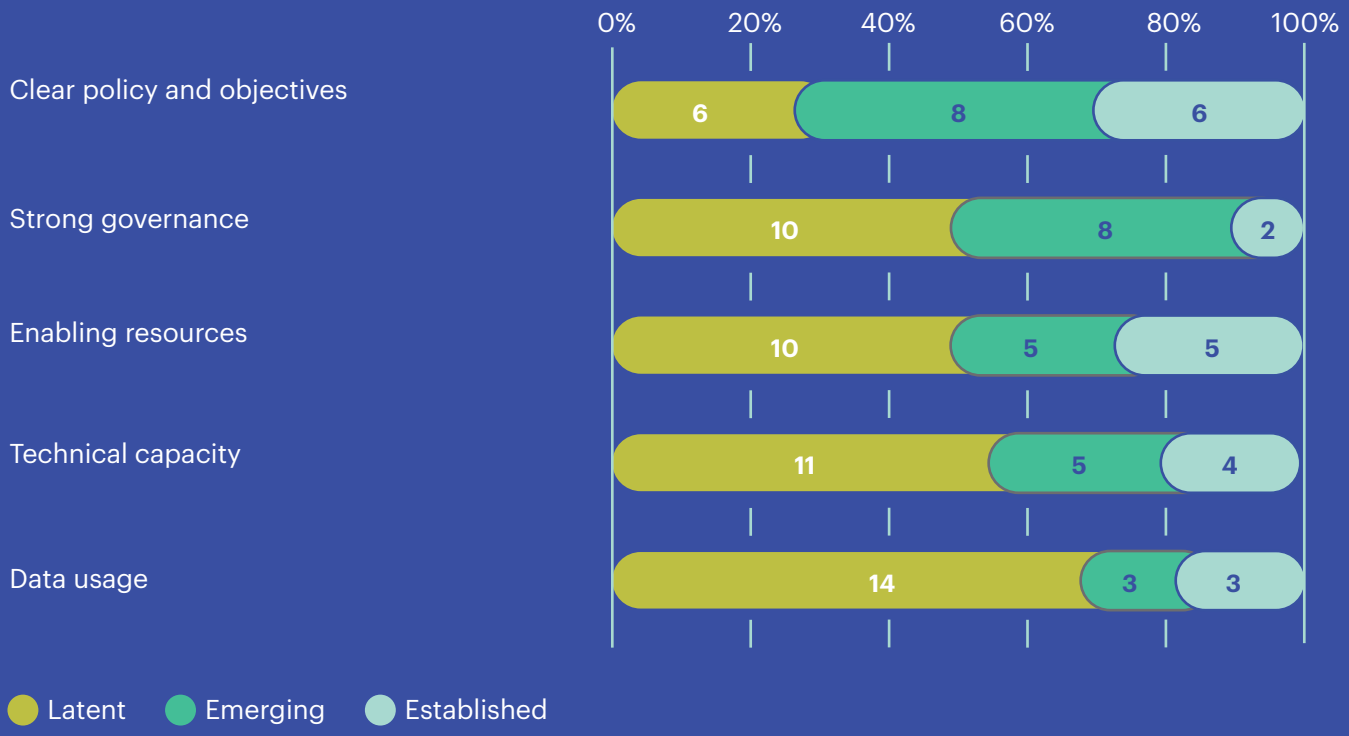
The self-evaluation framework

The framework consists of five key drivers outlined above. Each of the drivers is accompanied by a detailed rubric that helps characterize a state's level of readiness as latent, emerging, or established.

Data collected from secondary research and interviews with assessment experts[10] has been used to evaluate readiness to conduct LSAs for 20 states. According to the framework and associated rubric, 85% of the states analyzed are at a latent or emerging level of readiness.

[7] Formerly known as Gray Matters India (GMI)
[8] Clark, M. (2012, April). What Matters Most for Student Assessment Systems: A framework paper. Washington DC, USA: SABER (The World Bank)
[9] Australian Council for Educational Research (ACER), Centre for Global Education. (2017). The Manual of Good Practice in Learning Assessment. India: ASER.
[10] Experts include EI, CSSL, CGI, Samagra, BCG and some SCERT representatives.

Chart 2. Distribution of states by key drivers



The Implementation Toolkit

An Implementation toolkit has been created to guide states endeavouring to conduct high-quality LSAs. Key recommendations are outlined below:

Clear policy and objectives

- Buy in for LSAs is required all the way from state leadership to the school level.
- Learning objectives should be clearly defined for each grade and subject.

Strong governance

- Accountability systems with clearly defined responsibilities for test administration and results should be established.

Enabling resources

- Adequate funding should be allocated to cover all aspects of LSAs including design, administration, analysis, reporting, and dissemination.
- Experienced resources are required for the implementation of LSAs to help build systemic capacity.

Technical capacity

- Questions should distinguish between rote and conceptual learning and identify misconceptons.
- Test instruments should be built from a blueprint designed to meet assessment objectives; new test instruments should be piloted on small samples first.
- Assessments should be designed to allow comparison over time and states must put in place strategies to ensure data reliability and representative coverage of students.

Data usage

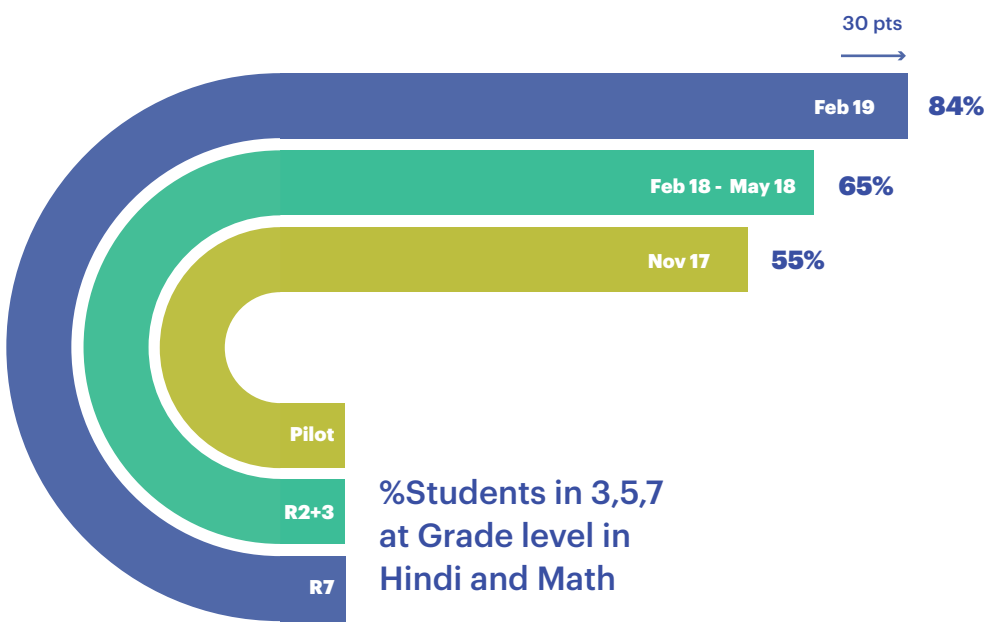
- Insightful data analysis coupled with effective dissemination is an intrinsic part of an LSA.
- Relevant analysis includes growth in learning outcomes over time, bucketing students by proficiency levels, identifying areas of strength and weakness, and performing misconception analysis.

Case Studies

Case studies from India and other developing nations showcase how successful implementation of LSAs have led to an improvement in education quality.

A clear vision accompanied by strong governance, detailed competency framework and scientifically designed assessments helped improve grade level competency in Haryana from 40% in 2014 to above 80% in 2019.

Figure 2: Growth in learning outcomes from November 2017 to February 2018



Haryana's government school system has over **14,000 schools and 100,000 teachers** catering to more than **two million students**[11]. In 2017, Haryana set an ambitious target of achieving 80% grade level competency in grades 3, 5, and 7 in Math and Language. The Saksham Talika – a detailed competency framework - helped define the learning objectives for each grade subject combination. Additionally, partnering with an independent technical expert to design and analyze assessments ensured that questions and test instruments were appropriately measuring student ability. The subsequent dissemination of results at a block level decentralized accountability of education quality and helped drive improvement in learning levels.

The LSA in Haryana help establish that:

- Significant growth in student learning outcomes can be achieved in a short period of time
- Data reliability can be ensured through data driven algorithms, disincentives and robust communication systems
- Demonstrated improvement in results can encourage states to budget for high-quality large-scale assessments

Engaging a third-party technical expert accelerated the implementation of competency-linked assessments, which provided an independent evaluation of Adarsh program. The assessment also helped customize remedial interventions based on student learning needs.

In Language

Students Can

- ✓ Use basic vocabulary
- ✓ Identify words to complete a sentence
- ✓ Use plurals, question words, pronouns, verbs, tenses, opposites and prepositions
- ✓ Extract explicitly sates facts from a sentence or story

Students Can't

- ✗ Handle conceptual questions, which required students to read stories and descriptive passages
- ✗ Connect facts from different parts of a passage
- ✗ Understand the meaning of words in context and draw conclusions requiring analysis of characters

In Math

Student performance was based on the nature of question.

- ✓ Procedural
- ✗ Conceptual
- ✗ Analytical

In higher grades, students were only able to handle procedural questions that were very 'straightforward' and not when they were slightly atypical. The performance on analytical thinking questions that involved higher order thinking skills was even lower than performance on conceptual questions.

[11] Ministry of Education, Government of India. (2018-19). UDISE+ 2018-19 (Provisional).

In 2015, Government of Rajasthan launched Adarsh School Yojna along with State Initiative for Quality Education (SIQE) to improve learning levels. A year later, the Rajashtan Madhyamik Shiksha Abhiyan (RMSA) decided to commission an independent evaluation of the programs and thereby determine impact on learning outcomes. Close to 34,000 3rd, 5th and 8th grade students were assessed.

The LSA in Rajashtan helped establish that:

- Technical partners can support the state in designing high-quality assessments and proving nuanced data-based recommendations
- Attention to test design and analysis can help identify student misconceptions and design targeted interventions like remedial workbooks

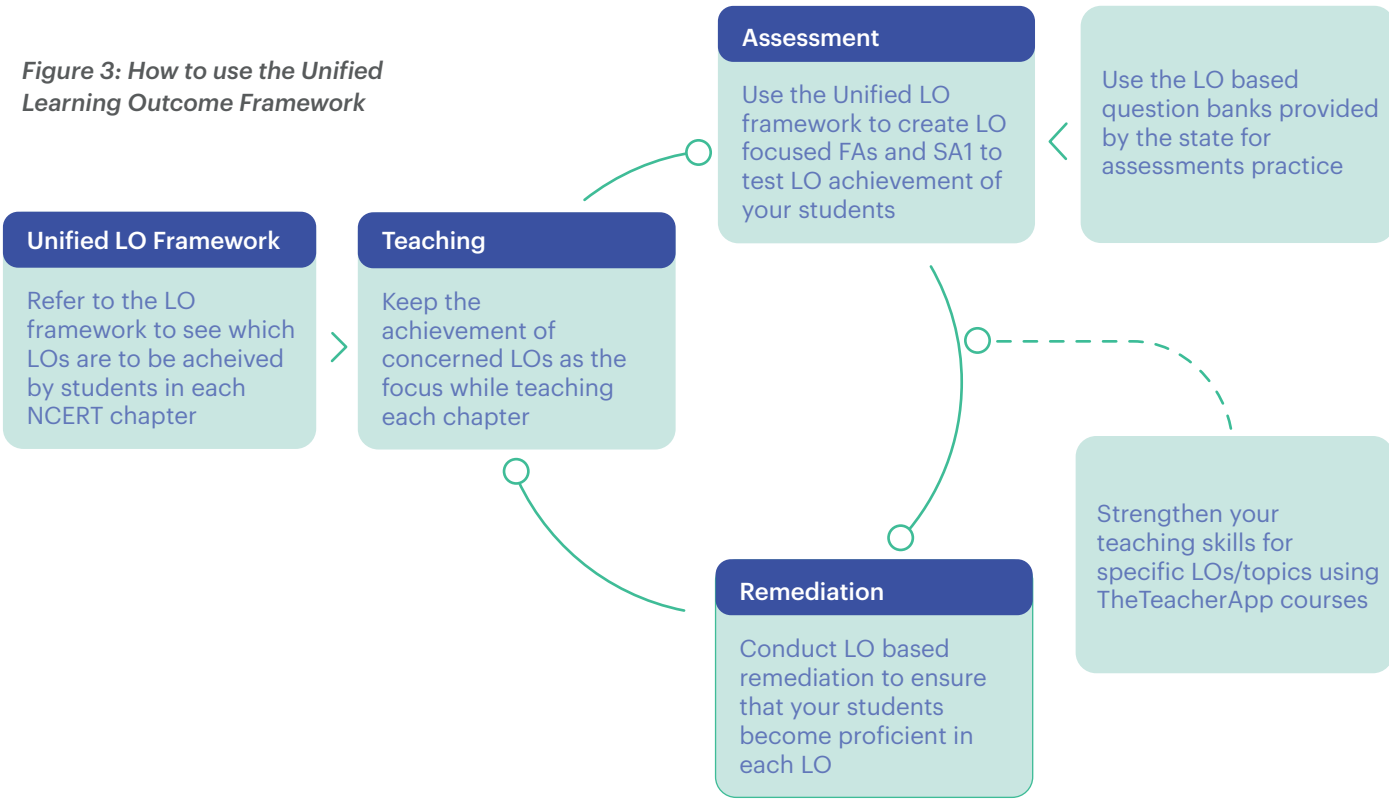
Himachal Pradesh

A detailed competency framework coupled with quality teacher training and technology-enabled review and monitoring has improved learning outcomes in Himachal Pradesh

Himachal Pradesh (HP), with nearly 840,000 students enrolled in over 15,400 government schools[12], has historically been ahead of the curve in driving new educational initiatives.

The state has developed a detailed competency framework that guides teachers in creating high-quality questions for standardized assessments. Additionally, well established data collection and digitization mechanisms have helped democratize insights from assessment data to inform state and school-level educational interventions.

Figure 3: How to use the Unified Learning Outcome Framework



[12] Ministry of Education, Government of India. (2018-19). UDISE+ 2018-19 (Provisional)

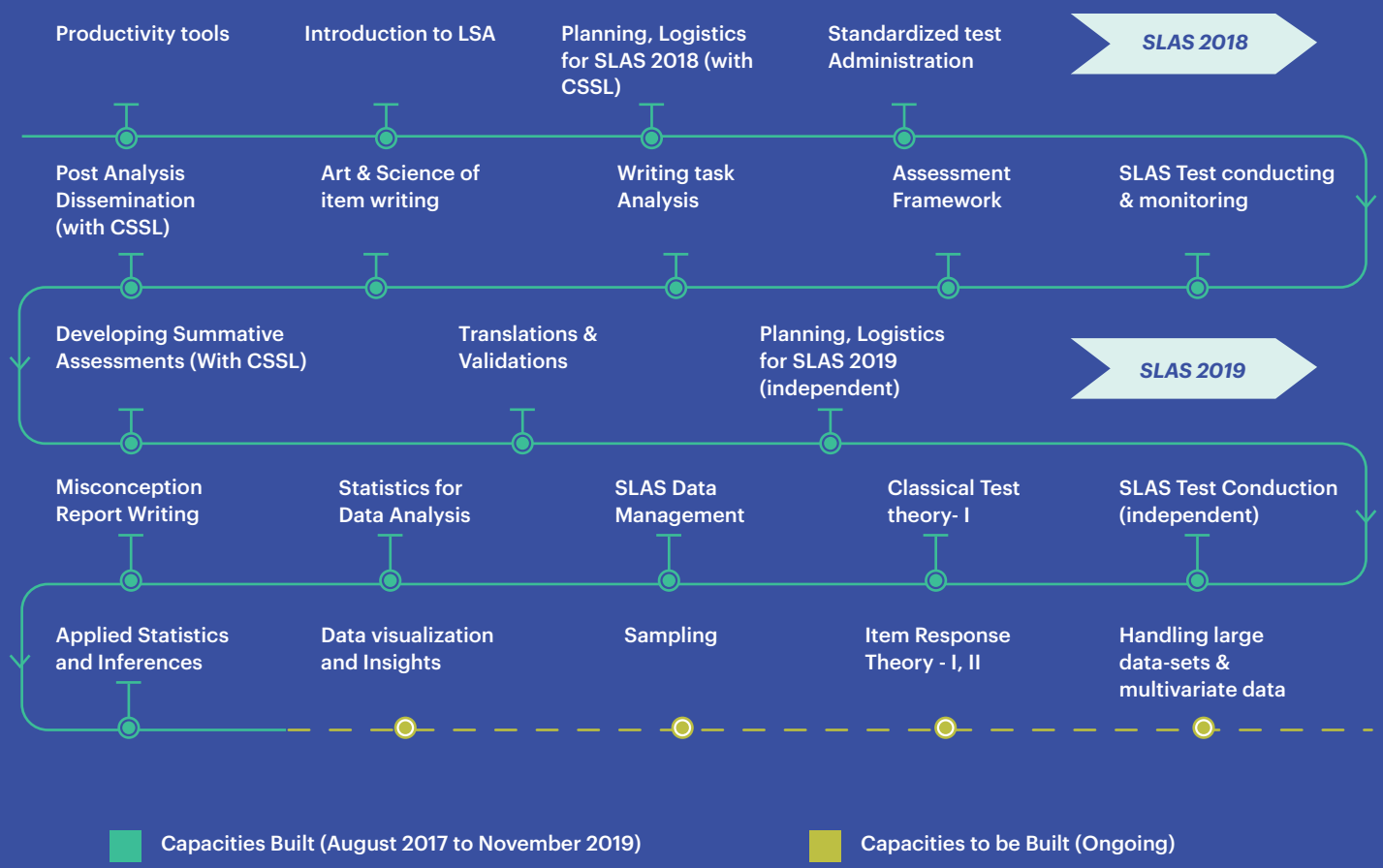
The Summative Assessments in HP have mirrored many of the attributes of a high-quality assessment and have helped establish that:

- Standardized assessment data can be used for decision making in areas such as resourcing, planning, capacity building, and communications
- A state-led effort to collect and use credible learning data can result in improved learning outcomes over time

Andhra Pradesh's leadership recognized the pivotal role of assessments in improving learning outcomes. The state took an exemplary long-term view to step up state capacity through the development of an assessment cell and improved data usage.

Andhra Pradesh's vision was to become one of the top three high-performing states in India by 2022 and the best state in the country by 2029. To drive the reform process, it sought to establish a forward-looking assessment cell with a team of highly motivated and qualified staff specializing in assessments and learning research. The state worked in tandem with a third-party technical partner to build internal capacity for conducting assessments.

Figure 4: Assessment cell capacities built



SLAS stands for State Level Achievement Survey

The Andhra Pradesh experience helped establish that:

- It is possible to develop high-end, in-house state capacity for all aspects of LSAs
- States can expand the coverage of assessments beyond government schools for a holistic picture of learning outcomes

Chile, a model for assessment-led reform for Latin America and the world, has been among the fastest improving countries globally in Programme for International Student Assessment (PISA). The country implemented a national learning outcome assessment system, which includes both public and privately managed schools, to track and improve student outcomes.

The school quality data generated and collected through assessments is made publicly available to improve stakeholder awareness. The data is also used to rank schools, and continuous low ranking of schools can lead to loss of recognition.

Chile illustrates a mechanism for dissemination of census assessment data to parents and schools for support and accountability. Similar models of public disclosure of school quality information and innovative cash transfers could lead to improvements in learning outcomes for all schools and improve equity in private schools.

The Way Forward

Global experiences with assessments can inform Indian policy while keeping in mind our own context. For assessments that provide a universal learning indicator for schools, key concerns include moving away from rote-based concepts, improving data reliability, and ensuring last-mile data dissemination and usage of results.

The NEP suggests setting up of a National Assessment Centre, PARAKH (Performance Assessment, Review, and Analysis of Knowledge for Holistic Development) to incentivize regular and frequent collection of learning outcomes data.As states start implementing the recommendations of NEP, assessments will emerge as a key intervention to improve learning outcomes. Data from assessments will be used to:

- Monitor growth in learning outcomes
- Inform customized teaching-learning practices by identifying student strengths, weaknesses, and misconceptions
- Drive accountability
- Enable effective governance at a decentralized level

This report has been developed to assist stakeholders who intend to conduct state-level LSAs. It is an attempt to consolidate best practices from states as well as leading assessment organisations to develop the following:

- **State self-evaluation framework:**
  Developed with the intent to help states assess their current preparedness for conducting a high-quality LSA.

- **Implementation toolkit:**
  This toolkit is intended to guide states in setting up and implementing high-quality LSAs. It brings together the best practices adopted across the country.

- **Case studies:**
  Learnings from successful implementations of LSAs across states in India and other developing countries.

This report is an effort to add to the evolving evidence base for LSAs. It has been authored with the intent to drive improvement in quality of school education in India.

CHAPTER 1

The need for **large-scale assessments** in India

1.1
Learning outcomes in India are lagging behind

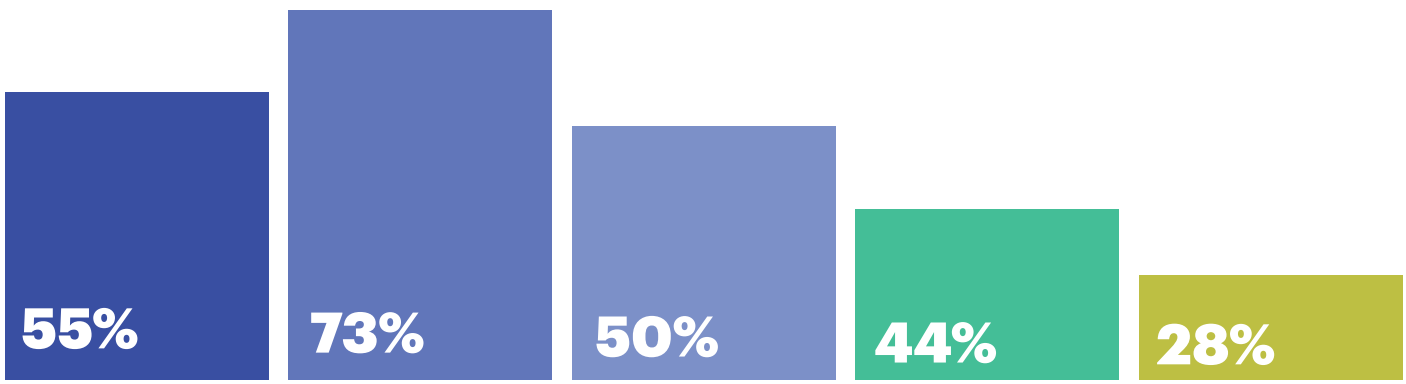
The Indian education system is home to nearly 248 million students enrolled in 1.55 million schools. In the last decade, significant strides have been made to improve access to and equity in education[13]. However, India has not seen corresponding advancement in learning outcomes (Figure 5)[13,14,15]

Figure 5. Key Performance Indicators in Education

ACCESS

91.6% Gross enrollment ratio (Grades 1-8), UDISE+ 2018-19

LEARNING OUTCOMES



55% students at basic or below basic performance level across subjects in grades 3,5 and 8, NAS 2017

73% 8th graders can read a Grade 2 text, ASER 2018

50% 5th graders can read a Grade 2 Text, ASER 2018

44% 8th graders can perform division ASER 2018

28% 5th graders can perform simple division, ASER 2018

[13] Ministry of Education, Government of India. (2018-19). UDISE+ 2018-19 (Provisional). Retrieved from http://dashboard.udiseplus.gov.in/#!/
[14] ASER Centre. (2019, January). *Annual Status of Education Report (Rural) 2018*. Retrieved from: https://img.asercentre.org/docs/ASER%202018/Release%20Material/aserreport2018.pdf
[15] MHRD, NCERT, UNICEF. (2017). *Retrieved from National Achievement Survey: Class III, V, VIII - National Report to inform Policy, Practices and Teaching Learning*: Retrieved from: https://ncert.nic.in/pdf/NAS/WithReleaseDate_NPPTL.pdf

1.2
Large-scale assessments can play a crucial role in improving the quality of learning by providing system-level insights

A 2018 World Bank report identifies LSAs assessments as an important tool for realising education's promise. According to the report, "national and subnational learning assessments provide system-level insights that are essential for guiding an education system." [17] In India, where children are on average two grades below grade-level proficiency[18], scientifically designed and well-administered LSAs can be used as diagnostic tools to guide curriculum development, design teacher training, improve instruction quality and allocate resources.[19] It is essential to recognise that the **ultimate purpose of LSAs is to provide data that can help improve the overall quality of learning.** Examples of states that have used LSA data well for system-level improvements are shown below in Figure 6.

Figure 6. Use of LSA Data for system level improvements[20]

Stronger governance & accountability	**Haryana Saksham Ghoshna** 80% students at grade level in 2019 compared with 40% in 2014	
Improved pedagogy	**Common misconception analysis** conducted in Rajasthan to bridge gaps in pedagogy across grades and subjects	
Customized intervention design	**Adarsh Program** evaluation in Rajasthan provided district-wise results, allowing for the design of customized remedial workbooks	
Data-based budgeting	Requests for funding through **Project Approval Boards (PAB)** for remedial programs in Himachal Pradesh have been supported with assessment data	

[16] World Bank Group. (2018). *Learning to Realize Education's Promise* (p. 18). Retrieved from: https://www.worldbank.org/en/publication/wdr2018
[17] World Bank Group. (2018). *Learning to Realize Education's Promise* (p. 19). Retrieved from: https://www.worldbank.org/en/publication/wdr2018
[18] Bhattacharjea, Wadhwa, Banerji 2011
[19] UNICEF. (2019). *Every Child Learns - UNICEF Education Strategy 2019-2030*: India Report
[20] Assessment question and data representation used with permission from CSSL

1.3
Several LSAs are conducted at the national and state level in India; few provide regular actionable insights on grade-level, competency-linked learning outcomes

Not all assessments that are large-scale provide meaningful information. Vyjayanthi Sankar from Centre of Science for Student Learning (CSSL) takes an implementation-focused lens to define a high-quality LSA, as summarised in Figure 7.

Figure 7. Features of a well-designed and analysed large-scale assessment

Based on grade-level competency framework

Standardised design, administration and data collection

Attention to high-quality test design and items

Measures representative sample of students or is census-based

Conducted over a regular frequency

Data is appropriately analyzed and fed back into the system

An overview of the types of large-scale assessments conducted in India is provided in Figure 8[21,22,23]

Figure 8: Overview of LSAs in India

National Achievement Survey (NAS)

Overview: NAS is a central government-led large-scale assessment that provides a 'snapshot of what students know and can do' at the end of Grades 3, 5, 8 and 10.

- **Competency-linkage:** NAS has a grade-level competency-linked testing approach with defined Learning Outcomes (LO) up to the elementary stage.
- **Sampling:** In 2017, sampling was done at the distrcit level.
- **Standard Administration:** Students across Grades 3, 5 and 8 were assessed on a single day.
- **Frequency:** NAS is only conducted once every three years.

[21] MHRD, NCERT, UNICEF. (2017). *National Acheivement Survey: Class III, V, VIII - National Report to inform Policy, Practices and Teaching Learning* (pp. 2-3). Retrieved from: https://ncert.nic.in/pdf/NAS/WithReleaseDate_NPPTL.pdf
[22] ASER Centre. (2019, January). *Annual Status of Education Report (Rural) 2018*. Retrieved from: https://img.asercentre.org/docs/ASER%202018/Release%20Material/aserreport2018.pdf
[23] This is an overview of low stakes assessments for students across grades, and thus, does not include board exams.

- **Data analysis:** In 2017, results were reported within the same academic session with a focus on student attainment against LOS.
- **Data usage:** There is limited usage of NAS data at the state level in decision making and interventions.

Annual Status of Education Report (ASER)

Overview: ASER is one of the largest and most cited LSAs in India.

- **Competency-linkage:** The assessment focuses on measuring basic numeracy and literacy through a one-on-one assessment. While the data provides directional insight on foundational learning at the national level, it cannot be the sole source of learning outcomes data as it doesn't cover urban areas and grade level competencies.
- **Sampling**: ASER is a household survey that covers a representative sample of children (between 3 and 16 years) across rural India.
- **Frequency:** ASER was conducted annually from 2005 – 2014. Since 2016, the 'basic' ASER is conducted every two years.

State Level Achievement Survey (SLAS)

Overview: Several states have recognized the need for assessments that are closely aligned to the state's curriculum and intended learning outcomes. As of 2016-17, twenty-seven states and union territories were conducting their own SLAS.

- **Competency-linkage:** Varies by state –some states such as Haryana, Rajasthan, Himachal Pradesh, Andhra Pradesh use competency frameworks to design assessments.
- **Data analysis and usage:** Few state-level assessments capture data at the level of rigor, disaggregation and frequency required for effective utilization. In addition, there has been limited meaningful analysis carried out.

SLAs present an excellent opportunity to improve learning outcomes. As of 2016-17, twenty-seven states in India have conducted sample or census-based assessments periodically[24]. Table 1 shows an illustrative list of SLAS conducted across India.

[24] The World Bank. (2018, August). *Implementation Completion And Results Report, India: Elementary Education III Project.* New Delhi: Education Global practice, South Asia region, The World Bank. Retrieved from: http://documents1.worldbank.org/curated/en/397001536766146941/pdf/ICR4464-PUBLIC.pdf

Table 1: Illustrative list of SLAS in India

State Assessment		Sample / Census	Grade	Sample Size	Frequency	Latest Years of SLAS
Certification						
Haryana	Saksham Ghoshna for block certification	Self-nomination (Ghoshna 1.0) Sample (Ghoshna 2.0)	Grades 3,5,7 (Ghoshna 1.0) Grades 3 to 8 (Ghoshna 2.0)	450K students (Ghoshna 1.0) 390 K students from all 119 blocks (Ghoshna 2.0)	Ghoshna 1.0 was conducted across 8 rounds between 2017-2019 - Ghoshna 2.0 was conducted in two parts covering all blocks	2017-19, 2019-20
Jharkhand	School Certification (Samwardhan) - third-party school certification to recognize and reward schools, which have achieved prescribed learning outcomes	Self-nomination	Grades 1 to 8	All Department of Education (DOE) and Government aided schools up to class 9	Schools self-nominate on a rolling basis and are approved/ rejected every 6-8 weeks through third-party assessment	2019-20
Odisha	Garima for school certification	Self-nomination	Grades 3 to 8	All schools can self-nominate, but in one cycle, 15k schools are tested over 1.5 months. 2-3 cycles happen every year	Each school is tested once on Bronze benchmark annually, and Silver & Gold only if they qualify Bronze	2019-20
Program Evaluation						
Rajasthan	Third-party evaluation for Adarsh School Yojana	Sample	Grades 3,5,8	Both rounds - 31000- 33000 students from 690 schools across 33 districts	Two rounds	2016-17 2018-19
Andhra Pradesh	Third-party assessment for APTeSAR	Sample	Grades 4,6,9	21,000 students (R1), 81000 students (R2), 1.01 Lakh (R3) from both private and public schools	Three rounds	2016-17 2017-18 2018-19

State Assessment		Sample / Census	Grade	Sample Size	Frequency	Latest Years of SLAS
System-level performance monitoring (student & learning objective level tracking in some states)						
Madhya Pradesh	Pratibha Parv	Census	Grades 1 to 8	Census based; 10 million students in 112,788 schools across the state	Annually	2011-13
Gujarat	Gunotsav	Census	Grades 2 to 8	25 per cent randomly sampled schools in each block	Bi-annually	2009-2013 2015-2019
Himachal Pradesh	Round 2 Summative assessments	Census	Grades 1 to 4 6 to 7	Census-based coverage in public schools	Annually	2016 onwards
Punjab	SLAS	Sample	Grades 2,3,5	20,000 students from 22 districts	3 rounds	2013-14 2014-15 2018-19
Uttar Pradesh	Prerna	Census	Grades 3 to 8	89.5 Lakh + students	Every quarter	2020
West Bengal	Utkarsh Abhiyan	Sample	Grades 3 and 6	Small sample of schools from select districts	2 rounds	2013, 2014

It is important to note that most SLAS only cover students in government schools. Given the increasing number of students enrolled in private schools (up to 50 per cent in some states), states should consider including private school students in the design of an SLAS.

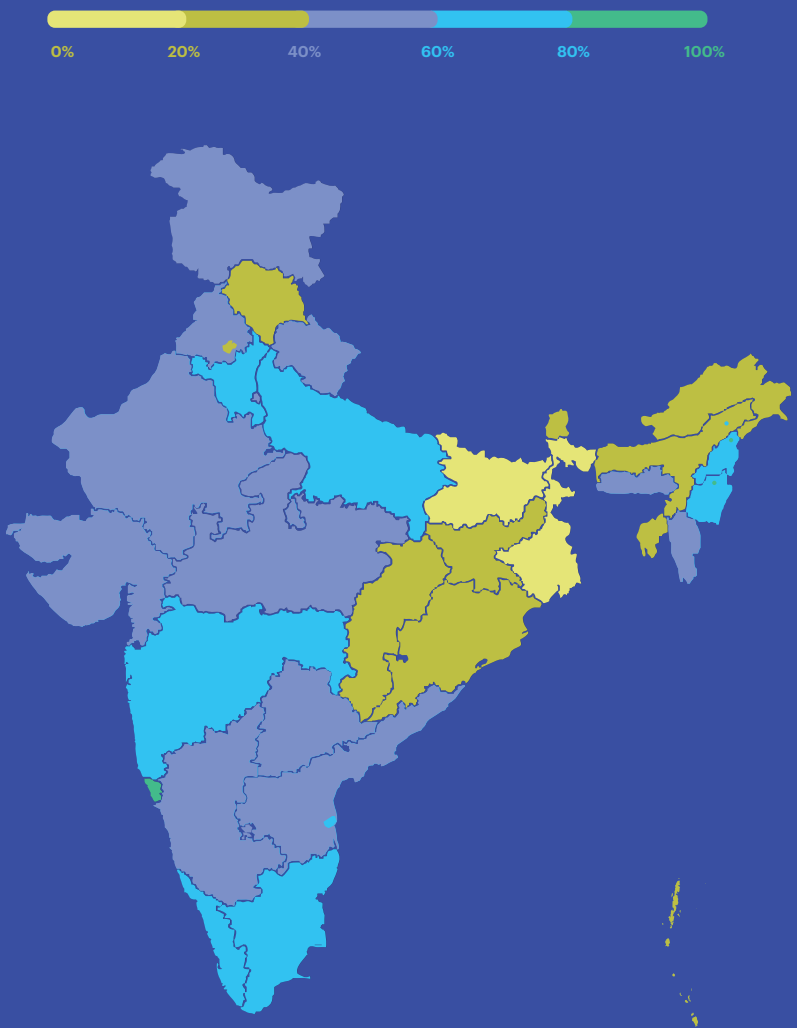
Figure 9. A note on private schools[25,26,27,28,29]

Accounting for 50 per cent student enrolment nationally, private schools should be included to obtain a comprehensive view of learning outcomes in India.

Nearly 50 per cent

(120 million) of all students in India are enrolled today in 470 thousand privately managed schools across the country.

School Enrollment Percentage by State



In 16 Indian states, the share of private school enrolment crosses the 50 per cent threshold. Parents invest in private schools because they believe these schools provide better learning environments for children. Actual student learning outcomes, however, require much improvement. 35 per cent of rural private school students in Grade 5 cannot read a basic Grade 2 level paragraph.

Relative to government schools, private schools perform better in terms of raw test scores and are much more cost-effective. However, a study conducted by Educational Initiatives in 2013 showed that there was a significant gap between the performance levels of students in high-fee private schools with respect to both government and affordable private schools. Thus, learning levels on average are still low in government and affordable private schools and more worryingly, have remained stagnant for a decade. This indicates a lack of systemic forces that would lead to an improvement in quality.

A major barrier to improving learning outcomes is that while parents care about the quality of learning, it is hard for them to judge how much their children are learning in school, especially in comparison to similar schools in their neighbourhood. This is particularly true in early grades, as about 60 per cent of all private schools do not extend to a board exam grade at all, making it hard for parents to judge the quality of these schools (U-DISE 2017-18). Research borne out of this line of thinking shows that providing information on school-level learning outcomes to parents improves learning outcomes in private schools.

It is, thus, critically important that private schools participate in large-scale assessments that test basic competencies and application of concepts. Their inclusion in the National Achievement Survey from 2021, key stage assessments and public disclosure of schools' learning levels will help in measuring school quality across management types and improving quality for all students, irrespective of the type of school they attend.

[25] Ministry of Education, Government of India. (2017-18). *UDISE+ 2017-18 (Provisional)*. Privately managed schools include private aided, unaided recognized, unaided unrecognized and others. Retrieved from: http://dashboard.udiseplus.gov.in/#!/schooldashboard

[26] Azim Premji Research Group. (2018, November). *School choice in low information environments: A study of perceptions and realities in four states- Field Studies in Education. Retrieved from:* https://azimpremjiuniversity.edu.in/SitePages/pdf/SchoolChoices_Web.pdf, NCERT - National Achievement Survey (NAS) Dashboard. (2017). Retrieved from: http://nas.schooleduinfo.in/dashboard/nas_ncert#/

[27] DFID Literature Review. (2015). *The Role and Impact of Private Schooling in Developing Countries.* Retrieved from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/439702/private-schools-full-report.pdf, Muralidharan, Karthik and Venkatesh Sundararaman. (2015). *The Aggregate Effect of School Choice: Evidence from a Two-Stage Experiment in India. The Quarterly Journal of Economics.* Retrieved from: https://academic.oup.com/qje/article/130/3/1011/1931887#84604204

[28] Educational Initiatives supported by Michael & Susan Dell Foundation. (2014, December). *Establishing Benchmarks of Student Learning, 2014.* Retrieved from: https://www.ei-india.com/newEIWebsite/eiasset/pdf/Establishing-Benchmarks-of-Student-Learning-Final.pdf

[29] Andrabi, Tahir, Jishnu Das, and Asim Ijaz Khwaja. (2017). *"Report Cards: The Impact of Providing School and Child Test Scores on Educational Markets."* American Economic Review 107. Retrieved from: https://doi.org/10.1257/aer.20140774., Afridi, Farzana, Bidisha Barooah and Rohini Somanathan. (2017). *"Improving Learning Outcomes through Information Provision: Evidence from Indian Villages."*

1.4
The way forward: High-quality large-scale assessments (LSA) should be an integral part of the Indian education system

The recently released **National Education Policy (NEP) 2020** places learning at the center of educational reform. It identifies gaps in the current education system, lays out a roadmap for change, and recognises assessment reform as a high-leverage option to achieve these changes. The key recommendations in the NEP on assessments are illustrated in Figure 10.

Figure 10: Key recommendations of NEP

Shift from rote-based to competency-linked assessments

All assessments will be built on a bedrock of clearly defined competency frameworks. This will also feed into board exam reform process for grades 10 and 12.

Focus on higher order competencies

The policy lays impetus on testing skills like critical thinking and problem solving. These skills will help students become lifelong learners and better prepared for life after school.

Key stage assessments

In the past, the absence of assessments and associated student achievement data at key stages in primary and elementary grades precluded the opportunity for correction in early years. Misconceptions persisted for years, resulting in expanding learning gaps. The proposed system-level assessments for students across grades 3, 5 and 8 will help overcome this challenge.

Finally, the suggested national assessment center in NEP, PARAKH, will guide states to conduct their own census based, high quality, standardized assessments. It will also incentivise regular and frequent collection of learning outcomes data. Thus, assessments will help attain the herculean but achievable objective of quality education for all students.

Purpose and methodology of report

This report has been created to assist stakeholders who intend to conduct state-level LSAs. It is an attempt to collect best practices from states as well as leading assessment organizations - CG Insights, Centre for Science of Student Learning (CSSL) and Educational Initiatives (EI) - to design and implement large-scale assessments in India. In the past decade, these three organisations have supported LSAs in 24 Indian states, assessed close to 18.5 million students and analysed more than one billion data points across elementary grades. Their learnings and extensive experience have helped create the following tools and insights through this report:

State self-evaluation framework: Developed with the intent to help states assess their current preparedness for conducting a high-quality LSA.

Implementation toolkit: This toolkit is meant to guide states in setting up and running high-quality large-scale assessments. It brings together the best practices adopted across the country through helpful recommendations.

Case studies: Best practices and case studies from successful implementations of large-scale assessments.

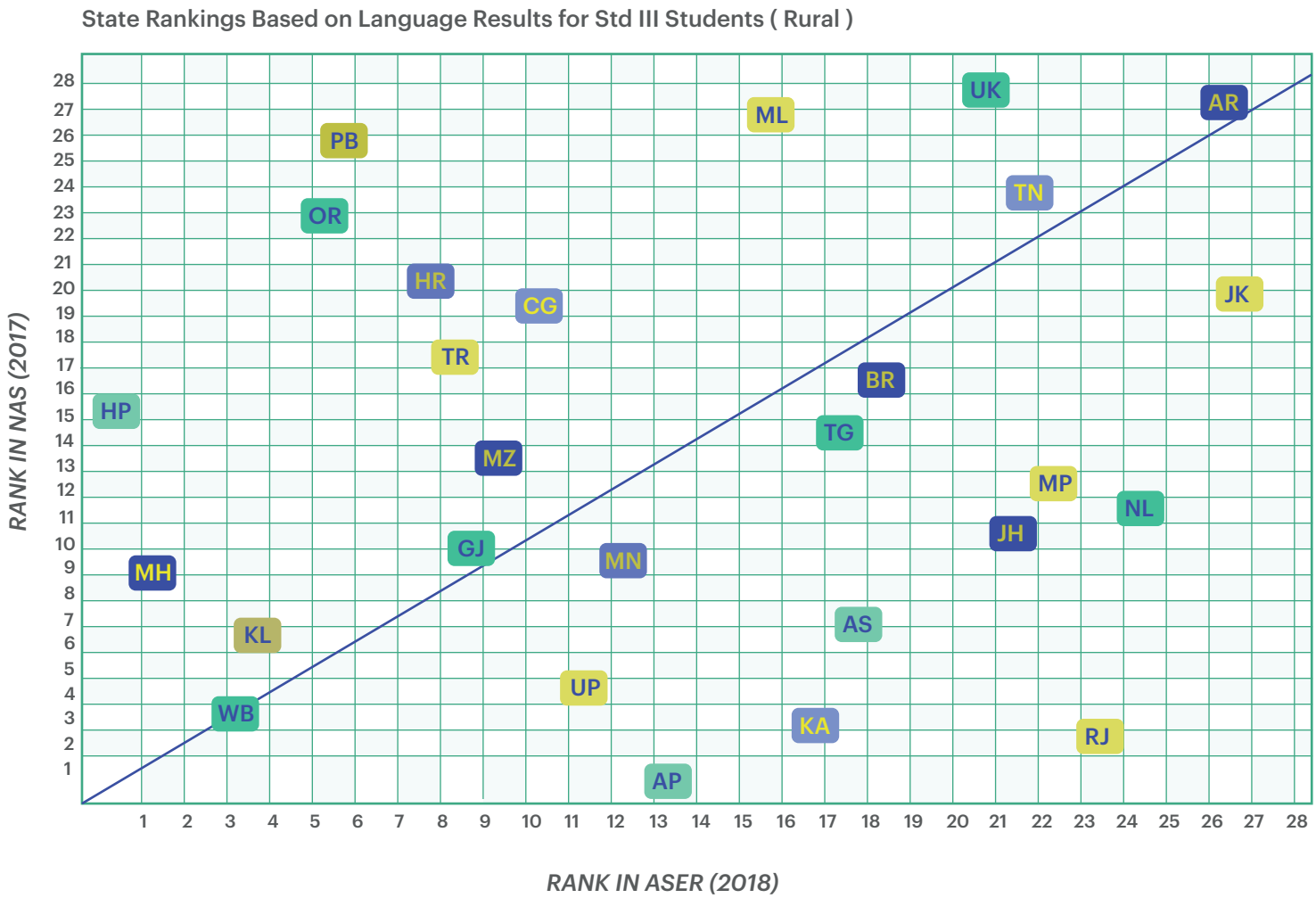
CHAPTER 2

Implementing large-scale **assessments in states**

2.1
The need for a state self-evaluation framework

State-level officials often find themselves at a loss when attempting to make an informed decision using learning outcome data. This conundrum arises because of the presence of several uncorrelated sources of assessment data. In addition to the National Achievement Survey (NAS), Annual Status of Education Report (ASER) and State-level Achievement Surveys (SLAS), states obtain learning outcomes data from summative assessments, board examinations and review and monitoring visits. An illustrative example in Figure 11 below demonstrates the issue. If NAS and ASER were strongly correlated, all states would lie on or near the blue line, but as we can see, this is far from the case. A state like Himachal Pradesh that ranks high on ASER shows a mid-level performance in NAS, whereas Rajasthan ranks high in NAS but has a lower rank in the ASER survey.

Figure 11. Comparison of state ranking by NAS 2017 and ASER 2018[30]



Note: For both NAS and ASER, Rank 1 represents the highest rank and Rank 28 the lowest.

[30] Image adapted from:Jonson D; Parrado, A (2019). *Assessing the Assessments: Taking Stock of Learning Outcomes Data in India*. RISE

The problem intensifies because, despite having multiple sources of data, few states have the required infrastructure, governance, and technical capacity to generate relevant, reliable and regular learning outcomes data that can be utilized to improve the quality of education.

With this in mind, we have outlined a self-evaluation framework that can be used by states to:

- Determine their readiness to conduct effective LSAs
- Identify and bridge existing gaps in capacity by developing internal resources or partnering with technical experts
- Rationalize existing assessments

The framework has been developed in partnership with CG Insights[31], CSSL and EI. Having implemented large-scale assessments in several Indian states, these organisations are well versed with the pre-requisites for conducting high-quality large-scale assessments in India. The framework has been enhanced using best practices from global assessment frameworks, such as the World Bank Group's SABER framework[32] and Australian Council for Educational Research's (ACER) framework[33].

2.2
There are five drivers for a successful large-scale assessment system

The framework is built on **five key drivers** that capture best practices for the ecosystem, test design and administration, and data dissemination and usage. These five drivers are further divided into **indicators** that together determine the state's readiness for conducting large-scale assessments.

[31] CG Insights/ ConveGenius Insights was formerly known as Gray Matters India (GMI)
[32] Clark, M. (2012, April). *What Matters Most for Student Assessment Systems: A framework paper. Washington DC, USA:* SABER (The World Bank). Retrieved from http://hdl.handle.net/10986/17471
[33] Australian Council for Educational Research (ACER), Centre for Global Education. (2017). *The Manual of Good Practice in Learning Assessment. India: ASER.* Retrieved from: http://img.asercentre.org/docs/Bottom%20Panel/Key%20Docs/aserassessment frameworkdocument.pdfA

Figure 12. Framework for state self-evaluation

The framework is intended as a tool through which a state can evaluate its current preparedness for conducting effective LSAs. For each of the indicators in the framework, a rubric has been defined, which will enable a state to characterize itself as latent, emerging or established for the indicator. An

Table 2: Illustrative rubric description for state self-evaluation framework

Key driver 4: Technical capacity

Dimension: Assessment design			
Indicator	**Latent**	**Emerging**	**Established**
Test design Robustness of test design that is competency-linked, at the relevant grade level with high-quality questions	Test design was not aligned to state curriculum and learning objectives and wasn't competency based with high question quality	Test design was inadequately aligned to state curriculum and learning objectives and/or was not competency based and all questions were not of high quality	Test design was sufficiently aligned to state curriculum and learning objectives and was competency based with high-quality questions

States can use the self-evaluation framework to rationalize the assessments currently in use

States can use the self-evaluation framework to identify strengths and gaps of existing assessments, and thereby perform a rationalization exercise. Let us take the case of a state conducting census-level student assessments at least twice a year. If this data is not being used regularly to inform teaching-learning practices at the system and school level, then the state can reduce the frequency of these census assessments or choose to conduct assessments for a representative sample of students.

2.3
Landscape analysis of readiness to conduct effective LSAs for 20 Indian states

For several years, states across India have been conducting SLAS using either internal capacity or with the support of technical partners. For this report, secondary research along with interviews with assessment experts[34] were conducted to collect information on twenty states. Based on the information collected and analyzed, we have segmented states into three categories – latent, emerging and established.[35]

[34] Experts include EI, CSSL, CGI, Samagra, BCG and some SCERT representatives.
[35] This analysis was done based on publicly available data about large scale assessments in various states.

85% states analyzed were at a latent or emerging stage

We considered historical large-scale assessments conducted by states alongside indicators required to conduct future large-scale assessments. At the overall level, more than 50 per cent states were at the latent stage.

This distribution can vary at the individual driver level as showcased in Chart 4. Ability to appropriately use assessment data appears to be the biggest area for improvement.

Chart 3: Distribution of states by overall preparedness level

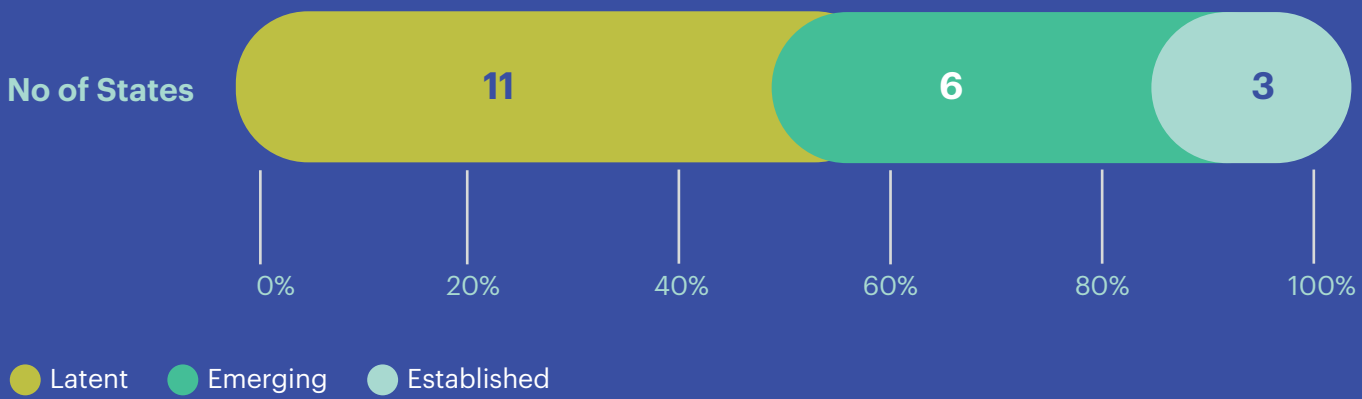
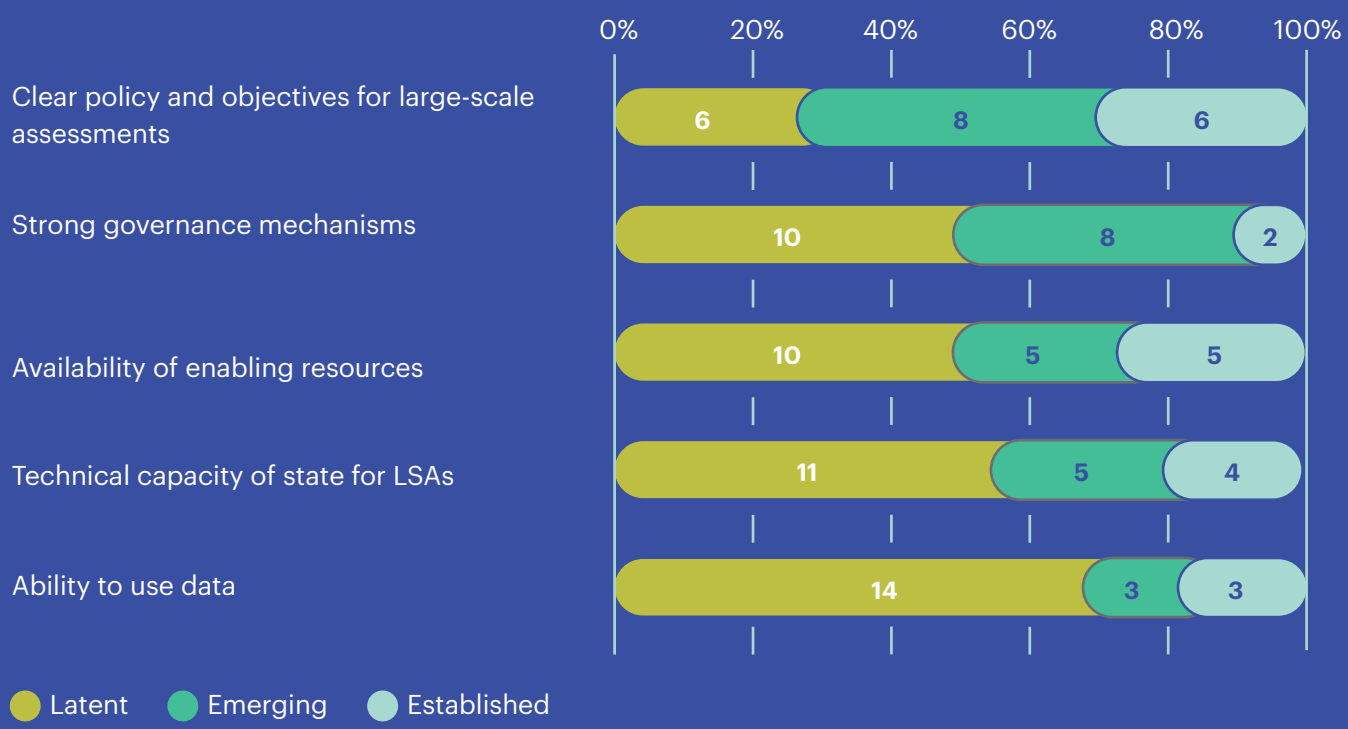


Chart 4: Distribution of states by key drivers



Based on our analysis, the common trends identified for states at the established level were as follows:

States at established level

- Conducted at least two rounds of LSAs in the last four years
- Had strong buy-in from state-level officials for LSAs (either at level of Chief Minister or Principal Secretary)
- Established clear objectives for LSAs, assessments were competency-linked and conducted at regular frequency
- Used assessment data to improve learning outcomes through specific interventions
- Allocated funding (from state budget or through external partners) for LSAs

Findings

2.3.1 Leadership support is critical for initiating high-quality LSAs; decentralized responsibility helps sustain change

Our research indicates that an aligned vision that recognizes the role of assessments in improving education quality leads to the development of robust assessment systems. Significantly, in states that were at the established level, there was a strong leadership buy-in all the way from the education department headquarters to the Chief Minister's Office.

However, leadership buy-in alone is not enough for a sustained impact. It was observed that a change in political or bureaucratic leadership impacted the continuity of assessment-related initiatives. If a state also had a decentralized assessment system with clearly defined responsibilities, high-quality LSAs were likely to continue even after a change in leadership.

2.3.2 Competency framework forms the bedrock for teaching initiatives and assessments

Several states lacked a clear competency framework with learning objectives defined for each grade. The focus on competency linkage allows assessments to move beyond rote-based concepts towards higher order thinking and conceptual understanding across grades and subjects.

Saksham Talika in Haryana and Seekhne Ka Pratifal in Himachal Pradesh are two examples of competency frameworks developed by the states that guide the design of large-scale assessments.

2.3.3 States lack systems that assign clear accountability for results

70 per cent (14 states) showed a lack of accountability for results, i.e. neither state nor district / sub- district level assessment units had any responsibility for student performance. Few states like Haryana, seemed to have successfully

ingrained accountability for results by adopting an incentive-driven, bottom-up approach towards assessment results. This ensured that stakeholders at all levels, including teachers and school/block administrators, took responsibility for the results.

2.3.4 Sources of funding for assessments vary by state

All states budgeted INR 10 lakhs per district annually for "school-based assessments" (0.1-0.2 per cent of their overall education budgets).[36] Some states used Samagra Shiksha funding to support LSAs but most relied on some form of external funding. States like Andhra Pradesh and Rajasthan received external funding for assessments in at least two rounds whereas Madhya Pradesh, Odisha and Jharkhand were 100 per cent externally funded by the World Bank. It should be noted that reliance on external funding for assessments can cause hiccups in the journey of securing regular assessment data. Ideally, a government should procure and pay for assessments that provide critical information for improving quality of education.

In Haryana, initial LSAs were funded through external partners. Given the success of the program and a steady growth in student learning outcomes, in 2019, Haryana allocated a budget (including costs for test design, administration, data usage) for conducting LSAs. It undertook a request-for-proposal (RFP) process to on-board a technical partner to design and support administration of the LSAs.

Table 3: Budget estimates for Saksham Haryana Assessments in 2019-20[37]

All estimates are for one round of assessments

Activity	Approximate Budget (per Saksham Ghoshna Round)
Printing of question papers and OMR sheets	INR 70-80 lakhs
Field invigilation training etc.	INR 20-30 lakhs
Third-Party fees	INR 50-60 lakhs

Assessment scale and scope

The assessment covered 119 blocks, 600 students per block per grade (grade 3-8) and 21 grade-subject combinations

[36] This data was taken from: Department of School education and Literacy (2019) PAB minutes for all states. NIC, New Delhi. Retrieved from: https://dsel.education.gov.in/pab-minutes

[37] Approximate budget estimates for Saksham Haryana rounds in 2019-20 have been provided by assessment partners

2.3.5 Collecting reliable learning outcomes data at scale continues to be a challenge

Several studies on assessments in India have found that student assessment data is often artificially inflated and hence unreliable[38]. The root causes of misreporting assessment data in India are largely the following:

- Perceived high stakes nature of examinations which creates incentive for stakeholders to artificially inflate assessment data
- Weak state capacity to conduct, monitor and analyze LSAs

The implications of such unreliable data are worse than a lack of reported data, since it misrepresents the real situation and misguides decision making[39].

2.3.6 Most states do not have appropriate data usage and dissemination mechanisms in place

It doesn't come as a surprise that evidence around usage of results for improvements in policy interventions, teaching delivery, pedagogy or learning outcomes was minimal. About 70 per cent of the states analysed (14/20) did not have appropriate data usage and dissemination mechanisms in place. Results were aggregated and analyzed in a manner that wasn't actionable at district and sub-district levels and rarely percolated down to individual schools or teachers. States were, thus, unable to establish an effective feedback loop in the system.

2.4 Implementation toolkit – recommendations for conducting LSAs

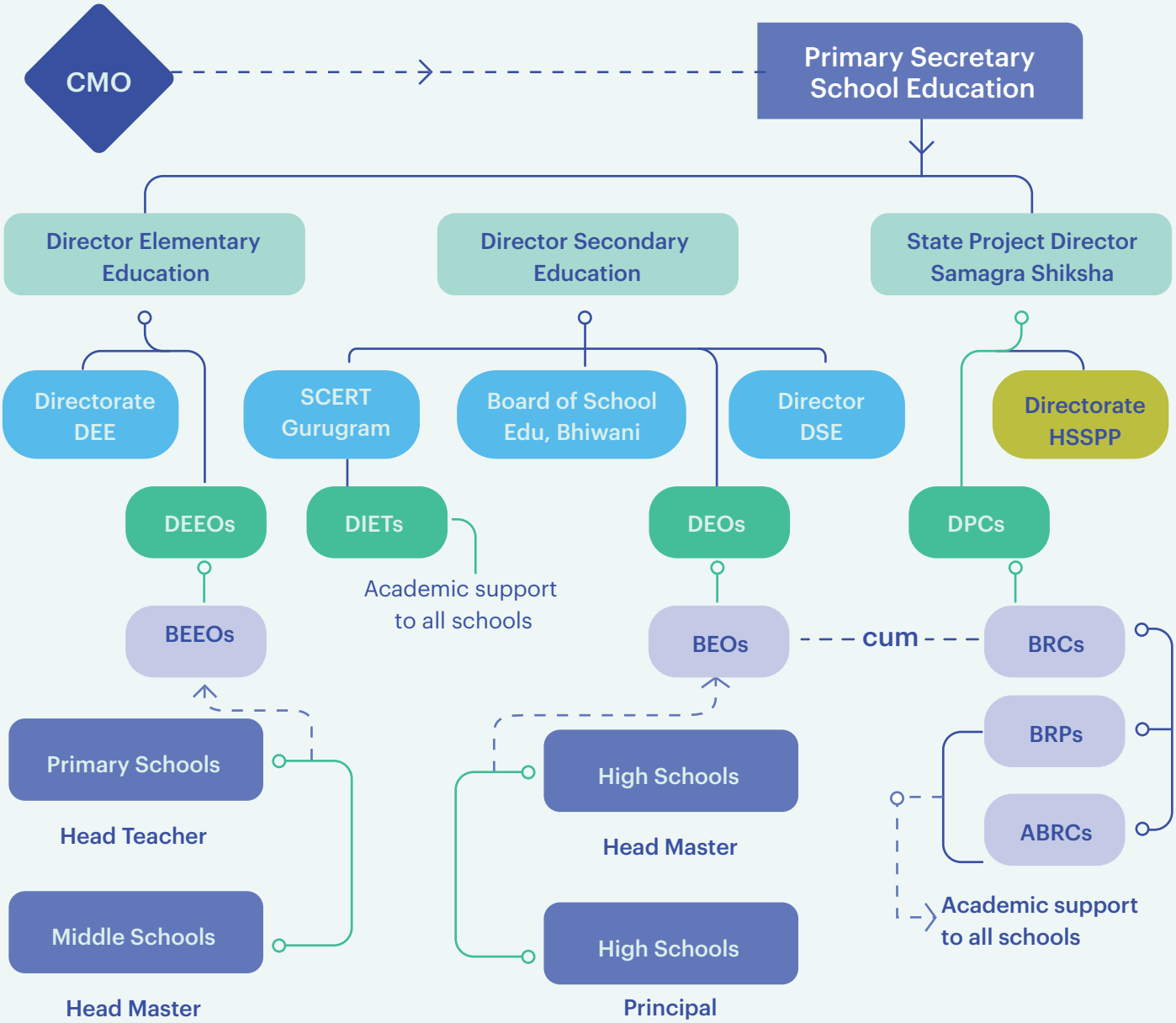
Clear policy and objectives

2.4.1 Buy-in for large-scale assessments is required all the way from state leadership down to the school level

The organogram of Haryana's Department of School Education below (Figure 13) illustrates the range of stakeholders involved in state-level decision making and implementation. Given the complex nature of the education system in most states, it is essential that there is buy-in at all levels, starting with the Chief Minister's Office.

[39] Singh, A. (2020, July). Myths of O!icial Measurement:Auditing and Improving Administrative Data in Developing Countries. RISE Working Paper Series. 20/042.Retrieved from: https://assets.publishing.service.gov.uk/media/5f906c46d3b f7f5d4def ae86/RISE_WP-042-Singh_0.pdf and Jonson D; Parrado, A (2019). Assessing the Assessments: Taking Stock of Learning Outcomes Data in India. RISE Porgramme. Retrieved from: https://riseprogramme.org/sites/default/files/inline-files/Johnson_Assessing%20the%20assessments RISE%20version_v2.pdf https://assets.publishing.service.gov.uk/media/5f906c46d3bf7f5d4defae86/RISE_WP-042-Singh_0.pdfhttps://assets.publishing.service.gov.uk/media/5f906c46d3bf7f5d4defae86/RISE_WP-042-Singh_0.pdf

Figure 13: Organogram of Haryana's Department of School Education[40]



2.4.2 Clearly defined objectives and an aligned vision are essential pre-requisites

A clearly defined objective helps determine parameters for test design, sampling, data analysis and dissemination. It is important to answer the following questions before conducting an assessment:

- How will data from assessments be used to inform teaching-learning practices and state-level education programs?
- What grades and competencies will be tested?
- Who needs to be tested – all students or a representative sample of students?
- At what level does the data have to be analyzed – student, school, block, district or state?
- What metrics need to be calculated to meet the objective of the assessment?

[40] Image developed by Samagra Governance in consultation with Haryana School Education Department, 2019

2.4.3

States should develop a competency framework mapped to learning outcomes for each grade and subject

A competency framework mapped to clearly defined learning outcomes for each grade and subject is an essential pre-requisite for successful LSAs. Himachal Pradesh adopted a learning outcomes-based approach to teaching and learning in 2016 and created a competency framework as well as learning outcomes framework. In 2020, HP launched its Unified Learning Outcome Framework, a detailed version of which is available on the Samagra Shiksha Himachal Pradesh website[41]. Within this initiative, HP created a master list of learning outcomes according to NCERT, mapped the learning outcomes to NCERT chapters, and ensured there was a mapping of learning outcomes to assessment cycles. An illustrative example of 3rd grade Math framework can be seen below in Figure 14.

Figure 14: Illustrative example of 3rd grade Math framework used in Himachal Pradesh

CLASS 3

MATH

LEARNING OUTCOME MAPPING

#	Chapter	FA1	FA2	SA1	FA3	FA4	SA2	Overall
1	देखे किधर से	-		-				-
2	संख्यायों की उछाल कूद	M301		M301				M301
3	कुछ लेना कुछ देना	M301		M301				M301
4	क्या लम्बा क्या छोटा		M305	M305				M305
5	आकृतियों का कमाल		M304 M311	M304 M311				M304 M311
6	लेने देने का खेल		M301	M301				M301
7	समय समय की बात			M309 M310				M309 M310
8	कौन किस्से भारी				M306 M308		M306 M308	M306 M308
9	बोलो भाई कितने गुणा				M301		M301	M301
10	पैटर्न की पहचान				M311		M311	M311
11	जग मग जग मग					M307	M307	M307
12	कैसे कैसे बाटें					M301	M301	M301
13	स्मार्ट चार्ट					M312	M312	M312
14	रूपए और पैसा						M302 M303	M302 M303

CODE	LEARNING OUTCOME
M301	Works with three digit numbers: ▪ Reads and writes numbers up to 999 using place value. ▪ Compares numbers up to 999 for their value based on their place value. ▪ Solves simple daily life problems using addition and subtraction of three digit numbers with and without regrouping, sums not exceeding 999 ▪ Constructs and uses the multiplication facts (tables) of 2, 3, 4, 5 and 10 in daily life situations. ▪ Analyses and applies an appropriate number operation in the situation/ context. ▪ Explains the meaning of division facts by equal grouping/sharing and finds it by repeated subtraction. for example 12÷3 as number of groups of 3 to make 12 and finds it as 4 by repeatedly subtracting 3 from 12
M302	Adds and subtracts small amounts of money with or without regrouping
M303	Makes rate charts and simple bills
M304	Acquires understanding about 2D shapes: ▪ Identifies and makes 2d-shapes by paper folding , paper cutting on the dot grid, using straight lines etc. ▪ Describes 2d shapes by the number of sides, corners and diagonals. for example ,the shape of the book cover has 4 sides, 4 corners and two diagonals ▪ Fills a given region leaving no gaps using a tile of a given shape.

[41] Detailed learning outcomes framework is available at the following link: http://samagrashiksha.hp.gov.in/Application/uploadDocuments/content/HP_Unified_LO_Framework.pdf

Strong Governance

2.4.4 Systems should be set up to ensure accountability at all levels

Stakeholders at all levels of the education system must be held accountable for the implementation and usage of assessment data. Some methods through which accountability can be built are:

- Include assessment results as an agenda item in the monthly review meetings for the Education department or Chief Minister's Office (CMO). A cascade mode for monthly reviews has proved to be effective in Haryana (as discussed in the case study in Chapter 3).

- Set up cascading communication groups from the CMO/ Education department level down to the school and teacher levels. An illustrative example of communication groups can be found in Table 4.

Table 4: Different groupings for assessment data communication

Grouping for communication	Stakeholders involved
CMO-State-District-Block	Chief Minister, Principal Secretary / Secretary, Directors of Samagra Shiksha, SCERT, APSCM, DCs, ADCs, SDMs, DEOs, DDEOs DEEOs, BEOs
CMO-State	ACSSE, APSCM, DSE, DEE, Initiative Leads and Initiative Owners
District-Block	DC, ADCs, SDMs, DEOs, DDEO, DEEOs, DIET Principal, DPC, APC, BEO & BEEOs
Block-School	BEOs and BEEOs, school heads, teachers
Block-School	BEOs, BEEOs, BRPs, ABRCs, Teachers

Enabling Resources

2.4.5 States should allocate adequate funding for regular large-scale assessments

Budgets for LSAs should cover test design, administration, training and capacity building for stakeholders, data analysis and reporting. LSAs are often customised for the state's requirements, and therefore, the cost varies by state. Table 5 presents an indicative cost for the design and administration of LSAs.

Table 5: Cost estimates for an assessment partner[42]

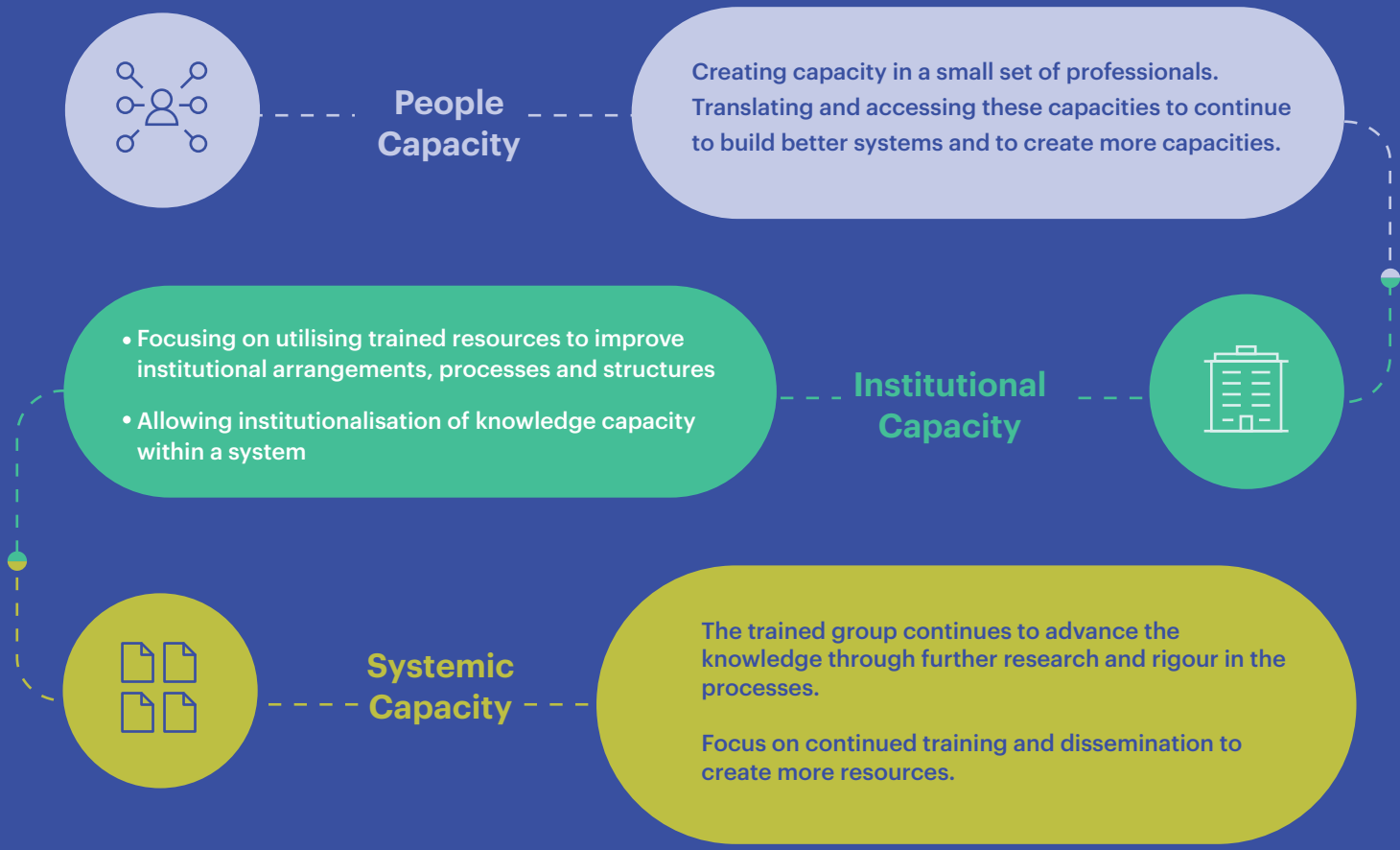
Budget Head	Fixed costs	Variable costs (Grade/ type of test determine such costs)
Test Design	Instrument Creation - Per Instrument: upto INR 2.5 Lac	
Test administration		Per Student for one subject: INR 100-200 Per Student for two subjects: INR 160-240 *(depending on the length of the papers, number of days over which papers were administered, travel distance of the evaluator)*
Training and capacity building	Training & Workshop - Per Round: INR 2 Lac *(includes a training before the assessments and a workshop at state-level, post assessments and completion of performance analysis)*	
Data analysis, dissemination and reporting	INR 1.5 - INR 5 Lakhs per grade per subject	

[42] The estimate costs of assessment components are provided by assessment partners; these are subject to variation by state and scale of program.

2.4.6 Experienced resources are required for the implementation of LSAs

For several years, states across India have been conducting SLAS using their existing internal capacity or with the support of technical partners. For states that would like to formalize their assessment cell and strengthen internal capacity, the three-stage process outlined in Figure 15 can be followed.

Figure 15: Process for increasing internal state capacity



For a more detailed understanding of this process, refer to the Educational Initiatives case study on building capacity for LSAs in Tamil Nadu in Appendix 3.

Additionally, Madhya Pradesh Rashtriya Madhyamik Shiksha Abhiyan, Directorate of Public Instruction, Bhopal (M.P.) invited tenders in 2018 for building institutional capacity for conducting diagnostic learning assessments in secondary and higher secondary classes. The request for proposal for that tender can be found in Appendix 4.

Technical Capacity

2.4.7 The quality of test items is one of the most important aspects of a high-quality large-scale assessment and must be prioritized

> **"The heart of any assessment is the question. A good question does not just assess, it throws light on learning gaps, it encourages thinking and it helps discriminate between students at different levels of learning. We often focus on the scores of an assessment but whether those scores are valid depend most of all on the quality of the underlying questions."**
>
> -Sridhar Rajagopalan (Co-founder and Chief Learning Officer, Educational Initiatives)

The quality of questions is the most important part of the test design process and yet highly under-rated by all stakeholders. If a question is framed well, it will:

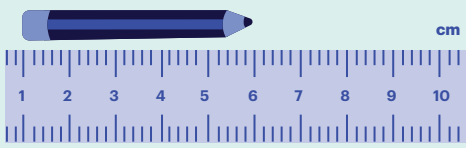
- Help distinguish mechanical learning from real learning with understanding
- Identify misconceptions and common errors made by students
- Provide feedback on what students are really learning

Developed items should be reviewed by a subject matter expert to ensure appropriateness of the test item, language used, clarity of answer choices and the distractors used in the answer choices.

The question below was selected from EI's Student Learning Study conducted across 18 states.[43] The important thing to note is that 95 per cent of students get the answer right if the pencil is placed at zero. However, **only 11 per cent get it right** if the pencil is offset as shown below. This means that in the former case, students who don't actually understand the concept would also get it right.

Figure 16: Illustration of a high-quality question

The length of the line in figure on the figure above is 4cm. How long is the pencil shown in the picture? (Use the ruler shown in the picture)



_____ cm

A Class 4 student explaining how he understood the question.

[43] Rajagopalan, Sridhar V. A.; Sankar, Vyjayanthi (2013). *Student learning study: Status of student learning across 18 states of India in Urban and Rural schools*. India: Educational Initiatives (EI) and Google.

2.4.8

Assessment objective should determine the blueprint for test design. New test instruments should be piloted on small samples first

An illustrative example of best practices related to test design, aside from the development of high-quality questions, has been outlined below. We describe the methodology CGI followed to develop a standardized test instrument for Haryana. This process can vary depending on assessment objective as well as organization.

Mapping the learning construct

The learning construct (state syllabus) defines the learning progression for a learner in any given topic/ subject/ area of expertise. The construct is mapped by breaking down the curriculum/syllabus document into specific learning outcomes that we expect a learner to demonstrate after having studied it thoroughly.

Development of test items

The test items are developed based on the learning construct. Each item (question) has a specific objective on what it is measuring based on the learning construct. The developed items are reviewed by a subject matter expert to ensure appropriateness of the test item, language used, clarity of answer choices and the distractors used in the answer choices.

Development of test based on blueprint

Based on the objective of the assessments, a test blueprint is developed. The blueprint draws from the construct and shortlists the specific skills or outcomes to be tested along with the difficulty level of the test. It includes total number of questions per test instrument, strands to be covered, topics within each strand and question types. In Haryana, the instruments were designed to have 20 per cent questions from two grade-levels below, 30 per cent questions from one grade-level below and 50 per cent of the questions at grade-level.

Piloting the tests and analysis of pilot data

The first test instruments are trialed with a smaller pool (approximately 300 students) to evaluate how the test instruments and the test items are functioning. In addition to evaluating instrument reliability and validity, the development team collects feedback on appropriateness of test items and test instruments by means of a survey. The pilot data is then analyzed to establish reliability and validity of the test instruments.

Test implementation

A standard measurement scale and a conversion table to convert raw scores to scale scores is developed. The scale enables one to compare performance of learners across cohorts and

measure growth longitudinally over time. The scale is divided into performance bands and each band is described qualitatively by using standard statements (abilities demonstrated by learners in the band). These parameters are then programmed to generate reports in an automated manner.

2.4.9 Assessments should be designed to allow comparison over time

States often attempt to compare results from an assessment with its previous rounds, as well as with other national and international assessments. This not only helps them monitor system progress, but also creates accountability and informs teaching practices

CG Insights, CSSL and EI often measure growth in learning levels for the same cohort of students as well as at the system level over multiple years. The steps that help in achieving comparability over time are:

- Ensuring the assessment tool is competency linked. To compare data, it is ideal for assessments to have 1/3rd of questions that are identical, 1/3rd that are similar repeats and 1/3rd that are new questions.
- Adopting Item Response Theory (IRT) as opposed to Classical Test Theory (CTT) measures the ability of a student as opposed to the score. Item characteristic curves help identify the difficulty level and the discriminatory power of question items. This allows for different questions with similar parameter values to be chosen for future tests.
- Using anchor items linked to different proficiency levels across various rounds and types of assessments.
- Conducting assessments at roughly the same time of the year and across the same demographic of schools and students.

Assessment data can only be compared by grade for each subject; data should not be compared across grades and subjects.

2.4.10 States must put in place strategies to ensure data reliability

Reliable and accurate data is the backbone of any assessment and the initiatives that ensue from it. As mentioned earlier, incorrect data is worse than no data at all because it embeds a state into assuming a false position. Below we outline some principles and strategies to improve data reliability in states. **It must be emphasized that all messaging and action should be focused on support and improvement, not punishment.** Workshops and awareness sessions to showcase importance of data reliability, and support systems for schools and blocks that are falling behind should be key elements of the strategy.

Figure 17: Note on using technology to improve data reliability

PRINCIPLE	STRATEGY
01 Measure data reliability and make it a salient outcome In any organization, what gets measured and rewarded is what gets done[44] . States should periodically measure the reliability of the data and attach a high weightage to data reliability metrics in the monitoring and evaluation framework.	Data reliability scores can be generated by retesting a sample of students. Retesting students by checkers (district education officers, independent third parties) is used to check the reliability of assessment data reported by teachers in the official school test. Models of retesting include: • State-led retest conducted by different teachers and schools • Third-party retest at district or state level
02 Make it harder to misreport data States should adopt practices that make it harder for the system to misreport.	• Multiple test booklets: Have more than one question paper, jumble order of questions, and vary answer order in multiple-choice questions • External grading: Send answer to different schools for grading • Conduct tablet-based digital assessments • Invite parents / Gram Panchayat leaders during assessments f for invigilation • Perform analytics to detect patterns in data that could be a consequence of cheating
03 Incentivize stakeholders to report true data	The system can reward schools/blocks to report reliable assessment data even when their performance on outcomes is not optimal
04 Messaging and action should be focused on support and improvement	Organize workshops and awareness sessions to showcase the importance of data reliability and support schools and blocks that are falling behind.

Note on using technology to improve data reliability in Andhra Pradesh

As part of a larger effort on school transformation, the Government of Andhra Pradesh found that poor data reliability in their summative learning assessments had weakened the system's ability to determine its own health. It was also an obstruction to providing school quality information publicly to parents. The Government, in partnership with CSF and Abdul Latif Jameel Poverty Action Lab (J-PAL), tested census level tablet-based assessment for all children in grade 4 – in public and private schools - in Prakasam district. J-PAL found tablet-based tests to be significantly more reliable than paper-based equivalents. Students tested on tablets on average scored the same as the J-PAL re-test, while others scored 21-28 percentage points higher on average in paper-based tests, depending on subjects

[44] Murlidharan, K. (2016, February) *Centre should redirect its energies towards defining and measuring outcomes, and linking them to funds for states.* Ask for results- The Indian Express. Retrieved from: https://indianexpress.com/article/opinion/columns/union-budget-2016-ask-for-results/

2.4.11

Insightful data analysis coupled with effective dissemination form an intrinsic part of a large-scale assessment

Raw assessment data is not actionable until translated into meaningful insights. In this section, we will outline the analysis that can be included in a large-scale assessment report. Some states have created publicly available dashboards showcasing learning outcome data to democratize access to data and insights across all stakeholders.

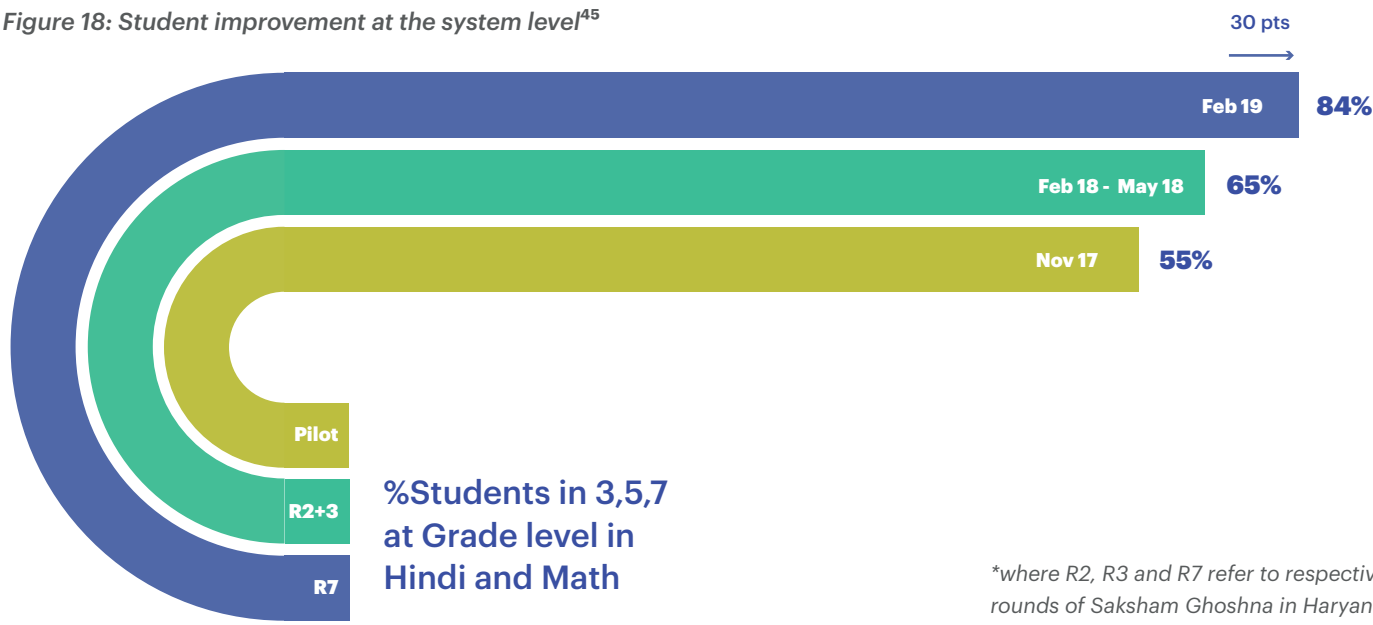
01

Estimating the expected learning gains in a year: Haryana's grade-level competency-driven Ghoshna campaign showcases that even first-generation learners can improve in a relatively short period of time at a system and cohort level.

System level

30 per cent points improvement in per cent students at grade level in less than two years for grades 3, 5 and 7 in Math and Hindi

Figure 18: Student improvement at the system level[45]



[45] Data for analysis in Fig 15, 16 and 17 was derived from Saksham Haryana's Ghoshna Rounds 2017-2019 where R2, R3 and R7 refer to respective rounds of Saksham Ghoshna in Haryana

Cohort level

9-18 per cent improvement in performance within six months for grades 3-8 in Math, Hindi, EVS, Science and Social Studies.[46]

Figure 19: Student improvement at cohort level for grades 3 to 8.

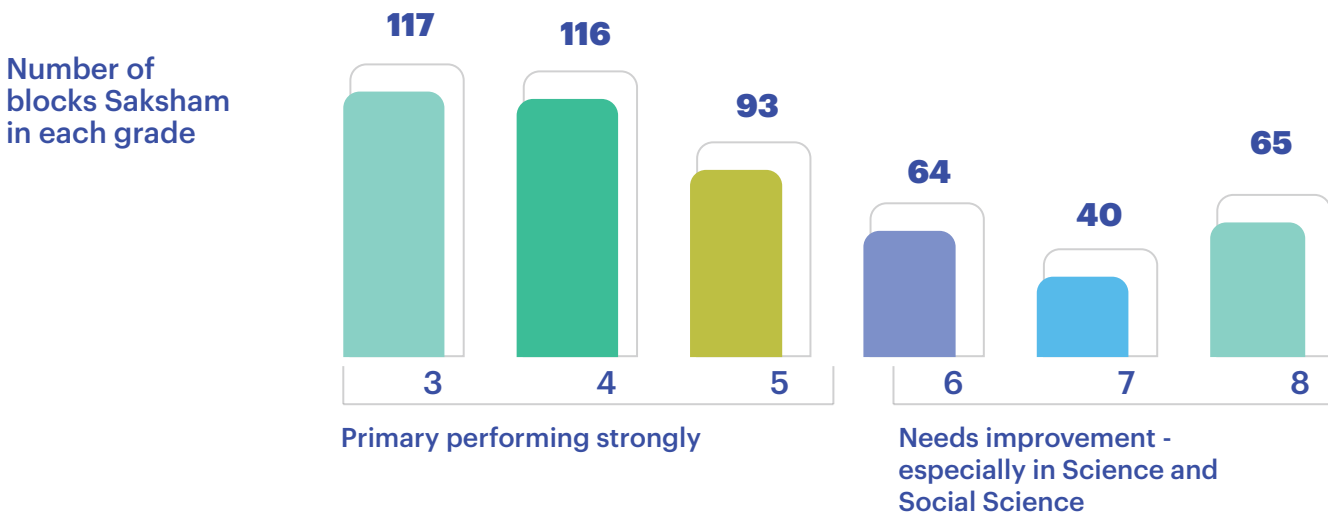
Average Difference in Performance from Baseline (Sep'19) to Endline(Feb'20)												
	Grade 3		Grade 4		Grade 5		Grade 6		Grade 7		Grade 8	
Subject	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2
Math	14%	14%	14%	11%	13%	13%	20%	18%	20%	16%	15%	13%
Hindi	14%	18%	14%	10%	9%	10%	14%	10%	21%	20%	13%	7%
EVS	0%	11%	11%	11%	10%	6%	-	-	-	-	-	-
Science	-	-	-	-	-	-	20%	15%	15%	12%	8%	9%
SSC	-	-	-	-	-	-	18%	16%	14%	7%	9%	5%
Overall	9%	14%	13%	11%	11%	10%	18%	15%	18%	14%	11%	9%

Note: Endline was conducted in two rounds represented by R1 and R2

02

Establishing difference in learning outcomes across grades: Figure 20 shows that by Feb 2020, the number of blocks with at least 80 per cent students at grade level (Saksham) is higher in grades 3 to 5 compared with grades 6 to 8.

Figure 20: Student learning levels by grade



[46] EVS was tested for grades 3-5 and Science and Social Science in grades 6-8

03

Segmenting students by proficiency levels can inform classroom instruction and enable interventions like teaching at the right level.

Figure 21: Illustrative segmenting of students by proficiency level[47]

National Benchmark of Math Achievement

5th Grade

School Category	Percentage of students Above National Benchmarks	Advanced Benchmark	High Benchmark	Intermediate Benchmark	Low Benchmark
HFP	4 8 19 29 40	40%	69%	88%	96%
APS	19 33 33 12 3	03%	15%	47%	81%
GOV	31 28 24 11 2	02%	14%	38%	66%

Percentage of students at or above Advanced Benchmark

Percentage of students at or above High Benchmark

Percentage of students at or above Intermediate Benchmark

Percentage of students at or above Low Benchmark

Percentage of students below Low Benchmark

[47] Adapted from: Sridhar Rajagopalan, V. A. (2014, December).*Establishing Benchmarks in Student Learning*. India: Educational Initiatives (EI) and Michael and Susan Dell Foundation. Retrieved from: https://www.ei-india.com/newEIWebsite/eiasset/pdf/Establishing-Benchmarks-of-Student-

04

Identifying areas of strength and areas of improvement can help inform review exercises and prioritization of concepts in the classroom.

Figure 22: Illustrative state-level competency report[48]

State-level Competency Report Classes 3 & 4		
GRADE 3 SUBJECTS	**TOP PERFORMING**	**AREAS OF IMPROVEMENT**
Hindi	01. Identify the fruit in the picture 02. Identify the picture & fill missing letter of the word	01. Interpret the meaning of a sentence in the context of the passage 02. Fill in the blank with correct past tense helping verb
Math	01. Identify the number that comes right after the given number 02. Identify the smallest object among the pictures	01. Read the time shown by an analog clock 02. Identify the day of the week on a date using calender of previous month
EVS	01. Identify the reason teachers tell students to play outdoors 02. Identify the correct profession for the given situation	01. Identify the shortest path to reach the destination in the map given 02. Identify factors which determine how much food a person eats, using given table

For a more detailed understanding of how to analyze top performing areas and areas of improvement, refer to Appendix 2

05

Misconception analysis: Misconceptions are concepts that students acquire that are not in line with or do not match the conventional expert view on that topic. Misconceptions can interfere with students' learning as they proceed through grades and impede their ability to form links between difference concepts. The illustration below is an example of a misconception in Mathematics and Language.

[48] Image used from: CG Insights. (2019, September). Saksham Ghoshna 2.0 State Performance Report,. CG Insights

Figure 23: Illustrative of a misconception in Language49

Class 4 Question No. 7

Question

Which word completes the sentence suitably?

Sheela _____ for her kitten everywhere. Later she found it under her bed

- ■ A. searched
- ☐ B. searching
- ☐ C. will search
- ☐ D. may search

Performance

Percentage of Students	
Option	Pvt EM School
A	47.0
B	32.6
C	10.5
D	5.6

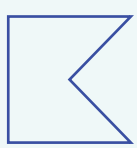
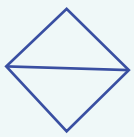
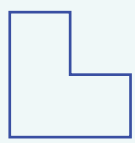
The question tests whether students can identify the appropriate form of the verb to be used according to the context given. While nearly half the students picked the right answer, option A, almost a third of the students picked the incorrect option B. It is interesting to see th students pick B over C or D, because C and D complete sentence in a grammatically correct way but are incorrect in the context. This points to the idea that the children are thinking in their native tongue and picking the most common tense, which is the present continuous.

Figure 24: Illustrative of a misconception in Mathematics[49]

Class 4 Question No. 12

Question

Which of the following shapes has total 5 corners?

- ■ A. 
- ☐ B. 
- ☐ C. 
- ☐ D. 

Performance

Percentage of Students		
Option	Govt TM School	Pvt EM School
A	19.6	23.0
B	63.9	64.2
C	4.2	2.9
D	5.8	3.8

A majority student (63.9% in Government TM schools & 64.2% in Private EM schools) choose the incorrect option B. Probably they are only counting the corners protruding out as they are distinctly visible. They are counting 5 corners in option B instead of 10.

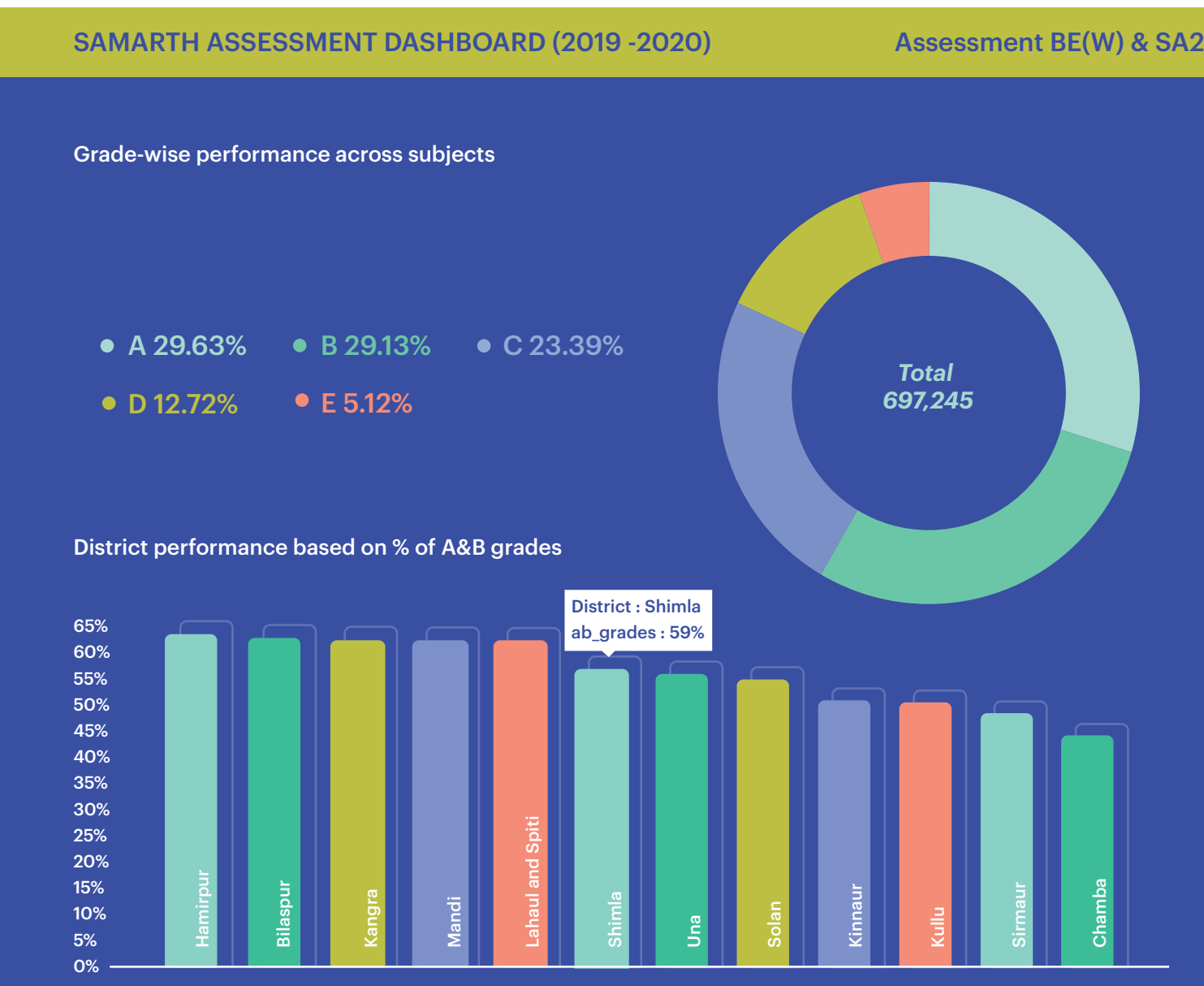
Data shows that if misconceptions are not corrected in early grades, they persist in later grades leading to an increase in the learning gap of students.

[49] Image retrieved from: Centre for Science of Student Learning (CSSL). (2018). *Andhra Pradesh Student Learning Acheivement Survey*. India: CSSL.

06

Learning outcomes at the state, district and block levels: Robust LSAs will enable data analysis at district and sub-district levels. In the illustrative image below (data from Himachal Pradesh's assessment), we see grade-wise performance of all students across subjects. However, the dashboard also showcases district-wise performance of data. This is critical, since it will allows officials and teachers in districts that have lower number of students scoring A and B grades (Chamba, Sirmaur) to create targeted interventions/remediation for students. Analyzing data at the district and block levels will also allow states to determine if there are other factors that control student learning outcomes.

Figure 25: Illustrative image of Samarth Dashboard, Himachal Pradesh showing grade-wise performance across subjects and performance at the district level [50]



[50] HP Samarth dashboard, can be accessed at: https://hpsamarth.com/

07

Learning outcomes by gender and social category: States can analyze data by gender and social category. For example, in the illustration below (Figure 26), data indicates that, on an average, across subjects and grades, there is negligible or no difference in the performance of boys and girls. However, in Figure 27, we see that there is a difference in student performance by category – students belonging to ST category perform at lower levels in Grade 6 Language and Grade 9 Mathematics.

Figure 26: Illustrative analysis showing difference in performance by gender[51]

	GIRLS			BOYS			SIGNIFICANCE & MEANING		
Papers	N	Average	Standard Deviation	N	Average	Standard Deviation	p-value	Cohen'sd	Effect Size
English 3	6692	56.8	18.30	6139	56	18.85	0.0120*	0.04	Negligible
Math 3	6630	66.46	18.99	6070	66.50	19.90	0.9073	-	-
Language 3	6638	65.94	19	6078	65.36	19.20	0.0896	-	-
English 5	7833	50.46	19.76	7852	49.99	19.59	0.1295	-	-
Math 5	7902	54.12	20.60	7926	54.90	19.50	0.0145*	0.04	Negligible
Language 5	7890	66.55	22.18	7896	66.16	21.81	0.2584	-	-

Figure 27: Illustrative analysis showing difference in results by category

Government TM Class 6

Category	OBC		SC		ST		Others	
Subject	Language	Math	Language	Math	Language	Math	Language	Math
N	7965	7703	3432	3332	655	632	1509	1402
Scaled Score	501.82	504.35	494.11	491.26	479.60	483.34	516.46	505.79
SD	92.74	92.99	96.99	95.42	96.12	95.69	95.28	91.63
Significant Meaningful	△	△	▽	▽	▼	▽	△	△

*** Statistically Significant at 5% significantly level; Cohen's d <0.2 = Negligible [0.2, 0.5] = Small [0.5, 0.8] = Medium [0.8, Inf] = Large**

[51] Adapted from: CSSL (2018-19). Rapid Assessment of Progress of Implementation of SIQE Programme in Rajasthan. CSSL

The next chapter of this report shall delve into the details of assessment mechanisms adopted by four states in India and Chile. In India, Haryana, Himachal Pradesh, Rajasthan and Andhra Pradesh account for over 10% of government school enrolments nationwide[52]. These states have successfully implemented several aspects of the LSA best practices discussed in Chapter 2 and make for reliable case studies to show linkages between high quality, competency linked assessments and improvement in quality of education. Similarly, developing countries like Chile have also been successful in using LSAs to measure grade specific competencies across the country, monitor the system, create accountability, measure growth in learning outcomes and help inform education practices and policy

[52] Ministry of Education, Government of India. (2018-19). UDISE+ 2018-19 (Provisional). Retrieved from http://dashboard.udiseplus.gov.in/#!/

CHAPTER 3

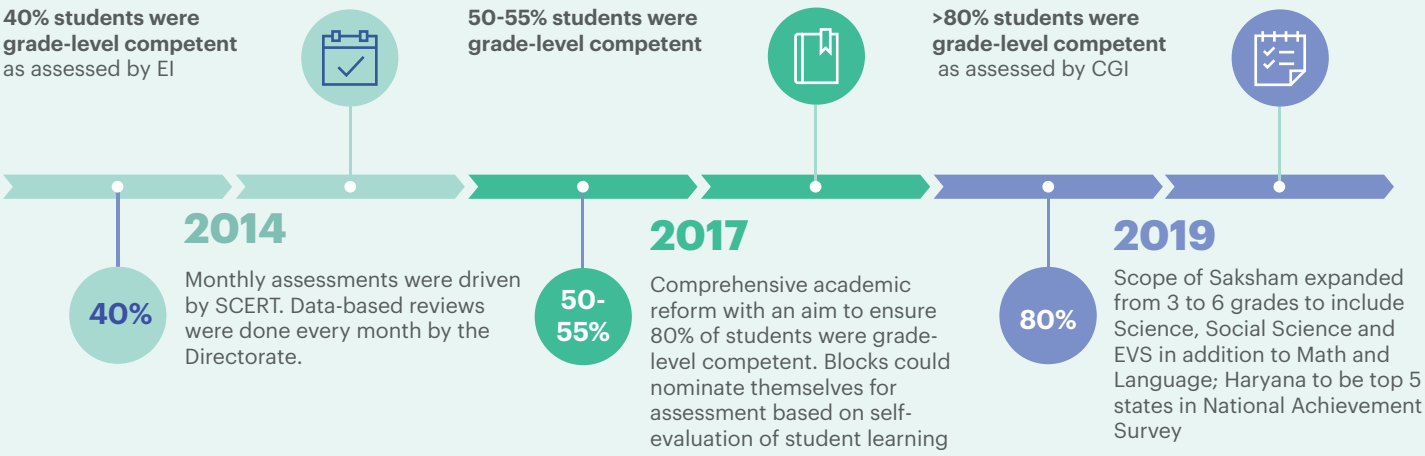
Case studies of large-scale assessments **in India and Chile**

Case Study 1. **Haryana**

A clear vision accompanied by strong governance, detailed competency framework and scientifically designed assessments helped improve grade level competency[53] in Haryana from 40 per cent in 2014 to above 80 per cent in 2019.

Haryana government's school system has over **14,000 schools and 100,000 teachers** catering to more than **two million students.** Over the last few years, the state has undertaken a series of data-driven academic and administrative reforms to improve the quality of education.

Figure 28: Timeline of assessment reforms and learning outcomes in Haryana



Implementation Highlights

A clear vision was communicated to stakeholders that helped align education interventions towards a common goal: 80 per cent students at grade level

An essential ingredient for success of the Saksham Haryana program was a clearly defined objective to enable 80 per cent students in grades 3, 5 and 7 to achieve grade level competency in Math and Hindi.[54] Equipped with a technology-driven communication strategy wherein WhatsApp groups were used for two-way communication at all levels, the overarching goal was clearly understood at the school, block, district, and state level. Learning results were also constantly communicated from the CMO's office for Saksham Ghoshna.

[53] Math and Hindi, Grades 3,5 and 7
[54] Saksham 1.0 grades 3,5 and 7 were assessed in Math and Hindi. In Saksham 2.0 this increased to grades 3-8 for Math, Hindi, Science, Social Science and EVS.

Figure 29: Communication from CMO on Saksham Ghoshna[55]

Strong governance mechanisms along with leadership support drove accountability of learning outcomes at all levels

Driven by Chief Minister's Office

Saksham Haryana cell was set up in the CMO to conduct regular reviews and monitor progress. The program has been running in mission mode by the CMO since 2017. The Chief Minister reviewed progress every quarter with the Education Minister and other senior officials in the Education department.

Figure 30: Saksham Sammaan Samaroh celebrating success of the program[56]

[55] CMO Haryana. [@cmohry]. (2020, April 30). सक्षम हरियाणा कार्यक्रम' के तहत आयोजित की गई सक्षम घोषणा परीक्षा के परिणामों में राज्य के खंडों में विद्यार्थियों के सीखने के स्तर में हुआ उल्लेखनीय सुधार [Tweet]. Twitter. https://twitter.com/cmohry/status/1255754798252486656, CMO Haryana. [@cmohry]. (2019, September 4). Proficient Students with #SakshamGhoshna2.0: A unique initiative of Haryana Govt. [Tweet]. Twitter. https://twitter.com/cmohry/status/1169158851419000832

[56] Image for Saksham Sammaan Samaroh has been provided by Samagra Governance, July 2019

Accountabilty and transparency across state, district and sub-district levels

One of the primary reasons for the overall success of the program was that the state **decentralized accountability** of results to the block. This made school principals, teachers and block-level officers directly responsible for driving learning outcomes. Haryana instituted an incentive mechanism through which education officials at the block and cluster levels were recognised and rewarded for achieving Saksham status.

> **A well-defined competency framework tied curriculum, pedagogical practices and assessments to clear learning objectives across grades and subjects. This provided a guided path for teachers and students towards the goal of grade level competency**

Haryana created a unified learning outcome framework (LOF), **Saksham Talika**, that was aligned to NCERT's 2017 learning-level outcome framework. The LOF was created by SCERT for Grades 1 – 5 for English, Hindi and Mathematics and laid out the learning outcomes to be taught for each summative assessment.

Saksham Talika was structured to be a practical and useful document for teachers and administrators. It lists competencies for each grade level, maps to teaching-learning resources and acts as a tracking mechanism that teachers can use. Even with Saksham Talika in place, however, the idea of a competency framework was an abstract concept for teachers. The assessments used as part of Saksham Ghoshna helped teachers visualize how competency frameworks can aid in teaching and learning. Teachers were then able to use this framework to develop competency-linked question papers to assess students.

Figure 31: Illustrative image of competencies in Saksham Talika[57]

Following Image has been adapted from the detailed Saksham Talika available on the DigiLEP website.

सक्षम हरियाणा

ENGLISH | GRADE 5

SAKSHAM TALIKA

LEP Cycle	*LEP Teacher Manual*		
	Code	Pre-requisite Competencies	Lesson
LEP 2 (July) | 2 days	*ENG410*	Students can write 5-10 simple sentences on given topics/ pictures using vocabulary learnt and with appropriate sentence structure/s	*26*
	ENG411	Students can learn new vocabulary from the environment /stories /poems and use them in context in 2-3 written sentences	*25*

[57] Further details on Saksham Talika are available at the following link : https://sites.google.com/view/digilepharyana/%E0%A4%B8%E0%A4%95%E0%A4%B7%E0%A4%AE-%E0%A4%A4%E0%A4%B2%E0%A4%95

	ENG413	Students can use nouns, adjectives (comparative and ending with -ing), conjunctions, prepositions, prefix and suffix, tenses and linkers such as first, next etc. to indicate connections between words and sentences in speech and in writing	*27,28*
SAT Cycle	***Textbook (My Book of English-5)***		
	Code	Grade Level Competencies	Chapters
SAT 2 (July) | rest of the time	*ENG503*	Students can find simple information from tables and maps, etc.	*2,3*
	ENG504	Students can answer questions (starting with what, how, where, why) in 3-5 sentences using recall, analysis, and sequencing based on grade 5 appropriate passage	*2,3*
	ENG508	Students can write 5-7 sentences on a given topic using theme related words e.g., traveling experience, annual day at school, etc.	*2,3*
	ENG511	Students can build grade 5 appropriate vocabulary using crossword puzzles, word chains, etc.	*2*
	ENG513	Students can identify and appropriately use nouns, pronouns, verbs, affirmative and negative sentences, contractions of do not/ did not and cannot/ was not and frame wh- questions	*2,3*

Scientifically designed and administered assessments ensured that appropriate competencies were tested on a representative sample of students and reliable data was collected for analysis

Haryana recognized the urgency for designing competency-linked high-quality assessments for driving improvement in learning outcomes. It, thus, chose to complement existing state capabilities with the technical expertise of CGI and EI.

Test design

CG Insights followed Item Response Theory (IRT) and developed assessment items, which lent themselves to evaluating learner ability irrespective of test instrument difficulty. The process used to develop standardized test instruments in Haryana has been described in the Implementation toolkit in Chapter 2. The assessment was carried out for close to 500 to 600 students per block in every grade. For Saksham 2.0, this resulted in data collection for almost 400,000 students.

Defining grade-level competency

Since a significant part of Haryana's goal was to ensure grade-level competency, it was essential to benchmark competency levels for each of the grades tested. A rigorous benchmarking exercise was conducted by CG Insights to determine the grade-level cut-off for Mathematics and Language. A panel of teachers and experts

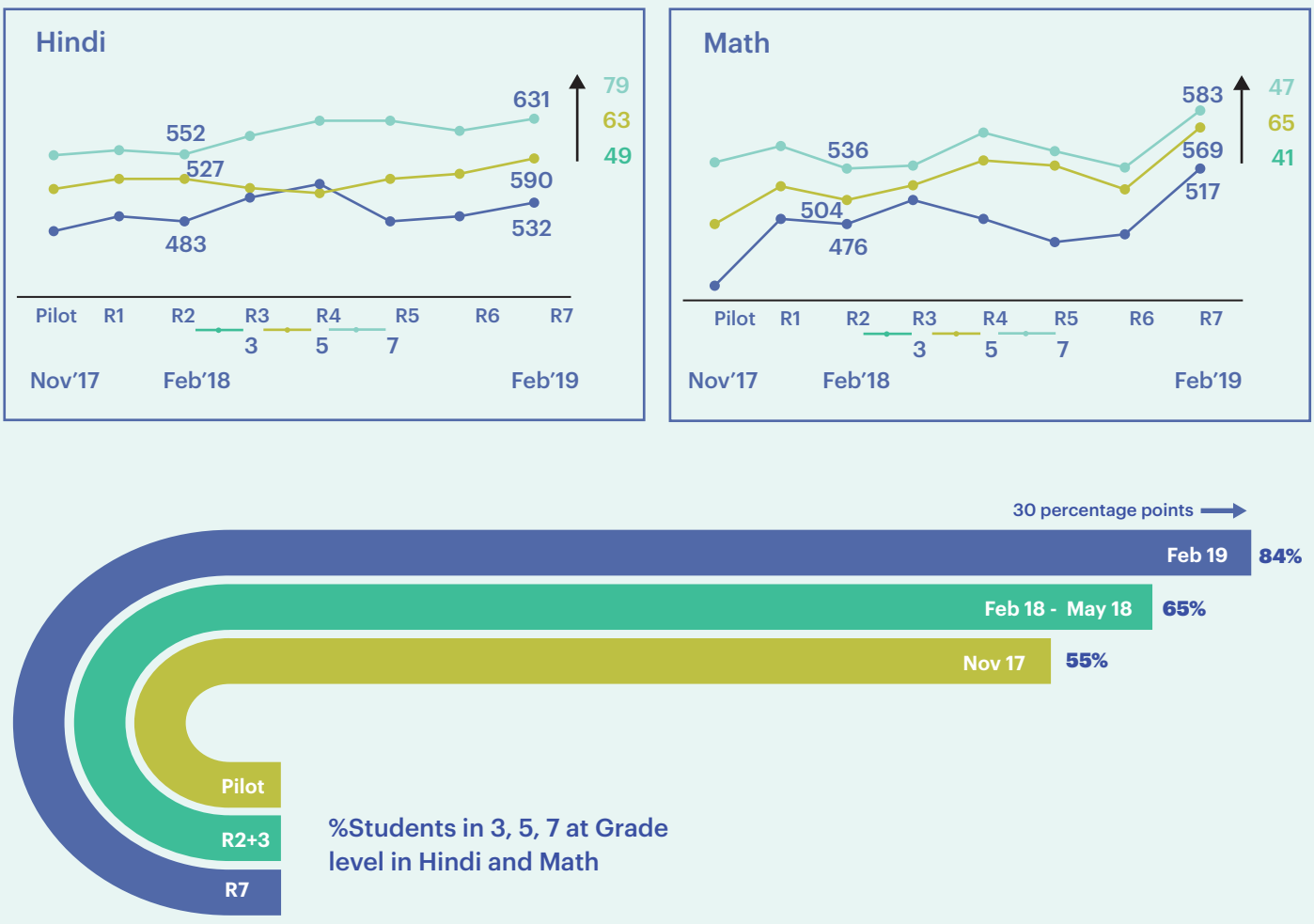
determined the common learning standards that should comprise grade-level competency. Additionally, a state-wide normative study was conducted to identify norm-referenced benchmarks balanced with the syllabus-based criterion referenced benchmark. Benchmarking helped stakeholders understand and assess the data and focus on specified learning objectives to achieve grade-level competency. For a detailed note on grade level competency, refer to Appendix 7.

Lessons from Haryana

Significant growth in student learning outcomes is ambitious, yet feasible

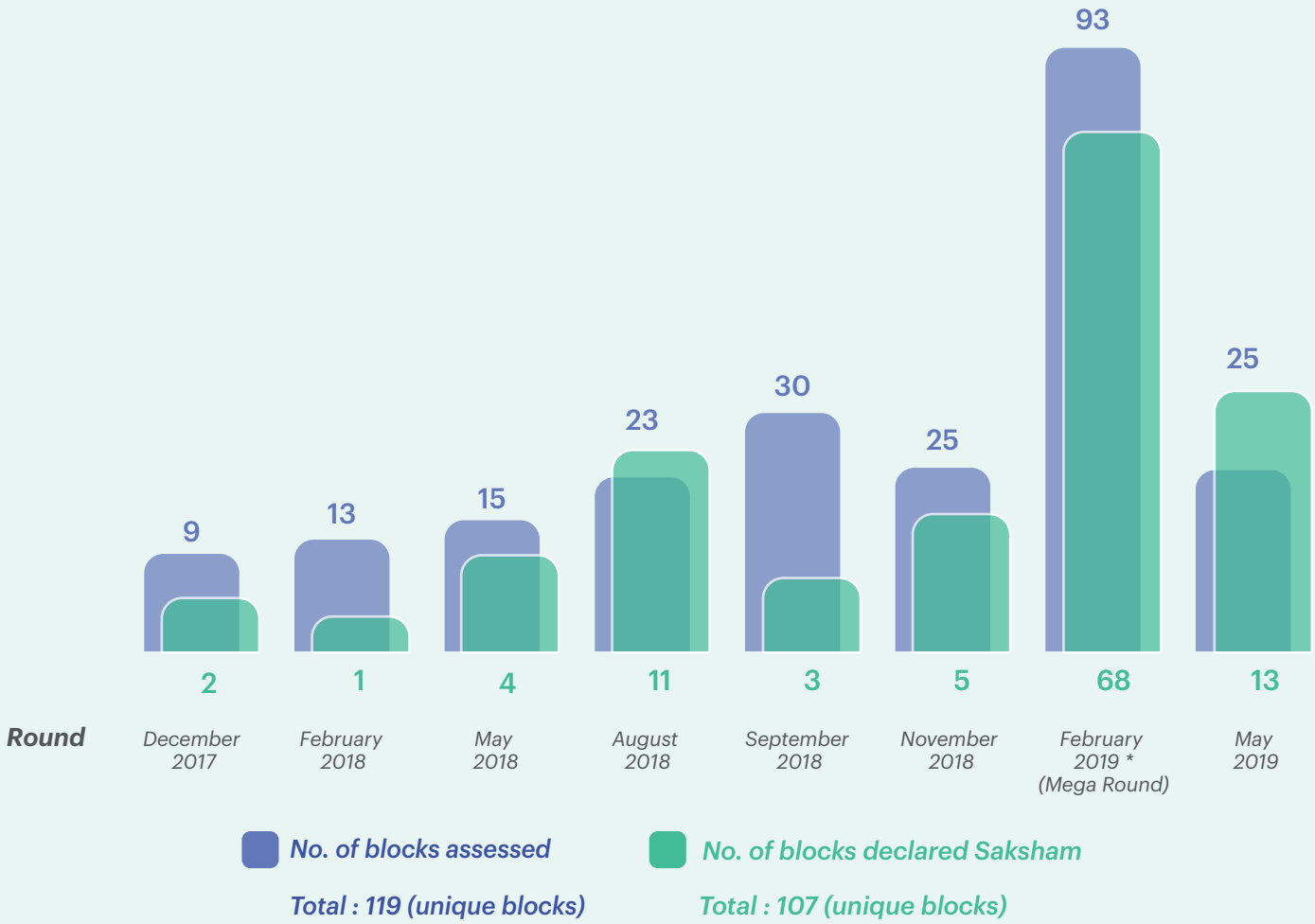
Haryana has achieved significant growth in student learning outcomes from 2014, when only 40 percent of students were grade-level competent. Between 2017 and 2019, blocks could nominate themselves for a third-party assessment if they felt more than 80 per cent students were grade-level competent. By 2019, 107 out of 119 blocks were declared Saksham, with more than 80 per cent[58] students declared grade-level competent.

Figure 32: Saksham 1.0: Growth in learning outcomes from November 2017 to February 2018[59]



[58] As of May 2019
[59] Data for analysis in Fig 29 was derived from Saksham Haryana's Ghoshna Rounds 2017-2019

Table 6: Saksham 1.0: Blocks declared Saksham during different rounds of assessment



In the academic year 2019-20, the scope of Saksham was increased to cover grades 3-8 in Math, Hindi, Science, Social Science and EVS. With focused interventions, teacher inputs and accountability and monitoring, the number of blocks that were at grade level for all grades increased from 0 to 22 in just six months. Table 7 below indicates that it was easier to achieve grade level competency in primary grades (3 to 5) compared to elementary grades (6 to 8).

Table 7: Saksham 2.0: Comparison of Saksham blocks in assessments conducted in September 2019 and February 2020

Parameter	Grade 3		4		5	
Assessment Cycle	Sept '19	Feb '20	Sept '19	Feb '20	Sept '19	Feb '20
# of blocks	119	119	119	119	119	119
Saksham Blocks	35	117	55	116	28	93

Parameter	Grade 6		7		8	
Assessment Cycle	Sept '19	Feb '20	Sept '19	Feb '20	Sept '19	Feb '20
# of blocks	119	119	119	119	119	119
Saksham Blocks	3	64	2	40	1	65

Table 8: Saksham 2.0: Summary table of number of blocks that achieved Saksham by grade

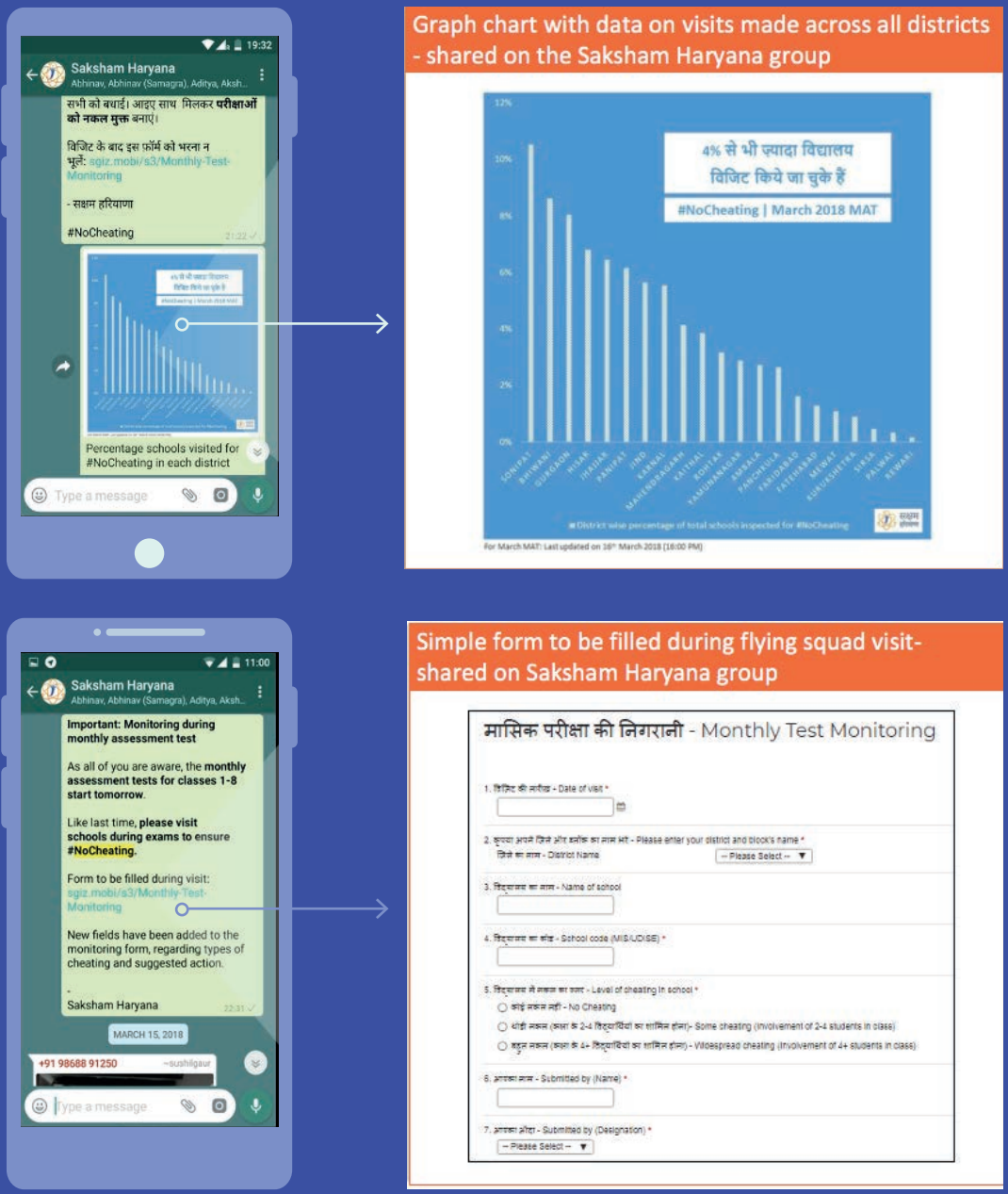
Criteria	No. of Blocks	
	Sept 2019	Feb 2020
Blocks Saksham in all 6 grades		22
Blocks Saksham in 5 grades	2	26
Blocks Saksham in 4 grades	2	33
Blocks Saksham in 3 grades	15	26
Blocks Saksham in 2 grades	17	8
Blocks Saksham in 1 grade	27	1
Blocks Saksham in no grade	56	3
	Total =119	Total =119

Data reliability can be ensured through algorithms, disincentives, and communication

High-visibility examinations can lead to cheating at the school and block level. Haryana was able to anticipate and curb this issue by developing a 'No-Cheating' campaign that was rolled out across the state; every stakeholder involved took an oath to avoid cheating.

Additionally, the third-party assessment partner developed an algorithm during the data review phase to ensure there was no malpractice. The algorithm detected data patterns such as extreme high performance on difficult questions and same wrong answer patterns; these indicate class or school level malpractice. When a school was flagged by the algorithm, additional checks were made by ground staff before marking a school or block as disqualified.

Figure 33. No-Cheating Campaign conducted in Haryana[60]



Showcasing results will lead to state budget allocation for assessments

Initially the assessments conducted in Haryana were funded through external partners. However, given the success of the program and a steady growth in student learning outcomes, Haryana allocated a budget (including costs for test design, administration, data usage) for conducting LSAs in the state, and undertook an RFP process to on-board a technical partner to design and support administration of the LSAs. Data from technical partners shows that it costs approximately INR 1.5 crore to conduct one round of assessment for 4 subjects for grades 3 – 8 across all 119 blocks in the state.

[60] Image for No-Cheating Campaign has been provided by Samagra Governance

Case Study 2. **Rajasthan**[61]

Engaging a third-party technical expert accelerated the implementation of competency linked assessments, which provided an independent evaluation of Adarsh program. This helped customise remedial interventions based on student learning needs.

In 2015, the Government of Rajasthan launched the Adarsh School Yojna to create Adarsh (model) schools with better infrastructure and resources across the state. The program aimed to provide equitable and quality education for children between the ages of 6 and 18. The state simultaneously launched a pedagogical reform called State Initiative for Quality Education (SIQE) to implement competency-based teaching-learning and assessments in the classrooms.

In 2016-17 the Rajasthan Madhyamik Shiksha Abhiyan (RMSA) commissioned an independent evaluation of the Adarsh School Yojna to determine the impact on student learning outcomes.

Figure 34: Timeline of assessments for Adarsh School Yojana

2015

Adarsh School Yojana was launched in tandem with SIQE to improve learning outcomes for students aged 6-18

2016

Assessment Round 1: Independent assessment of learning outcomes was conducted by Centre for Science of Student Learning (CSSL) for students in Adarsh and non-Adarsh schools

2018

Assessment Round 2: CSSL found that state learning levels had improved overall, but there was no significant difference between Adarsh and non-Adarsh schools

2019

State-wide remediation program was launched with the help of assessment data based learning gaps analysis

Implementation Highlights

Third-party technical expertise was leveraged to provide an independent evaluation of student learning outcomes, and strengthen state capacity for test administration

Rajasthan engaged Centre for Science of Student Learning (CSSL) to conduct an independent assessment of the Adarsh Yojana program. Bringing in a partner to conduct assessments provides an

[61] All images for "Case Study 2. Rajasthan", have been adapted from: CSSL (2018-19). Rapid Assessment of Progress of Implementation of SIQE Programme in Rajasthan. CSSL.

autonomous and credible review of progress. The state had clear objectives in engaging CSSL, which included:

Evaluate baseline student performance levels in Adarsh and Non-Adarsh schools[62]

Assess changes in student learning outcomes for Grades 3 and 5 in Language, Math and English. For Grade 8, only one round of assessment was conducted in Language, Math, English and Social Science

Identify gaps in student learning across competencies

Generate insights on the difference in student performance across districts

CSSL supported the state in building capacity and dedicated resources for LSA by conducting workshops for the SCERT team on aspects such as test design, item writing, test administration, data analysis and report writing. DIETs across the state put together teams to administer the assessment and were trained by CSSL to ensure standardization of the test conduction process.

> **High quality tests were designed, and assessments were conducted in a standardized manner across a representative sample of schools**

CSSL developed a list of competencies and cognitive domains to be tested for each subject and grade level. All questions in the test paper were aligned to a skill and cognitive domain.

The full-length learning assessments (105 minutes per subject) included multiple-choice questions and writing tasks, and oral questions for students in Grade 3. Some sections of the test papers were read aloud to students by trained evaluators in Grade 3 to address reading difficulties, if any. The questions were developed to test not just recall and procedure, but also understanding, application, reasoning, analytical thinking and creativity of students (illustrative questions can be referenced in Appendix 6).

The assessment was conducted with a sample of 690 schools across all 33 districts in Rajasthan. Approximately 13,000 students in Grade 3, 16,000 students in Grade 5 and 3,900 students in Grade 8 were assessed in February 2019 for Round 2 of the assessment. In order to ensure reliability of data, teachers from neighboring schools were trained and were deputed as invigilators for the assessment. The extensive sample ensured that specific insights could be generated at a district level and differences between districts could be studied.

[62] Both Adarsh and non-Adarsh schools were either secondary (up to Grade 10) or senior secondary (up to Grade 12) schools.

Table 9: Sample of students assessed in Round 2

	Grades 3 and 5	Grade 8
Districts covered	33	33
Number of schools	690	198
Subjects tested	Language, Math, English	Language, Math, English, Science, Social Science
Number of students tested	30,000	4,000

A detailed analysis across multiple parameters helped generate insights on learning levels

CSSL used item response theory to conduct analysis of the assessments. Data was cut across multiple parameters to showcase a true picture of learning in the state. A glimpse of the analysis conducted in Rajasthan is provided below:

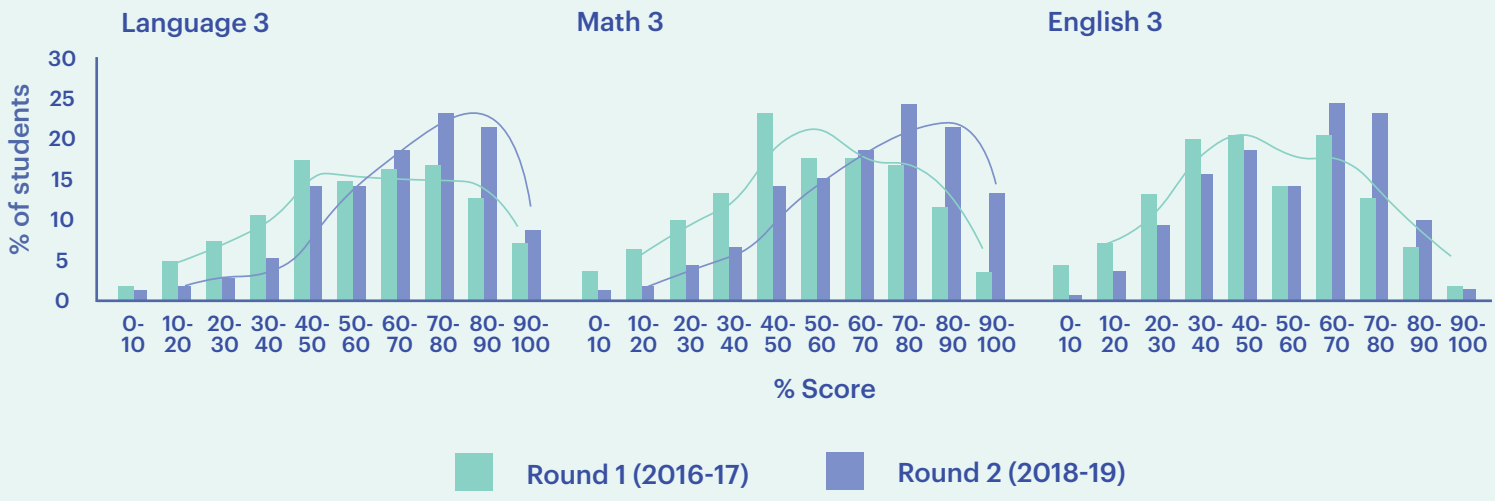
Overall performance of students across Rounds 1 and 2

The percentage of students who could answer at least 6 out of 10 questions increased from 22-52 per cent to 34-66 per cent in different grades and subjects tested

Student score distribution

A shift to the right was observed in almost all classes and subjects

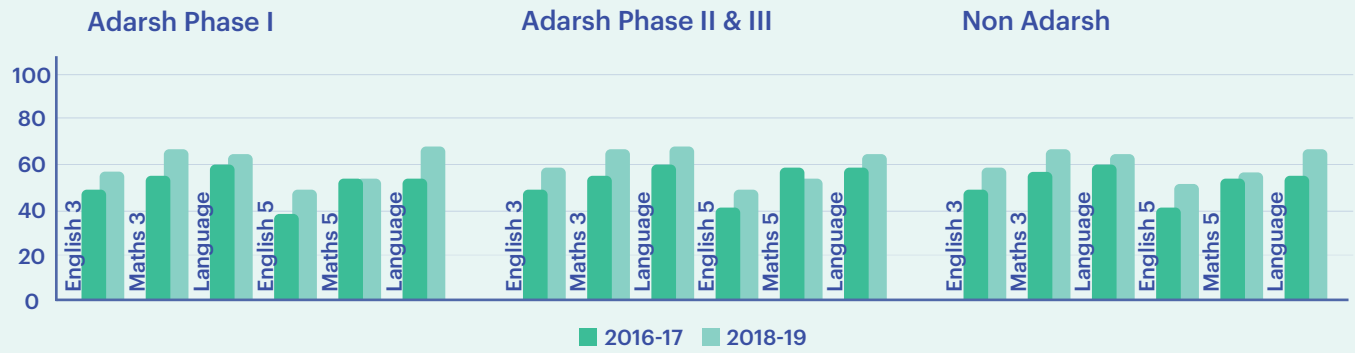
Figure 35: Example of student score distribution for Grade 3



Comparative performance across Adarsh and non-Adarsh schools, and SIQE and non-SIQE certified schools

Performance of students across these schools was found to be similar with no meaningful differences. This was a very important insight for the state to improve upon the core pedagogical design of SIQE.

Figure 36: Comparison of performance between Adarsh vs Non Adarsh and schools in Rajasthan



Comparative performance by district

Some districts maintained their performance across Round 1 and 2; the analysis showcased districts that had moved up or down in performance.

Figure 37: District wise performance in Rajasthan

Composite Performances of Districts in 2016-17

Composite Performances of Districts in 2018-19

Performance Rank

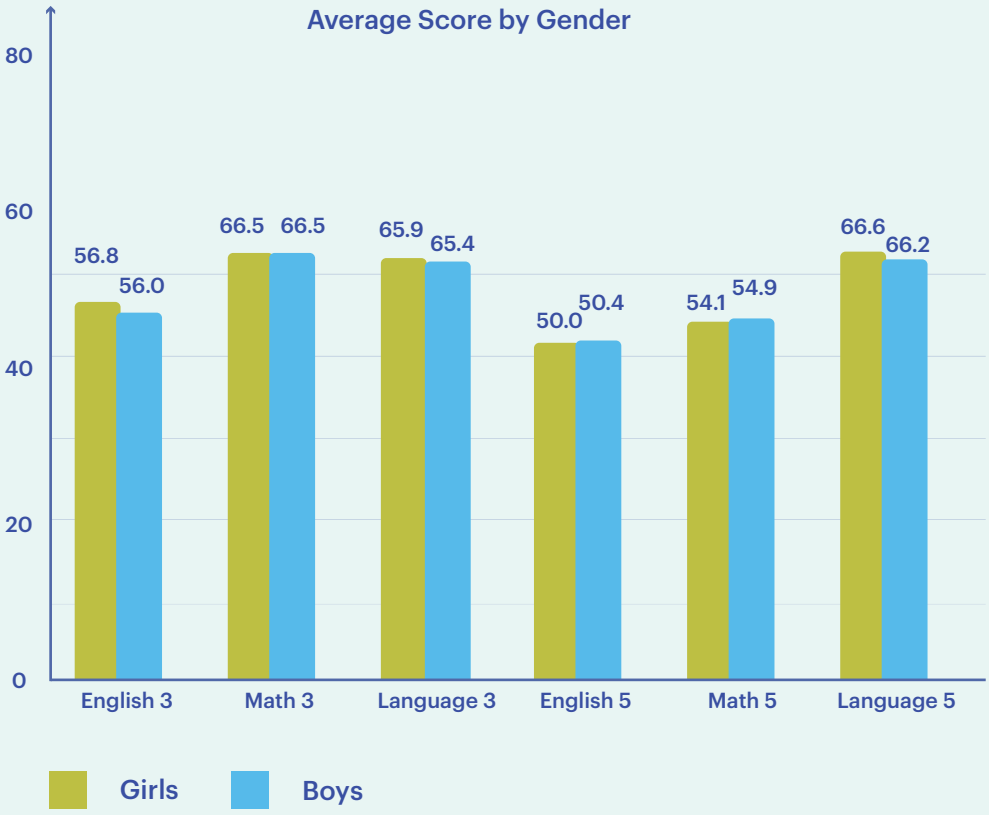
Q1 Q2 Q3 Q4

District	CPI 18-19	CPI 16-18
SIKAR	1	6
NAGAUR	2	3
DAUSA	3	10
KARAULI	4	9
BHARATPUR	5	27
JHUNJHUNU	6	4
BARMER	7	26
CHURU	7	1
AJMER	9	19
HANUMANGARH	10	2
DHAULPUR	11	7
GANGANAGAR	12	30
JHALAWAR	13	21
TONK	14	5
BUNDI	15	11
JALOR	16	20
ALWAR	17	17
DUNGARPUR	18	32
PALI	18	24
BIKANER	20	14
JAIPUR	21	12
SIROHI	22	23
CHITTAURGARH	23	13
S. MADHOPUR	24	18
BHILWARA	25	8
KOTA	26	15
BARAN	27	33
RAJSAMAND	28	25
JAISALMER	29	16
JODHPUR	30	22
BANSWARA	31	29
UDAIPUR	32	31
PRATAPGARH	33	28

Comparative performance by gender

There was no meaningful difference in the performance of girls and boys in all subjects in grades 3 and 5.

Figure 38: Performance by Gender in Rajasthan



Scale Anchoring

Technical partners can support the state in designing high-quality assessments and providing nuanced recommendations based on the data

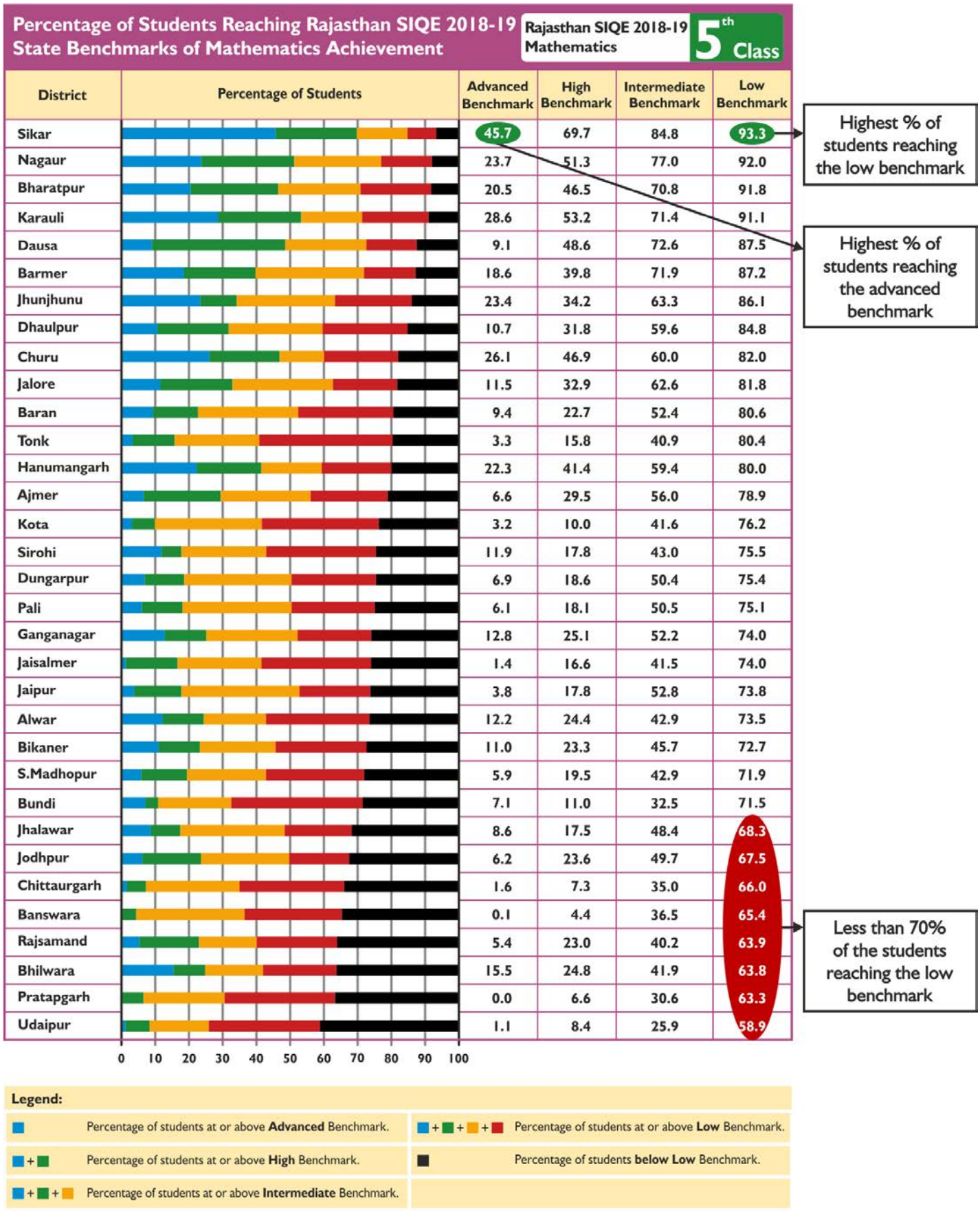
CSSL benchmarked knowledge and ability of students in Rajasthan using Scale Anchoring, a scientific method to analyze results and describe concepts or topics that are understood by students at each ability level. Figure 39 details what children at different ability levels were able to do in terms of understanding numbers. For example, writing number values given in words as digits is easier than writing number values given in expanded notation as digits.

Figure 39: Example of what students at different benchmarks know and do in addition

Class 5: Number Sense		
Low Benchmark (25th Percentile)	इनमें से कौन-सी संख्या 'सात हज़ार बानवे' है? अ. **792** ब. **7092** स. **700092** द. **700902**	*Students can write the 4-digit numbers given in words as numbers.*
Intermediate Benchmark (50th Percentile)	तान्या के पास पाँच अंक हैं - **8, 9, 4, 5, 6**। वह हर अंक का प्रयोग केवल एक बार करते हुए, **5** - अंकों वाली कुछ संख्याएँ बना रही है। अगर तान्या अंक **9** को दहाई के स्थान पर रखती है, तो कौन सी सबसे बड़ी संख्या बना सकती है? अ. **98654** ब. **98564** स. **86594** द. **85694**	*Students can find the place value of a digit in a 4-digit number*
High Benchmark (75th Percentile)	उत्तर ढूँढें। **4 इकाई + 5 दहाई + 9 हज़ार + 7 सैंकड़ा = _____** अ. **4597** ब. **5794** स. **7954** द. **9754**	*Students understand the concept of place value. Know that a 4-digit number can be represented in expanded notation.*
Advanced Benchmark (90th Percentile)	यदि ★ एक अंक है जो **4** से बड़ा और **9** से छोटा है, तो इनमें से कौन-सी संख्या सबसे छोटी होगी? अ. **9★4** ब. **★92** स. **49★** द. **4★9**	*Students can understand place value in 3-digit numbers and can solve related problems.*

Scale anchoring can explain the way children learn and help plan for scientific remediation. It can also be useful for preparing learning material for teacher training. Further, the scale anchoring graphs for Rajasthan show that there was a wide variation in learning levels amongst districts. For a policy maker, the ability to customize interventions based on district level requirements can help set appropriate targets at scale.

Figure 40: Learning outcomes by district



Lessons from Rajasthan

Attention to test design and analysis can help identify student weaknesses and inform classroom practices

Analysis of student responses from the well-designed diagnostic questions were used to identify the student weaknesses and strengths. They were provided in each subject as a starting point for the teacher to explore in the classroom and eventually correct.
For Example:

In Language

Students Can

- Use basic vocabulary
- Identify words to complete a sentence
- Use plurals, question words, pronouns, verbs, tenses, opposites and prepositions
- Extract explicitly stated facts from a sentence or story

Students Can't

- Handle conceptual questions, which require students to read stories and descriptive passages
- Connect facts from different parts of a passage
- Understand the meaning of words in context and draw conclusions requiring analysis of characters

In Math

Student performance was based on the nature of question.

- Procedural
- Conceptual
- Analytical

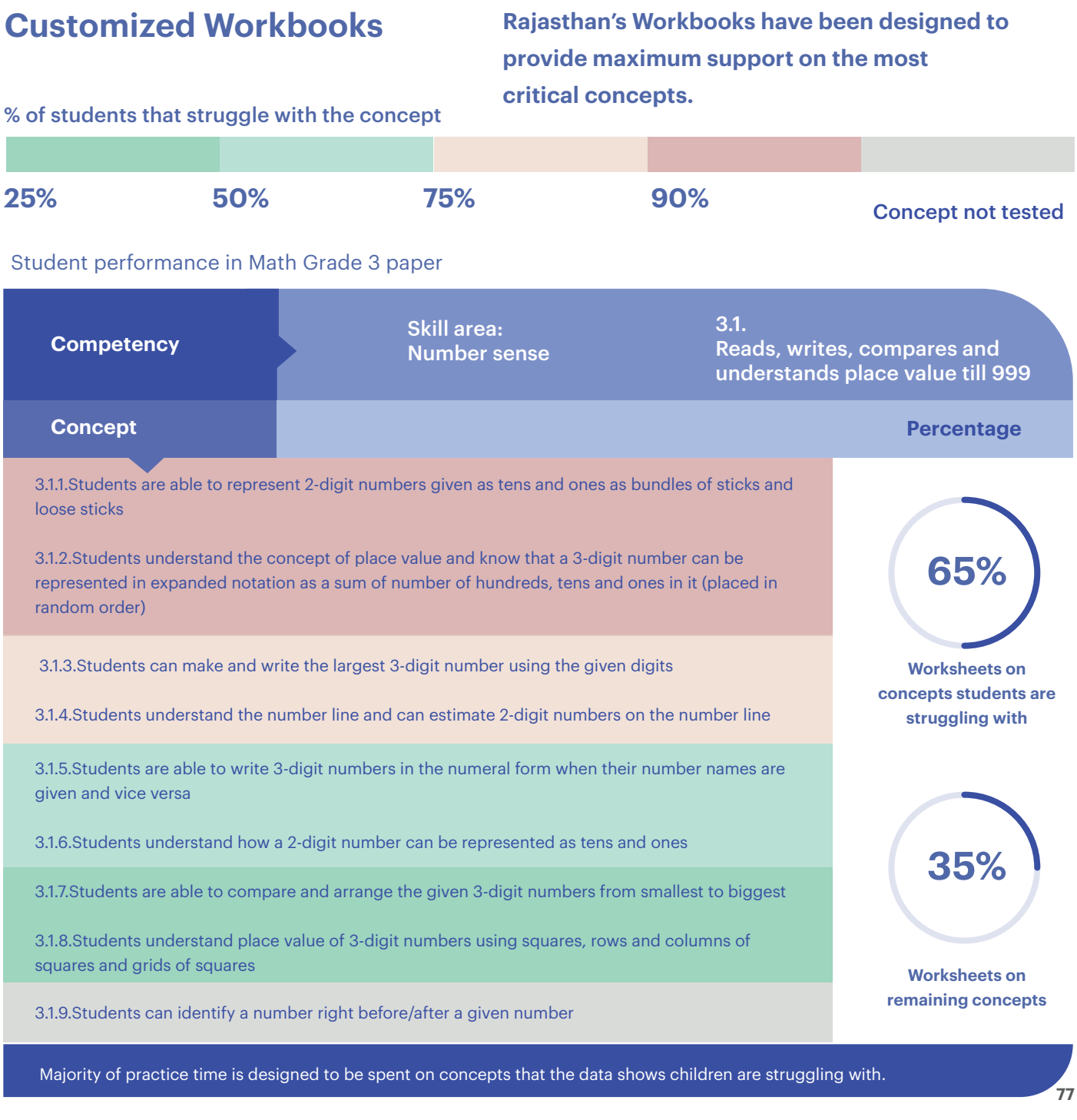
In higher grades, students were only able to handle procedural questions that were very 'straightforward' and not when they were slightly atypical. The performance on analytical thinking questions that involved higher order thinking skills was even lower than performance on conceptual questions.

Further, writing task responses showed that less than 14-16 per cent of students could write a sentence for a picture and about 8-9 per cent could write a story of 8-10 lines for given picture cues. A qualitative analysis of the writing samples showed that a great number of students had difficulty in developing and expressing original ideas based on the given context. They seemed to struggle with spelling skills and seemed to lack an extensive vocabulary. These were found to be key areas for improvement.

Learning assessment data can be used by the state to design targeted interventions

Despite the overall positive trends in the assessment, a closer look at the data indicated that **30-50 per cent students in the state were still likely behind grade-level.** This indicated a need for targeted remedial support. The state designed competency-based workbooks to bring students to grade-level. Students received these workbooks as per their learning level, and not their grade level. The design of these workbooks was based on the gaps highlighted by the CSSL assessment and the benchmarks released from the assessment for what students know and can do at different ability levels. As illustrated in the image below, remedial workbooks focused on specific concepts that students struggled with. In addition, questions in the workbooks addressed the misconceptions highlighted by the assessment.

Figure 41: Workbooks for remediation



In addition to assessment of student learning levels across the two rounds, CSSL also studied the SIQE program through classroom observations and teacher interviews. CSSL was then able to make holistic recommendations to the state based on key findings and analysis of strengths and weaknesses.

Some of these recommendations included: improving curriculum and pedagogy, developing teacher support material to address misconceptions and learning gaps, building awareness amongst teachers that rote learning was not true learning and making learning assessments a regular feature of classroom practice.

Case Study 3. **Himachal Pradesh**

A detailed competency framework coupled with quality teacher training and technology enabled review and monitoring has improved learning outcomes in Himachal Pradesh

Himachal Pradesh (HP), with nearly 820,000 students enrolled in over 15,400 government schools[63], has historically been ahead of the curve in driving new educational initiatives. HP was one of the two participating states from India in PISA 2009, indicating the state's intention to benchmark student learning against global standards. However, the state did not perform well in PISA, indicating issues with learning quality.

In HP, more students are enrolled in government schools (57 per cent at elementary and 71 per cent at secondary)[63]. Data from ASER (2018) shows that while there has been growth in learning outcomes for students in government schools, a gap in learning levels between government and private schools exists[64]. Similarly, gap between private and government school pass per cent in 10th and 12th grade was upwards of 15 per cent points in 2018-19[65].

Himachal Pradesh has undertaken a series of reforms to bridge the existing gaps in the education system and improve learning outcomes of students across the state. Critically, the state has developed a detailed competency framework that guides teachers in creating high-quality questions for standardized assessments. Additionally, well-established data collection and digitization mechanisms have helped democratize insights from assessment data, which are then used to drive state and school-level educational interventions.

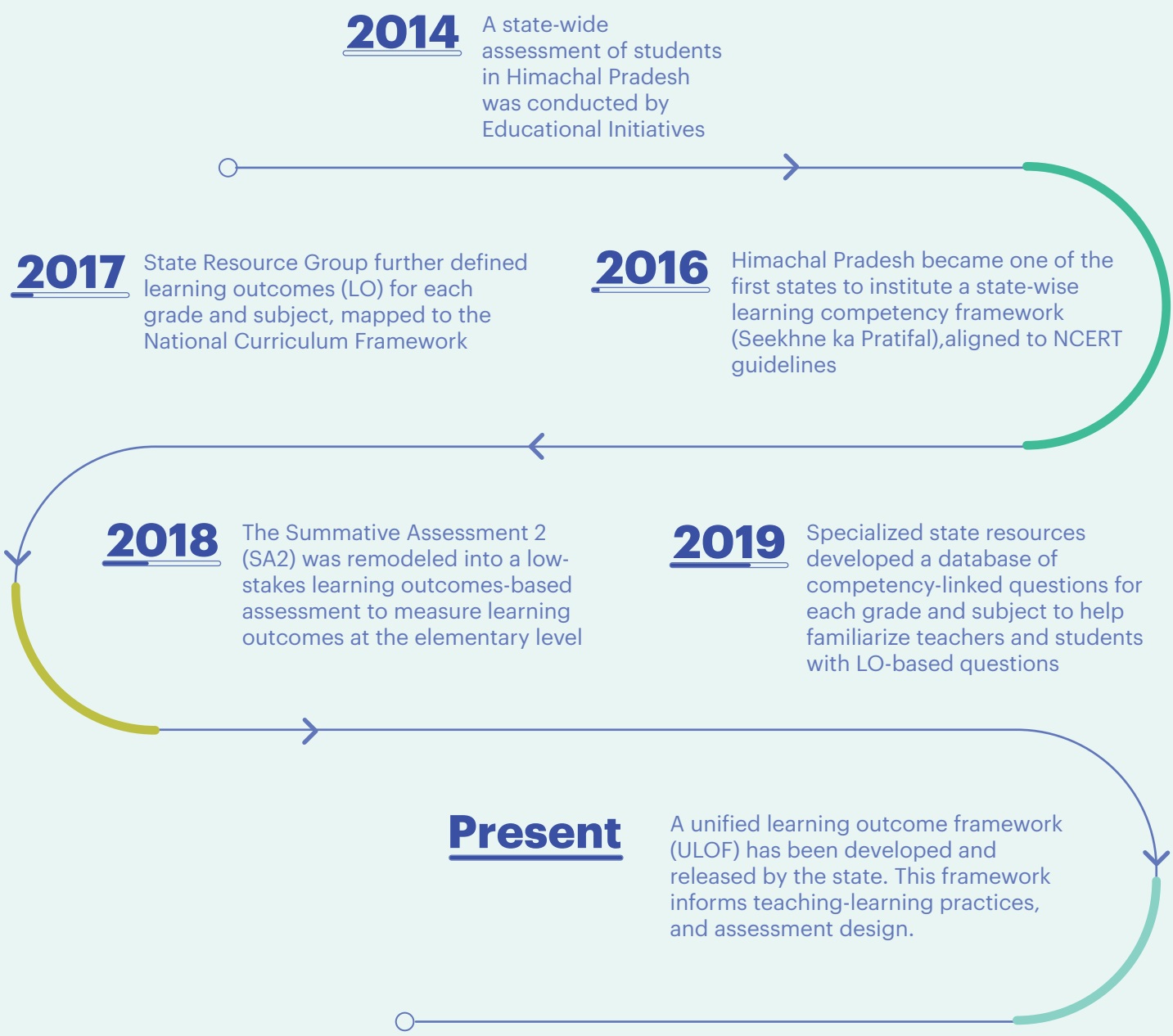
---

[63] Ministry of Education, Government of India. (2018-19). *UDISE+ 2018-19 (Provisional)*. Retrieved from http://dashboard.udiseplus.gov.in/#!/

[64] In language, 74.5 per cent of Grade 5 government school students could read a Grade 2 text against 80.4 per cent students in private schools. In Mathematics, only 51.5 per cent of Grade 5 students in government schools could complete division problems compared with 64 per cent students in private schools. ASER Centre. (2019, January). *Annual Status of Education Report (Rural) 2018* (pp. 110-111). Retrieved from: https://img.asercentre.org/docs/ASER%202018/Release%20Material/aserreport2018.pdf

[65] 10th and 12th grade pass per cent for private schools: 80 per cent and 79 per cent, respectively. Similar numbers for government schools was 55 per cent and 60 per cent. This data was obtained from the Samagra Governance team in HP.

Figure 42: Timeline of reform in Himachal Pradesh



Implementation Highlights

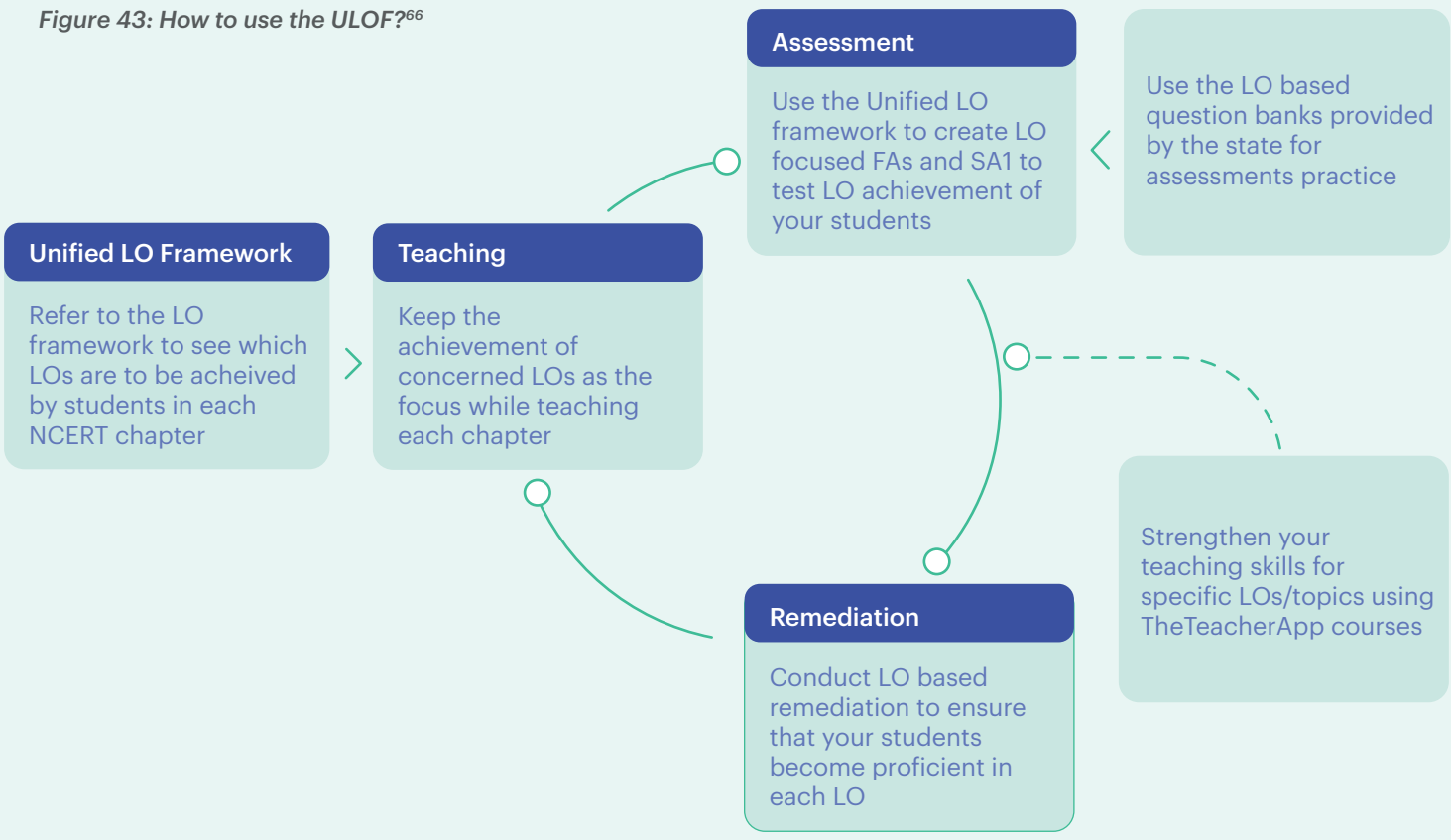
Himachal Pradesh has developed a comprehensive competency framework that drives teaching-learning in the classroom and supports design of standardized summative assessments

In 2016, the government of Himachal Pradesh was one of the first states in India to institute a state-wide learning competency framework (Seekhne Ka Pratifal), aligned to NCERT guidelines, and a learning outcomes (LO) framework (Samprapti Soochi). There was an effort to build widespread awareness amongst teachers on the LO framework and posters were distributed and pasted on the walls of all schools. The state supported teachers to teach at the LO level by:

- mapping teacher training to LOs
- creating LO based question banks
- mapping textbook chapters to LOs to allow teachers to teach better and create LO-based formative assessments
- analyzing assessment data at the LO level and providing LO based insights on the assessment dashboard

In 2020, the state developed and launched the Unified Learning Outcome Framework (ULOF) for all subjects in grades 1-8. Teacher training on the ULOF was to be done in a cascaded manner and a guidance document was developed to support teachers in creating high-quality LO based test items. Figure 43 describes how to use the ULOF. It is followed by a sample framework for class 2 math and a guidance document for LO based assessment creation.

Figure 43: How to use the ULOF?[66]



[66] Himachal Pradesh Government, H.P. Samarth, Samagra Shiksha. (n.d.). *Unified Learning Outcome Framework: Classes 1-8* (p.5). Retrieved from http://samagrashiksha.hp.gov.in/Application/uploadDocuments/content/HP_Unified_LO_Framework.pdf

Figure 44: ULOF for Grade 2 Math[67]

CLASS 2
MATHS

LEARNING OUTCOME MAPPING

#	Chapter	FA1	FA2	SA1	FA3	FA4	SA2	Overall
1	क्या है लम्बा क्या है गोल?	M202		M202				M202
2	गिनो मगर समूह में	M201		M201				M201
3	तुम कितना वजन उठा सकते हो	M203 M204		M203 M204				M203 M204
4	दस दस में गिनो		M201	M201				M201
5	पैटर्न		-	-				-
6	पैरों के निशान		M202	M202				M202
7	जग और मग			M203				M203
8	करो मजे दस के साथ			M201				M201
9	मजेदार दिन				M205 M206		M205 M206	M205 M206
10	अंक जोड़ो				M201		M201	M201
11	रेखाएं ही रेखाएं				M203		M203	M203
12	लेना और देना					M201	M201	M201
13	सबसे लम्बा कदम					M203	M203	M203
14	आते पक्षी जाते पक्षी					M201	M201	M201
15	कितनी छोटी है						M207	M207

CODE	LEARNING OUTCOME
M201	Works with two-digit numbers ▪ Reads and writes numerals for numbers up to 99. ▪ Uses place value in writing and comparing two-digit numbers. ▪ Forms the greatest and smallest two-digit numbers (with and without repetition of given digits) ▪ Solves simple daily life problems/situations based on addition of two-digit numbers ▪ Solves daily life situations based on subtraction of two-digit numbers. ▪ Represents an amount up to Rs. 100 using 3-4 notes and coins (of same/ different denominations).
M202	Describes basic 3D and 2D shapes with their observable characteristics ▪ Identifies basic 3d-shapes such as cuboid, cylinder, cone and sphere by their names ▪ Distinguishes between straight and curved lines. ▪ Draws/ represents straight lines in various orientations (vertical, horizontal, slant)
M203	Estimates and measures length/distances and capacities of containers using uniform non-standard units like a rod/pencil, cup/spoon/bucket etc.
M204	Compares objects as heavier/lighter than using simple balance.
M205	Identifies the days of the week and months of the year
M206	Sequences the events occurring according to their duration in terms of hours/days, for example, does a child remain in school for longer period than at home?
M207	Draws inference based on the data collected such as 'the number of vehicles used in Samir's house is more than that in Angeline's.

Figure 45: Guidance document for LO-based assessment creation[68]

English — *Assessment Guidelines*

Some general guidelines for using accessible language are provided below:

- Use vocabulary that will be widely accessible to students. Avoid expressions/words with multiple meanings, and unduly challenging words.
- Keep sentence structures as simple as possible to express the intended meaning. For students, a number of simple sentences are often more accessible than a single more complex sentence.
- When a fictional context is necessary (e.g., for comprehension passage), use a simple context that will be familiar to as wide a range of students as possible.
- Provide a scoring guide to ensure uniformity of marking the assessment papers.

The learning outcomes considered while planning lessons and/or teaching are the same that we assess students for. Thus, for lower grades we generally include more questions for listening (e.g., following simple instructions), speaking (e.g., simple dialogue/Q&A) and basic reading (e.g., phonic readiness). For grades between 3-5, we can shift focus in favour of reduced listening/speaking and increase focus on reading texts, vocabulary, basic writing and grammar. For grade 6 and above, the complexities of reading, higher order comprehension skills, writing and grammar take dominance.

[67] Himachal Pradesh Government, H.P. Samarth, Samagra Shiksha. (n.d.). *Unified Learning Outcome Framework: Classes 1-8* (p.9). Retrieved from http://samagrashiksha.hp.gov.in/Application/uploadDocuments/content/HP_Unified_LO_Framework.pdf

[68] Image for Guidance document for LO-based assessment creation has been provided by Samagra Governance.

Designing assessments is easier if formative assessment methods (recitations, role plays, presentations, group projects, etc.) are used to check for listening and speaking competencies. Reading, comprehension, writing and grammar questions are more easily incorporated in summative (pen and paper) type assessments.

Type of Assessment	*Remarks*
Formative	Generally, conducted at the end of a term, unit It is more aligned to indicate —"assessment of learning"
Summative	Commonly, used on a more continuous basis, less formal, often less stressful for students. Often used to understand "assessment for learning"
In Class/Check for Understanding /Alternate	Most flexible is usage. Is used throughout teaching process Provides data for the teacher to immediately change teaching method based on student responses.

Irrespective of whether the assessment method, a healthy mix of open ended (e.g., writing an essay, suggesting a new title for a passage, offering one's opinion with reasons on a topic/situation etc.) and closed ended questions (questions which are likely to have only one possible correct answer; e.g., MCQs, factual questions, knowledge based questions etc.) Particularly, for assessing English, here are some suggestions:

Type of Assessment	*Suggested questions/activities*
Close Ended Questions	Multiple choice questions, true and false, match the following, fill in the blanks, quizzes, factual questions, yes/no type answers , long/short answers that require presenting facts/knowledge etc.
Open Ended Questions	Essays, opinion pieces, changing the end of a story or character trait, creating a roleplay/drama, drawing story/character/words, debates

In our classrooms, we find that students are generally more comfortable with closed ended questions. It is therefore necessary to start building more open ended questions gradually with students.

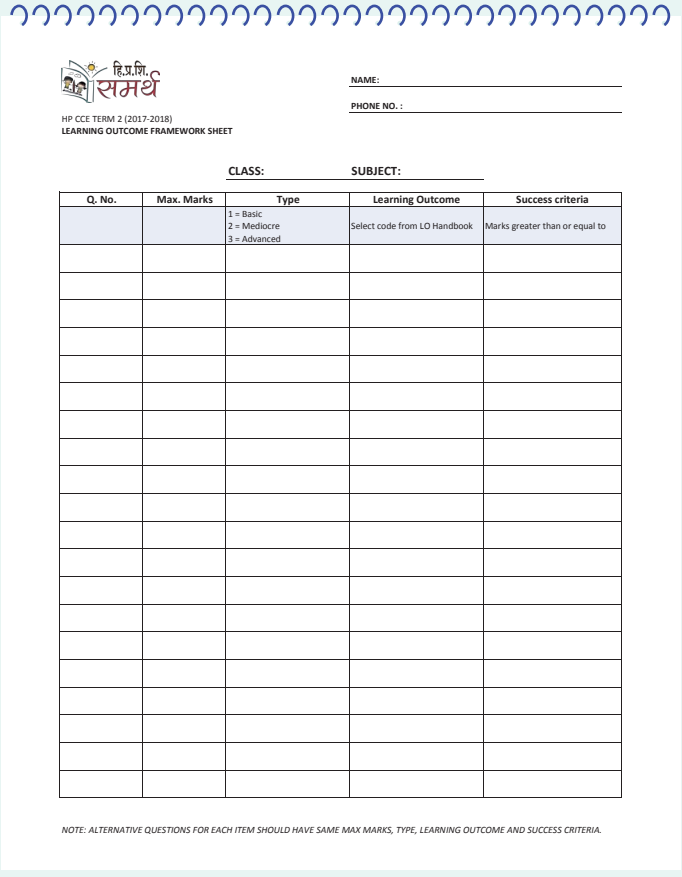
The competency framework, along with learning outcomes defined by grade level and subject serve as the backbone for designing the annual Summative Assessment 2 (SA2). Since 2016-17, Samagra Shiksha has spearheaded the SA2 and designs centralized question papers for grades 1-4 and 6-7 based on the learning outcomes defined for each grade and subject. This competency linked SA2 is largely used to gather year on year insights on improvement in grade level competency and to identify learning gaps and misconceptions. From the academic year 2020-21, the SA2 assessments for grades 5 and 8, developed by the HP Board of School Education, will also be made LO based.

The state has invested in building strong internal capacity to design large-scale assessments

Himachal Pradesh's capable team of subject matter experts and teachers, led by the state research and evaluation coordinator, designs LO based question papers at a workshop organized annually in DIET-Shimla. Each question prepared is mapped to defined learning outcomes for the subject to ensure that the assessment paper is of high-quality and is testing appropriate grade level skills and competencies.

The tests are designed to include question types that test a student's cognitive dimensions as well as conceptual knowledge. Samagra Shiksha also defines grade-level cut-off for each LO based question in the SA2. The state targets that at least 75 per cent of students in each grade meet the grade level cut-off.

Figure 46: Illustrative sheet used to record mapping of LOs for each question paper[69]



हि.प्र.शि. समर्थ

NAME:

PHONE NO. :

HP CCE TERM 2 (2017-2018)

LEARNING OUTCOME FRAMEWORK SHEET

CLASS: SUBJECT:

Q. No.	Max. Marks	Type	Learning Outcome	Success criteria
		1 = Basic 2 = Mediocre 3 = Advanced	Select code from LO Handbook	Marks greater than or equal to

NOTE: ALTERNATIVE QUESTIONS FOR EACH ITEM SHOULD HAVE SAME MAX MARKS, TYPE, LEARNING OUTCOME AND SUCCESS CRITERIA.

Test administration is carried out entirely by state-level personnel

A qualified group of state personnel at each level (district, blocks, zones) manages the entire administration, data collection and results synthesis process for the centralized SA2. Samagra Shiksha supervises the centralized printing of test papers for SA2, which are then distributed to schools using a network of district and block level officials. Spot checks are also carried out by district level staff to monitor the assessment process.

A strong review and monitoring system and easy-to-use, technology-led data collection and dissemination tools have ensured that there is high reliability and usage of assessment data

[69] Image for Illustrative sheet used to record mapping of LOs for each question paper has been provided by Samagra Governance.

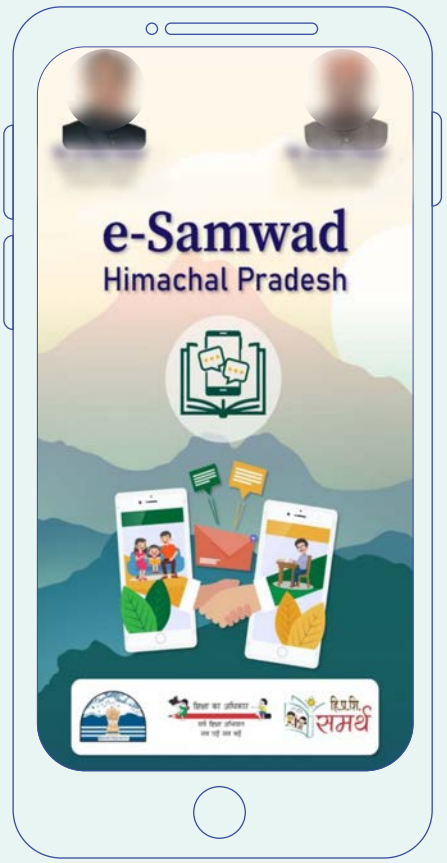
Data collection through an easy-to-use mobile app.

Himachal Pradesh has developed technology infrastructure to support the collection and dissemination of assessment data. Previously, assessment data was transferred to OMR sheets that were then scanned centrally. Now the state has integrated data collection into the E-Samwad app – a product that was developed by Himachal Pradesh education department to improve teacher-parent communication and transparency[70].

Teachers can now directly upload SA2 results online through the app, circumventing the tedious process of collecting and scanning OMR sheets. Additionally, with the development of the ULOF and creation of LO-based assessments at the class level, data collection has been enabled for all assessments, which will ensure more frequent data collection and analysis, leading to better and more timely decision making.

In academic year 2020-21, Himachal Pradesh became one of the only states in India to digitally collect assessment data. The state achieved data collection for SA1 from 92 per cent of schools (during lockdown due to COVID-19) without an extension of deadline.

Figure 47: E-Samwad app for data collection and illustration of data transfer to the app[70]

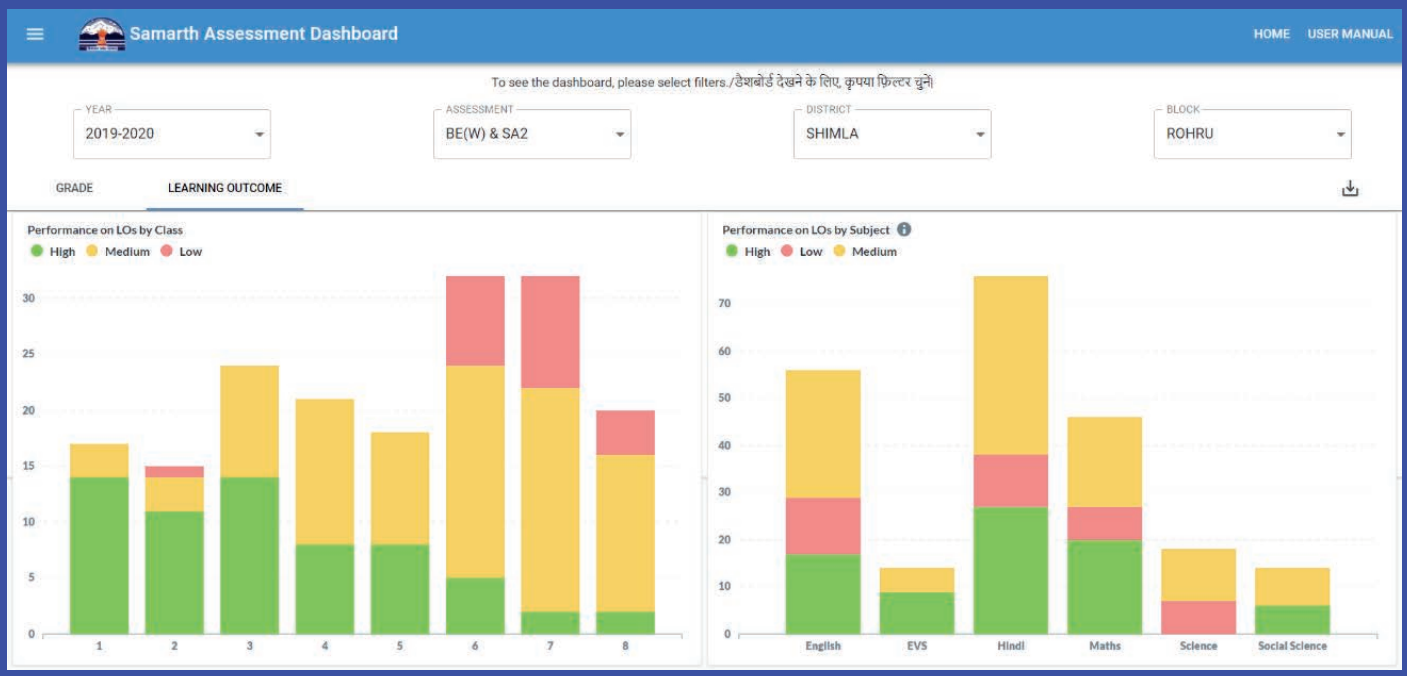


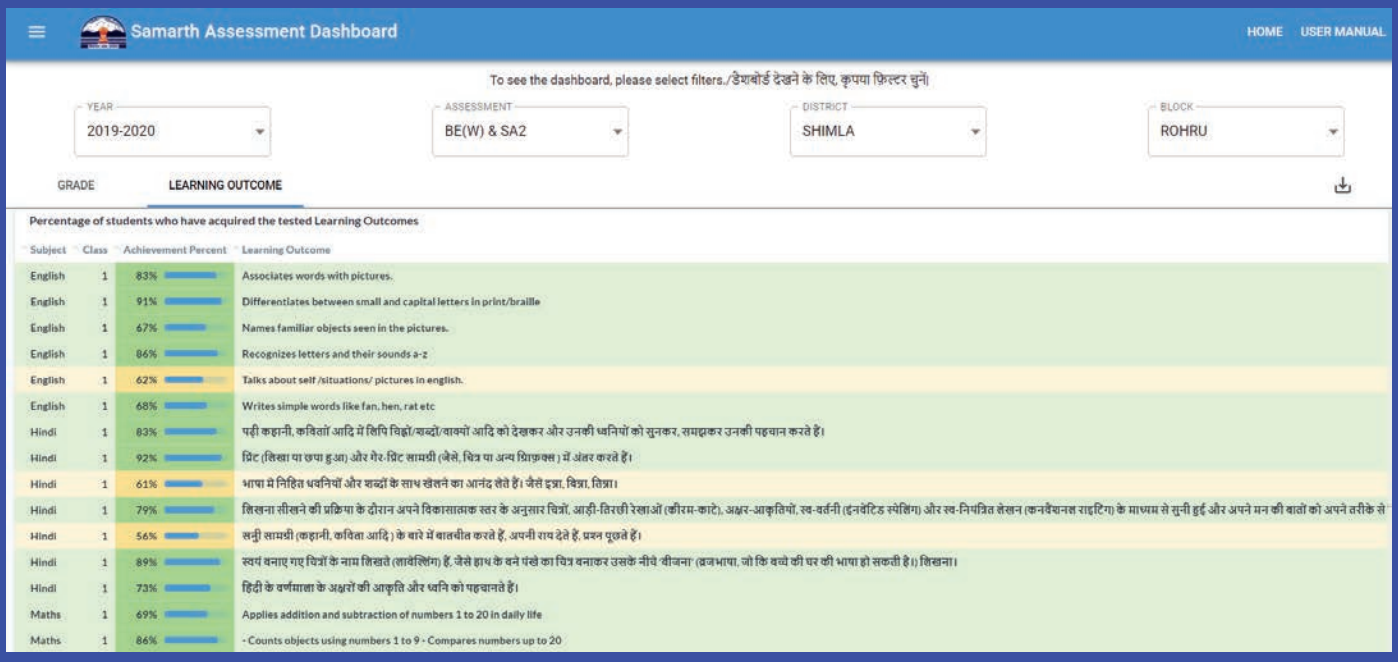
Publicly available data by grade and learning outcomes at the state, district and sub-district levels

The state has built a specialized assessment dashboard to publicly disseminate assessment data at the state, district and sub-district levels. The Samarth data dashboard[71] allows for analysis and management of assessment data. It can be used by teachers and education officials to inform education practice.

[70] Further details on the e-Samwad app are available at the following link: https://sites.google.com/samagragovernance.in/esamwadhp/home?authuser=0
[71] Further details on the HP Samarth Dashboard are available at the following link: https://hpsamarth.com/

Figure 48: Samarth data dashboard with data by learning outcomes[72]





Subject	Class	Achievement Percent	Learning Outcome
English	1	83%	Associates words with pictures.
English	1	91%	Differentiates between small and capital letters in print/braille
English	1	67%	Names familiar objects seen in the pictures.
English	1	86%	Recognizes letters and their sounds a-z
English	1	62%	Talks about self /situations/ pictures in english.
English	1	68%	Writes simple words like fan, hen, rat etc
Hindi	1	83%	पढ़ी कहानी, कविताएँ आदि में लिपि चिह्नों/शब्दों/वाक्यों आदि को देखकर और उनकी ध्वनियों को सुनकर, समझकर उनकी पहचान करते हैं।
Hindi	1	92%	प्रिंट (लिखा या छपा हुआ) और गैर-प्रिंट सामग्री (जैसे, चित्र या अन्य ग्राफ़िक्स) में अंतर करते हैं।
Hindi	1	61%	भाषा में निहित ध्वनियों और शब्दों के साथ खेलने का आनंद लेते हैं। जैसे इन्ना, विन्ना, तिन्ना।
Hindi	1	79%	लिखना सीखने की प्रक्रिया के दौरान अपने विकासात्मक स्तर के अनुसार चित्रों, आड़ी-तिरछी रेखाओं (स्क्रीबल-स्क्रिबल), अक्षर-आकृतियों, स्व-वर्तनी (इनवेंटिड स्पेलिंग) और स्व-नियंत्रित लेखन (फ्रीहैंड राइटिंग) के माध्यम से सुनी हुई और अपने मन की बातों को अपने तरीके से
Hindi	1	56%	सुनी सामग्री (कहानी, कविता आदि) के बारे में बातचीत करते हैं, अपनी राय देते हैं, प्रश्न पूछते हैं।
Hindi	1	89%	स्वयं बनाए गए चित्रों के नाम लिखते (लाबेलिंग) हैं, जैसे हाथ के बने पंखे का चित्र बनाकर उसके नीचे 'वीजना' (ब्रजभाषा, जो कि बच्चे की घर की भाषा हो सकती है।) लिखना।
Hindi	1	73%	हिंदी के वर्णमाला के अक्षरों की आकृति और ध्वनि को पहचानते हैं।
Maths	1	69%	Applies addition and subtraction of numbers 1 to 20 in daily life
Maths	1	86%	• Counts objects using numbers 1 to 9 • Compares numbers up to 20

[72] Further details on the HP Samarth Dashboard are available at the following link: https://hpsamarth.com/

Lessons from Himachal Pradesh

Standardized assessment data, based on a detailed LO framework, can be used for decision making in a variety of domains within education

Himachal Pradesh has consistently and effectively used assessment data to drive education reform in the state. This includes:

- **Resourcing:** Assessment data is used for budget planning and allocations for state education interventions
- **Planning:** Assessment data is used extensively at the state level for planning purposes. With the development and use of the Samarth dashboard, there is a growing use of data at the school, cluster and block level to create development plans.
- **Administrative decisions:** Assessment data is used by officials to plan visits to weaker performing districts, blocks or schools.
- **Capacity building:** Based on the results of assessment data, teacher training needs are determined, and courses are recommended. Typically, training is provided to teachers on weaker performing LOs.
- **Rewards and recognition:** Better performing schools and blocks are appreciated and awarded based on assessment data. Best practices from the state are also collated and disseminated.
- **Communication:** Assessment data is widely communicated across the state, with campaigns in print and social media. The state also sends personalized, targeted messages to various stakeholders through WhatsApp groups.

Figure 49: Communication of assessment data[73]

[73] Image for Communication of assessment data has been provided by Samagra Governance

A state-led effort to collect and use credible learning data can result in improved learning outcomes over time

The SA2 is a census-level assessment conducted for elementary school students in Himachal Pradesh. The state has shown growth in learning outcomes, indicating that a focused approach based on a competency framework can drive results at scale.

HP distributes student learning outcomes across 5 categories (A to E) for each class. Between 2018-19 and 2019-20, we have seen an increase in the percentage of students receiving grades A and B (higher than 65 per cent) across all classes (Chart 5). There is also a marked decrease in the number of students receiving grade E, which is the lowest grade across classes (Chart 6). Though growth in learning outcomes has been seen across grades, absolute % students scoring in the top 2 grades (A & B) is low for grades 6 through 8, and indicates scope for improvement.

Chart 5: Percentage of students obtaining Grades A and B

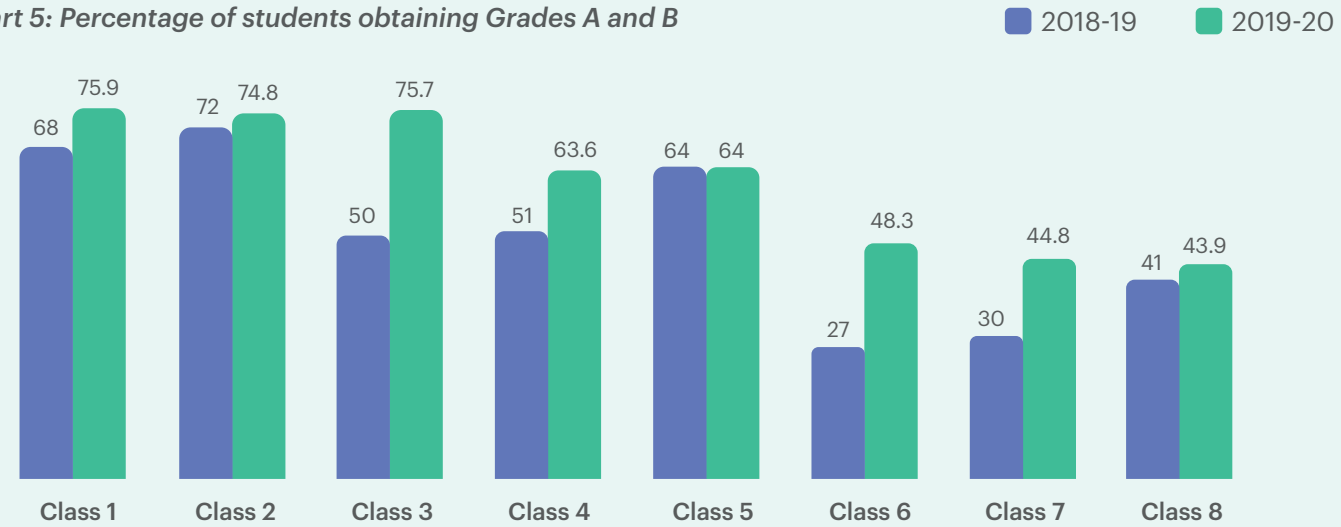
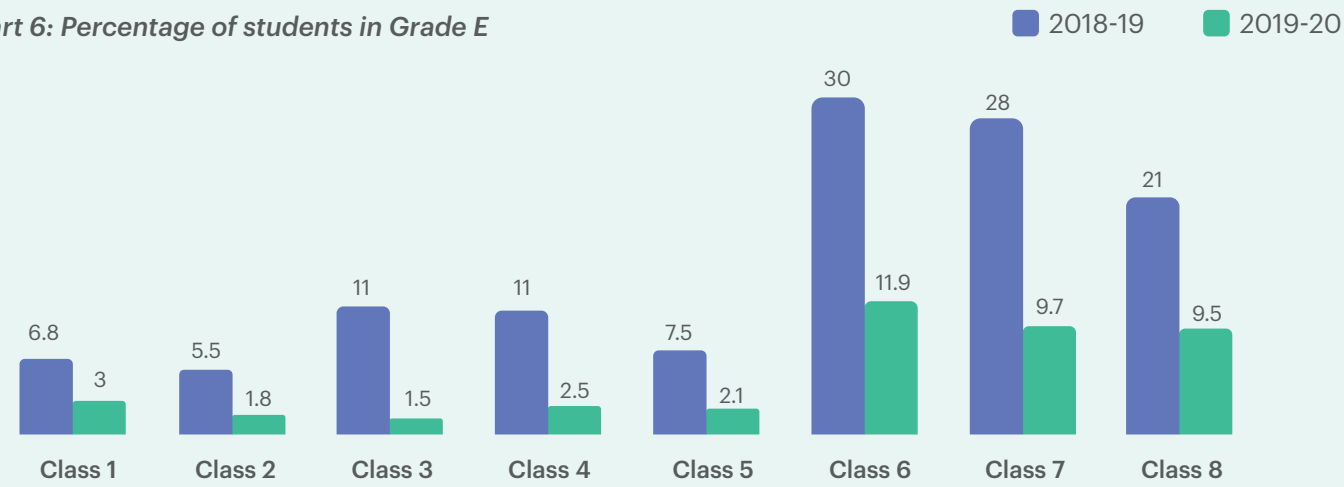


Chart 6: Percentage of students in Grade E



Case Study 4. **Andhra Pradesh**

Andhra Pradesh's leadership recognised the pivotal role of assessments in improving learning outcomes. The state took an exemplary long-term view to step up state capacity through the development of an assessment cell and improved data usage.

Andhra Pradesh's vision was to become one of the top three high-performing states in India by 2022 and the best state in the country by 2029. To drive the reform process, it sought to establish a forward-looking assessment cell with a team of highly motivated and qualified staff specializing in assessments and learning research.

Towards this purpose, the Government of Andhra Pradesh (GoAP) initiated its technology enabled student assessment reforms called VidyaVikaasam. Centre for Science of Student Learning (CSSL) and Samagra Development Associates provided the technical support to meet the objectives of *VidyaVikaasam* detailed below:

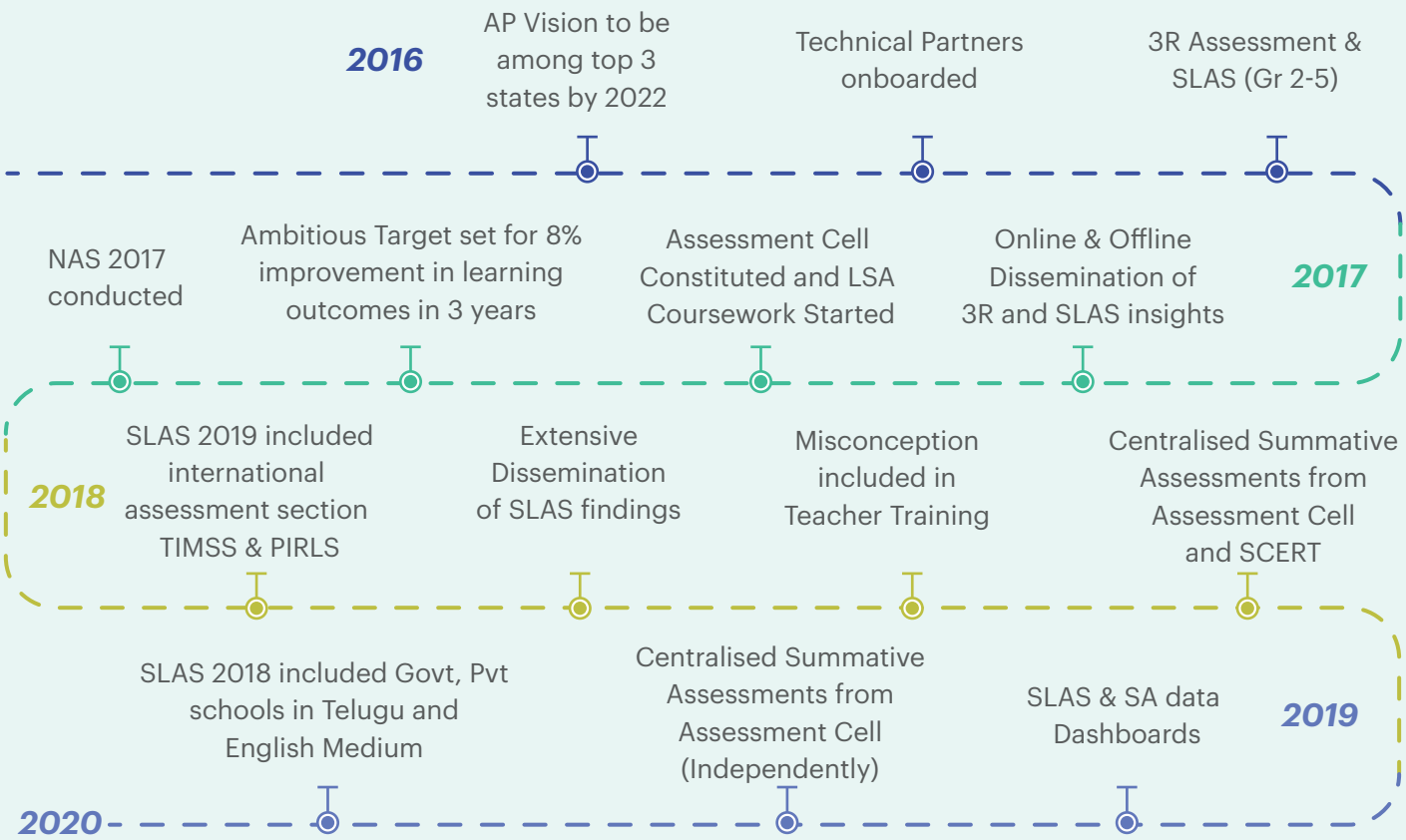
Build long term system and institutional capacity through an assessment cell that can roll out all learning assessments planned and conducted by the state

Strengthen the methodology of designing assessment tools (test papers and background questionnaires) so that data is amenable for actionable insights that are used as inputs for teacher training and pedagogy

Improve report dissemination, all the way to school, so that inputs are utilized in classrooms

Track the effectiveness of the assessment cell over time in improving learning outcomes and increase technology utilization in assessment cell workflows.

Figure 50: Timeline of assessment-linked initiatives in Andhra Pradesh



Implementation Highlights

The state worked in tandem with a third-party technical partner to build internal capacity for conducting assessments; objectives of the assessment were clearly defined

Andhra Pradesh set up an in-house assessment cell to conduct high quality SLAS. The objectives for the state-level assessments are outlined below:

- Provide clear picture of learning in Andhra Pradesh through robust diagnostic achievement surveys
- Develop high-end expertise in the field of assessments, conduct high-quality learning assessments for all students and draw actionable insights
- Communicate and educate teachers and administrators on the quality of learning in AP

For constituting the assessment cell, eleven teachers were selected through a stringent merit-based examination process. Additionally, a 39-member district assessment cell (three members per district) was created to provide administration support. CSSL trained these teachers through a three-year certification program to acquire end to end capabilities equivalent to a high-end testing agency. The assessment cell independently planned and administered the 2018-19 SLAS with support from CSSL only for item development and data analysis.

Figure 51: Capacities built for the Assessment Cell

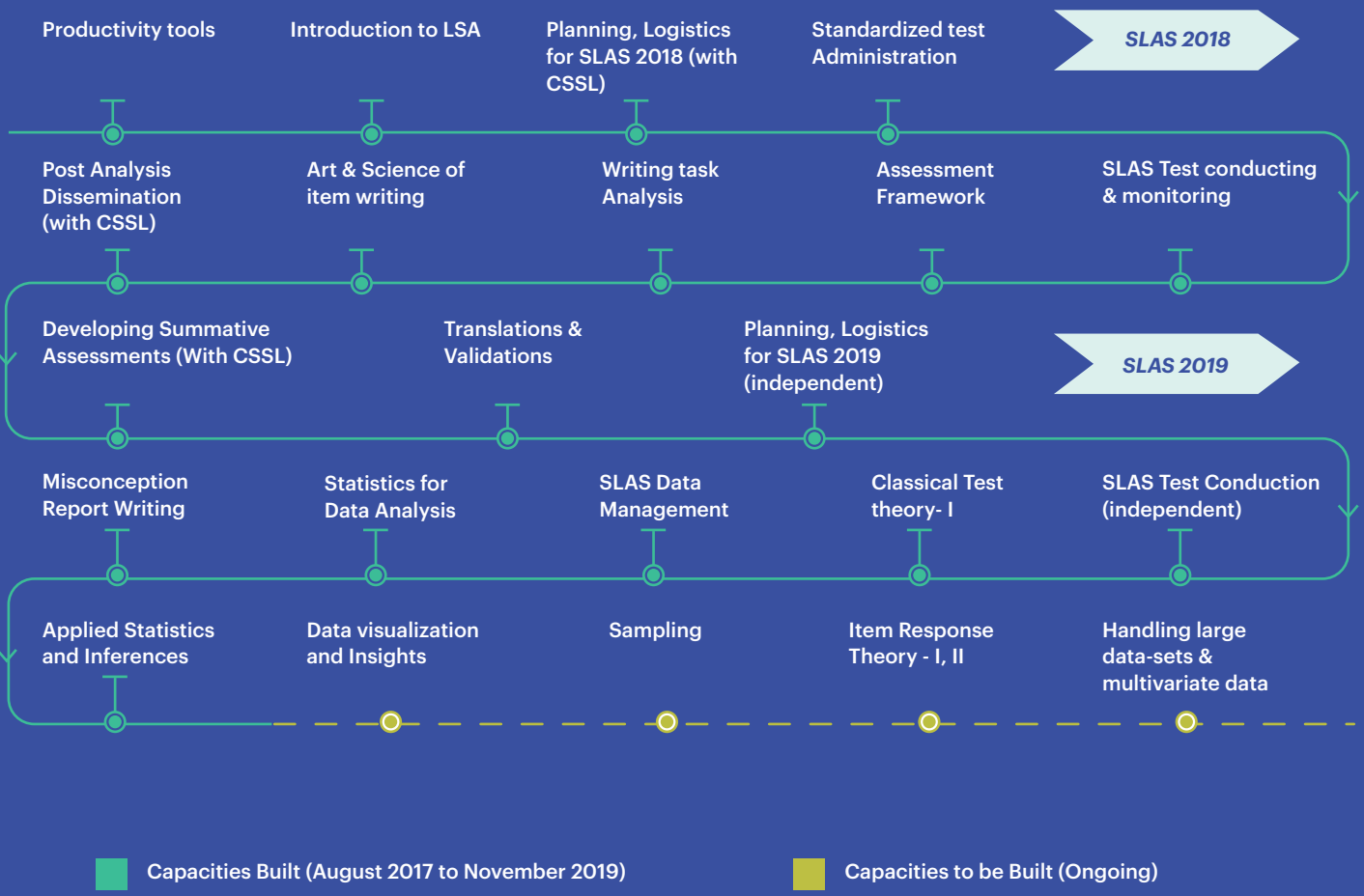


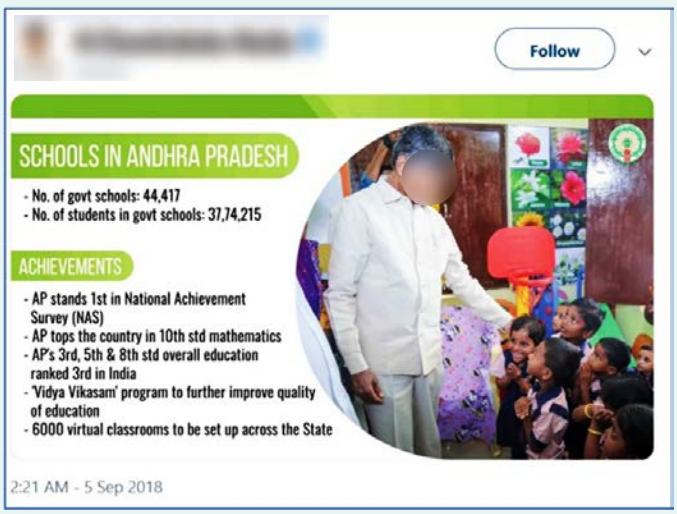
Figure 52: Workshops and training conducted for state assessment cell members[74]

[74] Image for Workshops and training conducted for state assessment cell members has been provided by Centre for Science of Student Learning (CSSL) and Samagra Governance.

Both political and bureaucratic support drove the initiatives under Vidya Vikaasam resulting in recognition from central agencies

On Teacher's Day in September 2018, the Chief Minister of Andhra Pradesh released a statement stating, "Initiatives like Vidya Vikasam will monitor and review the improvement in learning levels of children in Andhra Pradesh through high-quality assessments.[75] In his statement, the Chief Minister listed all the achievements over two years, spearheaded by *VidyaVikaasam* in the education sector. Commissioner of School Education in Andhra Pradesh in an interview to Yourstory explained, "Our aim was to focus on learning outcome of students, and not on finishing the curriculum or just conducting examinations. We envisioned to move towards 'child-centric' school education, with a goal to create an all-enabling ecosystem that can ensure 'happy, fulfilled, resilient, and responsible students who are future-ready"[76]

Figure 53: Chief Minister of Andhra Pradesh on social media about Vidya Vikaasam[76]



In March 2017, the Assessment Cell model implemented in Andhra Pradesh was selected by Ministry of Human Resource Development (MHRD), Govt of India as the model suitable for scale-up across all states. This model was subsequently presented in all five regional workshops conducted by MHRD as part of its PPP initiative in 2017-18 for senior government officials.

Andhra Pradesh developed a data collection and analytics system for large-scale assessments to provide insights to all stakeholders

Andhra Pradesh had a strong technology ecosystem and data infrastructure, with dedicated IT resources working within the Education Department. This was leveraged to create a unique systemic assessment program (VidyaVikassam). A data and technology warehouse was developed in the state (during Round 2 of SLAS), which facilitated collection and analysis of SLAS data in the successive rounds of the assessment.

Assessment analytics dashboard

The use of technology to collect and analyze data helped increase usage of assessment results towards academic, operational and policy related processes. The main objectives of the dashboard were to:

[75] N Chandrababu Naidu. [@ncbn]. (2018, September 5). Initiatives like Vidya Vikasam will monitor and review the improvement in learning levels of children in Andhra Pradesh through high-quality assessments [Tweet]. Twitter. https://twitter.com/ncbn/status/1037269511383199744?lang=eneducing-learning-gap
[76] Shruti Kedia. (2019, April 11). How the Andhra Pradesh govt is working to reduce learning gap among government school students. YourStory. Retrieved from https://yourstory.com/socialstory/2019/04/andhra-pradesh-govt-schools-reducing-learning-gap/amp

Move focus from data collection to data utilization, including a regularly updated Chief Minister (CM) dashboard

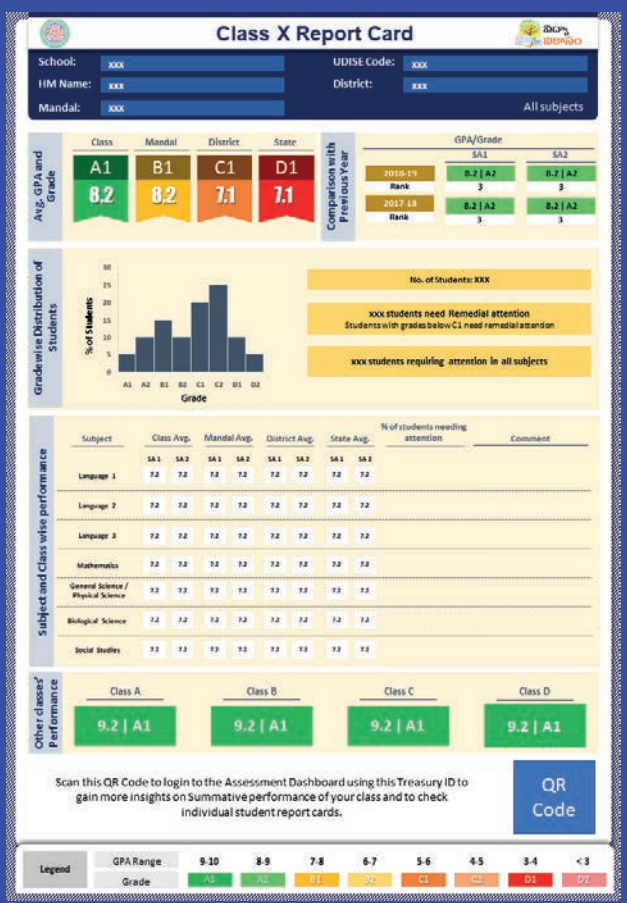
Enable data backed review meetings on performance in assessments and creation of action plans to improve learning outcomes

Include insights by year, district, type of school and medium of instruction in addition to overall view of data that can mask underlying trends

Use data to build community engagement rather than work at the independent school level

The team collaborated with a technology vendor to create an assessment dashboard that would provide customized views of data based on the user's unique login credentials. The dashboard included report cards at the classroom and school level. The assessment dashboard was available on the CM core dashboard and the Commissioner of School Education (CSE) dashboard resulting in over two million views.

Figure 54: Classroom and school data on the assessment dashboard[77]



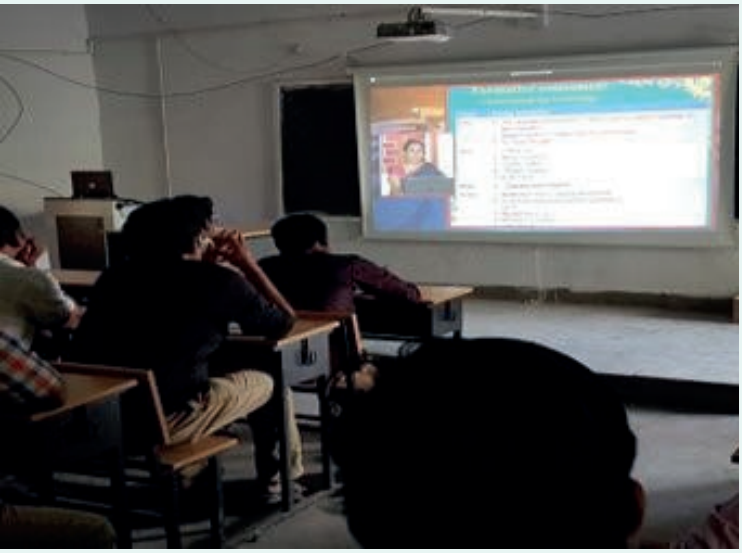
Data dissemination to teachers helped complete the feedback loop and make the assessment results actionable

A major objective of the program was to ensure assessment data was disseminated to teachers. By closing the loop with teachers and education officials, the state was also spreading awareness of LSAs, sensitizing teachers on AP's assessment performance and building familiarity with learning outcomes. Additionally, sharing actionable insights would enable teachers to adopt targeted interventions for improving student learning levels.

The assessment cell scripted content and recorded videos for data dissemination. Dissemination of SLAS data was carried out through virtual classrooms and approximately 22,000 teachers across 346 Mandals were reached. The content was also posted on YouTube and a course was created on the Diksha platform to ensure a wider audience.

[77] Further details on the dashboard are available at the following link: https://core.ap.gov.in/CMDashBoard/Index.aspx

Figure 55: Dissemination of assessment data through virtual classroom[78]



One of the trends seen through the assessments was that student learning outcomes fell as they progressed through schooling. To correct this, the state implemented a summer remedial program (Gnana Dhaara) in 2018 for students transitioning from Grades 5 to 6 and 9 to 10. The program was meant to be a bridge program to support slow learners through this difficult transition, curb dropouts and engage students during the summer. Based on the results of the summative assessment I, nearly 50,000 students were identified, and a two-week residential program was planned.

Lessons from Andhra Pradesh

It is possible to develop high-end, in-house state capacity for all aspects of large-scale assessments

By setting up an in-house assessment cell, Andhra Pradesh took a crucial step toward developing internal capacity to design and administer assessments. At the end of comprehensive three-year training, the assessment cell was able to independently implement most aspects of a large-scale assessment, including test design, sampling, standardization and administration. The SLAS 2019-20 in Andhra Pradesh was largely conducted by the assessment cell, with monitoring by CSSL.

States can expand coverage of SLAS beyond government schools for a holistic picture of learning outcomes

The Andhra Pradesh government recognized that it could not ignore the quality of learning in private schools while trying to improve learning outcomes throughout the state. Hence it included students from both government and private schools, in English and Telugu mediums through the three rounds of SLAS conducted.

[78] Image for Dissemination of assessment data through virtual classroom has been provided by Centre for Science of Student Learning (CSSL) and Samagra Governance.

Table 10: Snapshot: AP school system

	Government	Private
Number of schools	45,060	16,696
Number of students	3 million	2.1 million
Number of teachers	182,000	120,000
Number of districts	3	
Number of mandals	670	

Table 11: Number of students by management type covered in SLAS in AP

Students type by Management	2016-17	2017-18	2018-19
All students	21121 (SLAS) 11,80,000 (3R)	81708	101654
Govt - Telugu	10600	34646	37494
Govt - English	-	-	31087
Private - Telugu	10521	4359	-

Recognition of assessments as a crucial lever in improving learning outcomes can pave the way for innovative solutions; AP piloted tablet-based assessments that showed how technology can improve data reliability

To test a method to improve data quality, a tablet-based approach to testing was piloted in Prakasam district. Prof. Abhijeet Singh and his team at J-PAL compared data reliability in tablet and paper-based census assessments through this pilot.

In Prakasam, Grade 4 students[79] were assessed via tablets by Cluster Resource Persons (CRPs). A control group was administered a paper-based assessment by teachers. A retest was conducted on a sample set of schools to assess data reliability. Tablet-based tests were found to be significantly more reliable than paper-based equivalents in a 'gold-standard' sample retest - with students scoring 21-28 percentage points higher on average in paper-based tests, depending on subjects[80].

The tablet-based assessment improved reliability in the following ways:

Randomization of assessment questions into different sets from a large, linked question bank such that various versions of an exam were taken in a single classroom.

Monitoring timestamps to ensure that exams happened when and where scheduled.

Eliminating the possibility of post-facto tampering since tests were submitted directly.

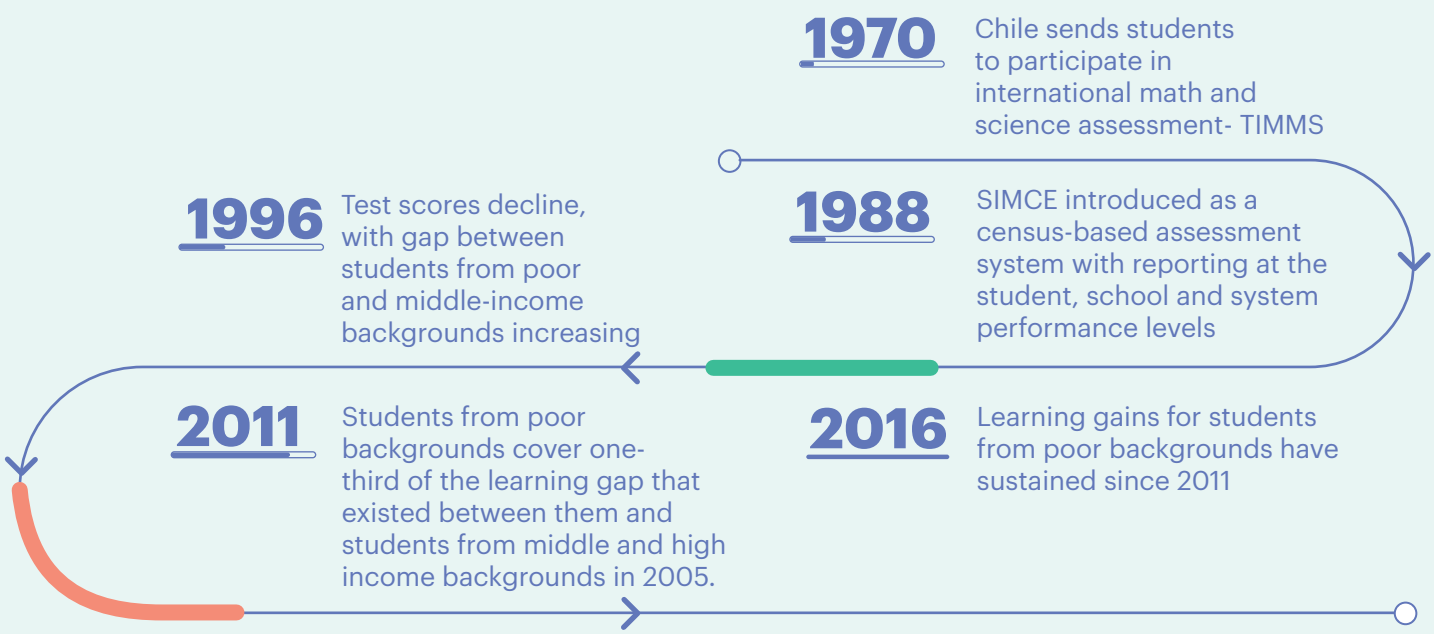
[79] Restricted to schools with more than 5 students
[80] Singh, A. (2020, July). *Myths of Official Measurement:Auditing and Improving Administrative Data in Developing Countries*. RISE Working Paper Series. 20/042. Retrieved from: https://assets.publishing.service.gov.uk/media/5f906c46d3bf7f5d4defae86/RISE_WP-042-Singh_0.pdf

Case Study 5. **Chile**

Chile, a model for assessment-led reform for Latin America and the world, has been among the fastest-improving countries globally in PISA. The country implemented a national learning outcome assessment system, which covers both public and privately managed schools, to track and improve student outcomes.

Chile has become a model, in Latin America and the world, for implementing an assessment-led reform of student learning outcomes. The country's national learning outcome assessment system (Sistema de Medición de Calidad de la Educación or SIMCE) covers all schools, both public and privately managed. Introduced in 1988, SIMCE is a census-based assessment system that generates data at the individual student, school and system performance level. Reforms in Chile led to improvements in Chile's PISA ranking between 2000-2015[81]. In the last decade, Chile has been among the fastest-improving countries globally in PISA[82].

Figure 56: Timeline of assessments and learning outcomes in Chile



Implementation Highlights

Chile designs objective-linked assessment that is administered at regular frequencies across all students to gather data by type of school and student incomes and background

[81] Economist special report. (2019, April 11). *How Chile combines competition and public funding*. The Economist. Retrieved from https://www.economist.com/special-report/2019/04/11/how-chile-combines-competition-and-public-funding
[82] Neilson, C. A. (n.d.). Working paper: Targeted Vouchers, Competition Among Schools,And The Academic Achievement Of Poor Students. Submitted to Econometrica. Retrieved from https://christopherneilson.github.io/work/documents/Neilson_SEPVouchers.pdf

Assessment framework

The Ministry of Education develops performance standards according to curriculum objectives. The item development process is rigorous and involves Item Response Theory (IRT) testing. The assessment is externally administered, thus ensuring greater data reliability when compared with school/teacher-administered assessments[83]. The Ministry of Education converts raw student scores into a complex index reflective of school socio-economic background and certain non-academic outcomes to rank schools[84].

Standard frequency of assessments

The data collected through the SIMCE assessments is comprehensive - across grades, subjects, and testing cycles. While students in Grade 4 are assessed every year in Mathematics and Spanish, students from Grade 8 and Grade 10 are assessed in alternate years in Mathematics, Natural Sciences, Social Sciences and Spanish[85].

> **Data on student performance and schools is publicly disseminated across multiple stakeholder groups, resulting in improved accountability and student performance**

School quality data collected in Chile through SIMCE is used in two ways. First, it is made publicly available to build parent awareness, and second, it is used for high stakes ranking of schools where being ranked at the bottom of the scale for over four years can result in loss of official recognition. Chile uses a multi-pronged mechanism for information dissemination covering various stakeholders apart from parents, including teachers, principals, policymakers, journalists and the general public. Each mechanism of dissemination has a different purpose - whether specific feedback to a teacher or school, building awareness and public involvement in education progress, or, crucially, information distribution to parents to drive informed choice[84].

The media plays a critical role in the dissemination of learning data.

SIMCE has been long recognized as one of the top performers in the region, and a key reason for this is the quality of dissemination[86]. Apart from parent booklets, mass media is a target audience for SIMCE. Journalists are involved in the dissemination process through explainers, special reports on the main findings, free flow of information and preparation of a list of experts who can be interviewed to analyze the results. SIMCE not only has the greatest political impact, but Chile is

[83] Raising student learning in Latin America, World Bank; *Reviews of national policies for education chile 2004 OECD*
[84] Ramirez, Maria Jose. (2012, April). Disseminating and using student assessment information in Chile (English). Systems Approach for Better Education Results (SABER) student assessment working paper; no. 3 Washington, D.C.: World Bank Group. Retrieved from http://documents.worldbank.org/curated/en/724411468014980654/Disseminating-and-using-student-assessment-information-in-Chile
[85] Lorena, M., & Carrasco, R. (2010). *Two decades of SIMCE: an overview of the National Assessment System in Chile, Assessment in Education: Principles, Policy & Practice*. 17(2), 233-248. doi:09695941003696214
[86] Vegas, E., & Petrow, J. (2007, September). *Raising Student Learning in Latin America. The Challenge for the 21st Century. World Bank Group*. doi:10.1596/978-0-8213-7082-7. Retrieved from https://elibrary.worldbank.org/doi/abs/10.1596/978-0-8213-7082-7

perhaps one of the few countries where results are well covered in the media[87]. Since 2005, the Education Ministry has decided to assign one day of the school calendar each year for the analysis of results within each school to ensure that the results can be understood and acted upon.

Lessons for India

Global experiences with census assessments can inform Indian policy while keeping in mind our own context. For assessments that provide a universal learning indicator for schools, key concerns include moving away from rote-based concepts, improving data reliability and ensuring last-mile data dissemination and usage of results. Chile's SIMCE illustrates the mechanism for dissemination of census assessment data to parents and schools for support and accountability. Similar models of public disclosure of school quality information and innovative cash transfers could lead to improvements in learning outcomes for all schools and improve equity in private schools.

[87] Lorena, M., & Carrasco, R. (2010). Two decades of SIMCE: an overview of the National Assessment System in Chile, Assessment in Education: Principles, Policy & Practice. 17(2), 233-248. doi:09695941003696214

Concluding Remarks: Future of Assessments in India

As states start implementing the recommendations of NEP, assessments will emerge as a front-runner in the list of interventions needed to improve learning outcomes. Assessments will be used to:

Monitor growth in learning outcomes

Inform customized teaching-learning practices

Drive accountability

Enable efficient governance at a decentralized level

However, not all assessments provide meaningful information. The report outlines 5 key drivers of successful large-scale assessments for states:

Clear policy and objective
Develop an aligned vision backed by leadership support along with a comprehensive competency framework.

Strong governance
Create accountability for results with stakeholders at every level.

Enabling resources
Budget for regular assessments. Build internal capacity or partner with third-party technical experts for design and implementation.

Technical capacity
Invest in high quality questions within test design. Ensure data collection is reliable.

Data usage
Democratize data availability. Disseminate assessment insights with parents, teachers, schools as well as cluster, block, district and state officials to drive action.

It is our hope that states use the self-assessment framework to determine their current capabilities across the five key drivers for large-scale assessments. The recommendations provided in the implementation toolkit can guide states as they design and administer LSAs in the future. The case studies highlighted in this report show that it is indeed possible for states in India to conduct high-quality LSAs and drive improvements in student learning outcomes.

APPENDIX 1

Framework for **State Self-Evaluation**

Key driver 1: Clear policy and objectives

Indicator	Latent	Emerging	Established
Dimension: Leadership vision and beliefs			
Leadership Support for LSAs Leadership's opinion on the use of LSAs to improve learning outcomes and drive educational reform	Leadership does not believe in the importance of LSAs in improving education quality	Leadership is open to conducting LSAs but unsure about their use in improving learning outcomes and drive change in education policy / programs / interventions	Leadership has strong belief in LSAs and their merit in improving learning outcomes and drive change in education policy / programs / interventions
Past LSA stability No. of rounds of LSA that have been conducted in the state (to establish continuity)	No LSA (or SLAS) has been conducted in the state till date	One round of LSA/SLAS was conducted in the last 10 years by current or previous government	More than one round of LSA/SLAS was conducted in the last 10 years and at least one round by the current government
Clear objectives for LSAs Availability of clear objective(s) for past LSAs that is informed by policy and/or learning needs **(OR)** Ability of leadership to articulate a clear objective / usage for LSAs	There were no clear objectives or purpose for the LSA	The LSA had a clear objective(s) or purpose, but the objective did not inform any specific education programs / policy / interventions to improve learning outcomes	The LSA had clear objectives and purpose that informed specific education programs / policy/ interventions to improve learning outcomes
Dimension: Education policy and goals			
Existing policy on LSA Availability of a state level policy / charter authorizing LSA	No policy document authorized the LSA program (OR) an informal / draft policy document mentions LSAs	A formal / official policy document authorized the LSA, but its contents were not comprehensive.	A formal / official policy document authorized the LSA program and its contents were comprehensive
Curriculum standards and learning goals Availability of official documentation on standardized curricula and learning goals for each grade	The state doesn't have learning goals/objectives defined for each grade	The curriculum and learning goals for each grade are clearly defined based on competency framework (aligned to NCF 2005 or state defined curriculum) and have been revised more than five years ago	The curriculum and learning goals for each grade are clearly defined based on competency framework (aligned to latest NCF 2005 or state defined curriculum) that have been revised within last five years
LSA awareness within state General workshops, trainings and communications for state officials to learn about LSA and its benefits	No awareness workshops about LSAs were conducted for key stakeholder groups or no stakeholder consultation was undertaken	There was at least one awareness workshop about LSAs among key stakeholder groups at the state level or stakeholder consultations were held	There were more than one awareness workshops about LSAs among key stakeholder groups at state, district and block levels and stakeholder consultants were held

Key driver 2: Strong governance

Dimension: Organization structures			
Indicator	**Latent**	**Emerging**	**Established**
Established assessment units in state for conducting LSAs Established unit(s) at state, district, and block levels for conducting LSA or identified technical support for conducting LSA	Assessment division not established in SCERT, District Institute for Education and Training (DIET) and Block Institute of Teacher Education (BITEs) for conducting LSAs and no technical partner identified	Temporary assessment division established in SCERT and most DIETs for running any LSA or technical partner identified to conduct LSA	Permanent assessment division established in SCERT and all DIETs and BITEs for conducting LSA or technical partner identified and onboarded
Experience of the assessment units Status of unit(s) (temporary / permanent) with primary responsibility for running any LSA.	There was no unit with primary responsibility for running the LSA	Assessment unit(s) had been in place for less than five years (OR) has conducted just one round of LSA	Assessment units had been in place for five or more years (OR) had conducted more than one round of LSA
Dimension: Accountability			
Accountability of results Responsibility for block, district and state level results is clearly allocated to individuals with the power to influence on-the-ground practices	There was no accountability for student performance or results at any level	The state and district level assessment administration were held accountable for the performance/ results in their respective districts	The block/cluster level administration (BRC/CRCs) was held accountable for the performance/ results of their respective block/cluster
Existing monitoring and reporting mechanisms Unit(s) with primary responsibility for running any LSA program should be/are accountable to a clearly recognized body	The unit was not accountable to a clearly recognized body / individual authority	The unit(s) with primary responsibility for running the LSA program was accountable to a body / individual within the assessment unit	The unit(s) with primary responsibility for running the LSA program was accountable to a clearly recognised body / individual authority within the education department

Key driver 3: Enabling resources

Dimension: Funding			
Indicator	**Latent**	**Emerging**	**Established**
Funding source Source of funding for latest LSAs in the state (government's internal source or external loans, credits, grants or equivalent)	There was no funding available for LSA activities	The source of funding for the majority of LSA activities was loans, credits, grants or equivalent; the rest was the government's internal funding sources (central or state)	The source of funding for all or majority of LSA activities was the government's internal funding sources (central or state)

Indicator	Latent	Emerging	Established
Funding scope Source of funding for latest LSAs in the state (government's internal source or external loans, credits, grants or equivalent)	There was no funding available for LSA activities	Funding was not sufficient and only covered 50 per cent or less of LSA activities	Funding was sufficient and well utilized to cover all core LSA activities
Dimension: Human resources			
Availability of staff Availability of sufficient number of staff to perform or manage all core LSA related tasks at the state, district and block levels	There are no staff available to perform or manage any core LSA related tasks at the state, district and block levels	Insufficient staff available to perform or manage all the core LSA related tasks at the state, district and block levels	Sufficient staff available to perform or manage all the core LSA related tasks at the state, district and block levels
Capability of staff Individuals part of the unit(s) with primary responsibility have relevant qualifications for carrying out various tasks of the LSA (OR) capability of existing staff to carry out LSA activities	There are no individuals with relevant qualifications for completing key LSA activities	Some (less than 50 per cent) of the individuals responsible for completing key LSA activities had the relevant qualifications	Most or all the individuals responsible for completing key LSA activities had the relevant qualifications
Dimension: Infrastructure			
Office infrastructure Availability of office infrastructure with state, district and block level unit(s) responsible for running the LSA. Example - computers, servers, building security, storage facility, communication tools, etc.	The LSA unit(s) did not have the appropriate resources	The LSA unit(s) had some (less than 50 per cent) of the appropriate resources	The LSA unit(s) had most or all the appropriate resources
Assessment roll-out infrastructure Availability of assessment resources like OMR printers, test development software, grading software, security & storage of test papers	The LSA unit(s) did not have the appropriate resources	The LSA unit(s) had some (less than 50 per cent) of the appropriate resources	The LSA unit(s) had most or all the appropriate resources
Training infrastructure Availability of sufficient resources and platforms to learn about assessments for key stakeholders and availability of subject matter experts to conduct trainings	There were no resources or platforms to learn about the LSA	Resources or platforms to learn about the LSA were minimal, or not of high quality, or did not benefit all key stakeholder groups	There were sufficient high-quality resources or platforms to learn about the LSA that were available to key stakeholder groups
Technology infrastructure / e-assessment readiness Availability of e-assessment infrastructure like computer centers, computer labs, tablet devices, etc.	The state is not equipped to conduct e-assessments and needs significant investment	The state is not well equipped to conduct e-assessments and needs additional investment	The state is well equipped to conduct e-assessments without additional investment

Key driver 4: Technical capacity

Dimension: Assessment design			
Indicator	**Latent**	**Emerging**	**Established**
Test design Robustness of test design that is competency linked, at the relevant grade level with high quality questions	Test design was not aligned to state curriculum and learning objectives and wasn't competency based with high question quality	Test design was inadequately aligned to state curriculum and learning objectives and/or was not competency based and all questions were not of high quality	Test design was sufficiently aligned to state curriculum and learning objectives and was competency based with high quality questions
Scoring The approach followed for test scoring is appropriate to the design as well as to meet the objectives of the state for LSAs	The approach followed for test scoring was not aligned to the design as well as the objectives of the state for LSA	The approach followed for test scoring was poorly aligned to the design and/or the objectives of the state for LSA	The approach followed for test scoring was well aligned to the design as well as the objectives of the state for LSA
Standardization Capability for standardization of the LSA at the system level with extensive procedures to ensure standardization	The LSA was not standardized at the system level	The LSA was poorly standardized (less than 50 per cent) at the system level, or minimal or no procedures were in place to ensure standardization	The LSA was sufficiently standardized at the system level, and sufficient procedures were in place to ensure standardization
Sampling Sampling adequately captured all categories of students in the state in order to provide a clear measure of learning levels in the state.	A non-random sample or a convenience sample of students participated in the LSA	A random sample of students that was not fully representative of all students at the state-level participated in the LSA	Census-based assessment with full participation of all students in all schools, or an adequately representative sample of students in select schools participated in the LSA
Linguistic adaptability State capability / capacity for linguistic adaptation of LSA	State has no internal capability / capacity nor any guidelines for linguistic adaptation of LSA	State has limited internal capability / capacity and poorly defined guidelines for linguistic adaptation of LSA	State has sufficient internal capability / capacity and well-defined guidelines for linguistic adaptation of LSA
Dimension: Test administration			
Methods and procedures documentation Availability of documentation on the methods and procedures used during the LSA	There was no documentation on the methods and procedures used during the LSA	There was minimal documentation on the methods and procedures used during the LSA, or the documentation that existed was not public	There was sufficient and public documentation on the methods and procedures used during the LSA
Monitoring mechanisms and quality processes Involvement of internal / external body(s) for monitoring quality protocols and processes for LSA and ensuring adequate guidelines exist and were used during quality reviews	No internal / external body(s) was in place to monitor the quality protocols of the LSA and there were no guidelines on how to assess quality of processes	An internal body was assigned / created to monitor the quality protocols of the LSA but there were insufficient guidelines on how to assess quality OR quality review was not documented	An external body was assigned / created to monitor the quality protocols of the LSA and there were relevant guidelines on how to assess quality; quality reviews were also documented

Dimension: Test administration			
Indicator	**Latent**	**Emerging**	**Established**
Data reliability Access to an exclusive data management server/service, along with robust protocols	There were no data management protocols	Data management protocols were not well defined; did not cover data security, data capture, data cleaning and/or version control	Data management protocols were well defined covering data security, data capture, data cleaning and version control

Key driver 5: Data usage

Dimension: Data analysis			
Indicator	**Latent**	**Emerging**	**Established**
Credibility of results Perceived credibility of the results of the LSA by key stakeholder groups	The results of the LSA were perceived as credible by very few stakeholder groups	The results of the LSA were perceived as credible by some stakeholder groups	The results of the LSA were perceived as credible by most or all stakeholder groups
Report format and template Availability of mandated reporting standards and formats for assessments	There was no standardized reporting format	There were standardized formats for limited stakeholders	There were standardized formats for reporting overall state, district, block and school level performance to most or all stakeholders
Prevention of assessment malpractice Availability of tools to analyze assessment data for malpractices like mass copying, etc.	No tools or mechanisms were in place to prevent assessment malpractices	Minimal tools or mechanisms were in place to prevent assessment malpractices	Robust tools and mechanisms were in place to prevent assessment malpractices
Dimension: Data dissemination			
Publication of results Availability of documented/ officially mandated reporting or publishing of results and sharing with all stakeholders	LSA results were not published	Limited information on the LSA results was published, or the results were published using a minimum number of dissemination mechanisms that did not reach all stakeholders	Sufficient information on the LSA results was published using an array of dissemination mechanisms and was also shared with all stakeholders
Use of results Use of assessment results/ Data for future actions related to policy, pedagogy, teaching delivery, system level changes or school level changes.	Assessment results and analysis was not used by any of the stakeholders for future activities or to meet the objectives or purposes of the LSA	Assessment information was used in positive ways by limited stakeholders at the school, system and policy/program level and met some objectives/purposes of the LSA	Assessment information was used by several or all stakeholders for changes at the school, system and policy/program level and met the objectives/purposes of the LSA

APPENDIX 2

Illustrative analysis of **strengths and weaknesses based on assessments** in Rajasthan and Andhra Pradesh

Andhra Pradesh	Rajasthan
Parameters: Math Competency[88]	
Grade 4 ***Strongest skill:*** Number sense and Arithmetic operations ***Weakest skill:*** Geometry **Grade 6** ***Strongest skill:*** Data handling and patterns and sequences ***Weakest skill:*** Geometry **Grade 9** ***Strongest skill:*** Patterns and sequences, Arithmetic operations, Data handling ***Weakest skill:*** Measurement and its application, Mensuration and Geometry	**Grade 3** ***Strongest skill:*** Measurement and its application ***Weakest skill:*** Geometry **Grade 5** ***Strongest skill:*** Patterns and sequences ***Weakest skill:*** Mensuration
Common findings across grades	**Common findings by grades**
Students in both states across grades exhibited a fair amount of rote learning in basic skills in Math. Overall performance was seen to be better in procedural over conceptual and mostly weak in analytical questions across all classes assessed. Geometry and mensuration were found to be the weakest topic in both states across grades and schools	**Grade 3-4** Geometry (unable to visualize 3D objects from different angles) and number formation **Grade 5-6** Number sense and scale measurements, basic geometric shapes and mensuration **Grade 8-9** Time and conversion of units, concept of LCM
Parameters: Language Competency	
In language, students were found to be relatively good at "reading, understanding and writing basic words". That is to say they were able to identify common objects in a picture, give description or use, and identify correct spellings and recognize a jumbled word. About 90 per cent of students in class 9, 76 per cent in class 6 and 80 per cent in class 4 were able to do this. However, the ability of students to 'read text and comprehend stated facts' or 'beyond stated facts' was found to be relatively weaker across all the classes. This is the key ability that differentiates students at 90th percentile from those at 75th percentile. Only 33 per cent students in class 4 and 47 per cent in class 5 were able to attempt the latter skills	Students across classes performed well in reading, understanding and writing basic words - about 78 per cent in class 3, 75 per cent in class 6, and 67 per cent in class 8. The skills tested under the competency "Use words appropriately" appeared relatively strong as well. This is to say students decode the print to some extent, have basic vocabulary in place, can identify a word appropriately to complete the sentence, have relatively good grammar, and can extract explicitly stated facts from a sentence or a story. However, less than 60 per cent students across grades are able 'read text and comprehend stated facts' or 'comprehend beyond stated facts'
Common findings across grades	**Common findings by grades**
Language competency patterns in both states were similar; students were able to decode the print to some extent and have basic vocabulary. However, in both states it was observed that most students are not able to handle conceptual questions that go beyond stated facts in sentences / passages.	**Grade 3-4** Usage of the correct form of verb for the given context as a result of thinking in the mother tongue; prone to pick present continuous which is the most common tense or pick the root form of the verb.

[88] Common findings across grades and subjects have been compiled from CSSL's analysis reports for Rajasthan's and Andhra Pradesh's State assessments respectively

Rajasthan

Parameters: Language Competency

Common findings by grades

Grade 5-6

Usage of prepositions due to picking options based on colloquial usage or lack of understanding of how to use prepositions. Also, low proficiency in understanding the implication of sentences

Parameters: Writing Competency

In class 4, less than 13 per cent students were able to write a meaningful short story with a title and end based on the picture cues provided. In class 9, an average of 17.5 per cent of students across schools could write a dialogue logically. Overall the proportion of students who are able to write a meaningful sentence / short story for the given picture, is not seen increasing from Class 4 to Class 6 and 9. This means that the ability of students to write independently and creatively with appropriate language elements is lacking and does not improve as

Nearly a quarter of the class 3 students who took the test did not attempt the writing tasks. In Class 5, close to one third of students did not attempt the writing tasks. Less than 14-16 per cent of them could write a sentence for a picture and about 8-9 per cent could write a story of 8-10 lines for given picture cues

Common findings across grades

Writing competency across both states is the weakest out of all competencies tested. Less than 20 per cent of students at any given grade could somewhat complete writing tasks

Parameters: Writing Competency

Students find it difficult to answer questions that check for their conceptual understanding. This is widespread and seen across all the subjects and classes in all types of schools assessed

Most students are not able to handle conceptual questions that go beyond stated facts in sentences/passages. In higher classes, students are only able to handle questions that are very 'straightforward' in procedural learning, and closer to what one would practice from a typical textbook and not when they are slightly atypical and conceptual

Common findings across grades

Both states show similar patterns in performance across grades and subjects when it comes to distinguishing student merit along procedural and conceptual questions. Students exhibit less merit along conceptual questions. This may be a cue to a systemic problem in how learning is approached and delivered across India

Common findings by grades

The results showed that for the questions tested, the learning levels of Rajasthan students in government schools in Classes 3 and 5 is similar to that of high performing state like Andhra Pradesh and the performance was better than low performing states like Jharkhand, Madhya Pradesh and Odisha

APPENDIX 3

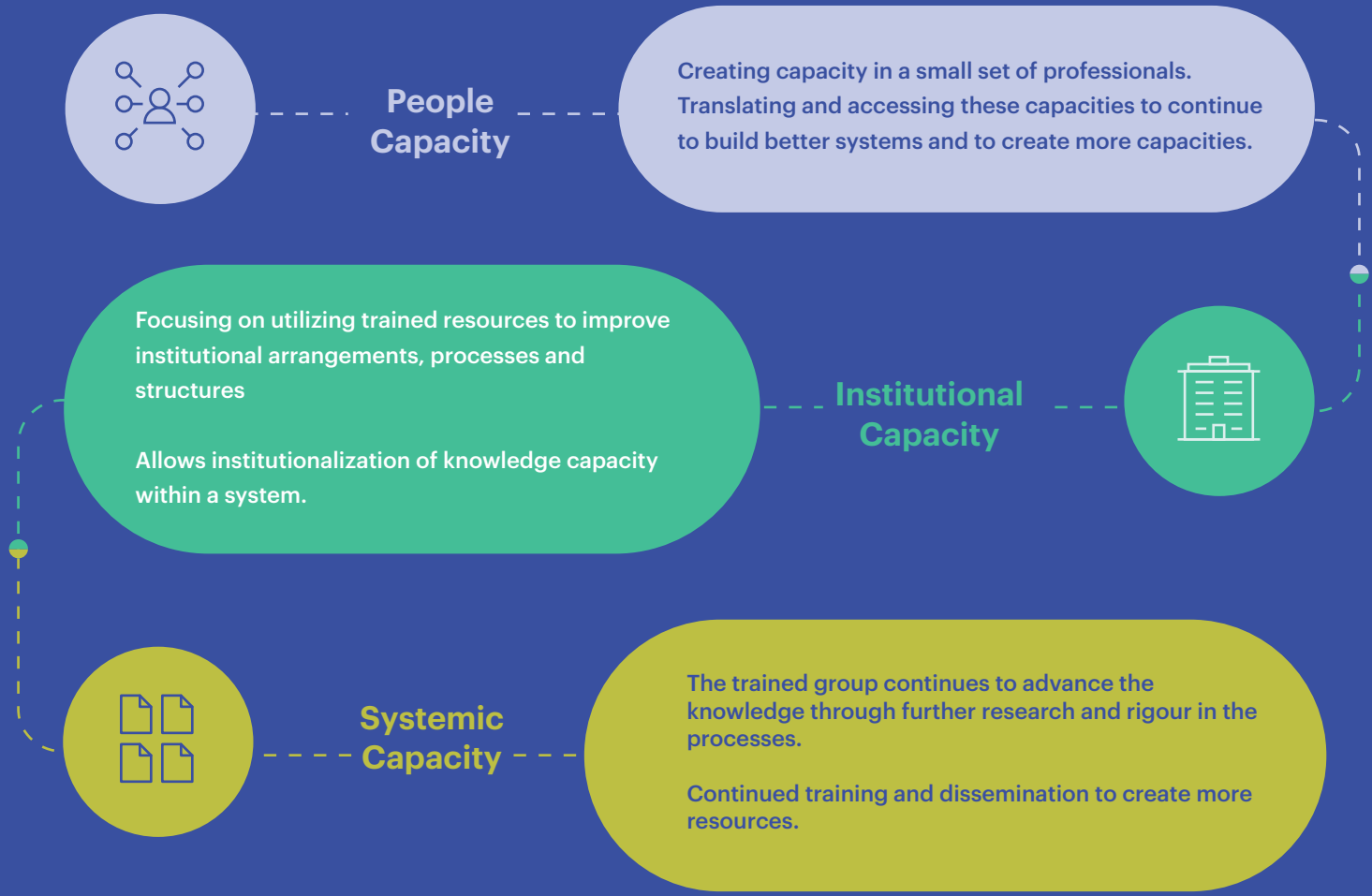
Tamil Nadu Capacity Building: Case Study Self-Evaluation

The Annual Student Learning Achievement Survey (SLAS) for the state of Tamil Nadu became a stepping stone for building state capacity in creation, conduction, and interpretation of assessments. Capacity was built by creating a State Resource Group for assessments in multiple languages.

2016-17: Creating the State Resource Group for assessments through workshops & SLAS

The state leadership-initiated, UNICEF-funded project with Educational Initiatives focused on creating end-to-end capacity for assessments. This initiative extended from understanding question design to completing the learning loop by studying data, extracting relevant insights for the classrooms, and creating classroom activities that can help in addressing learning needs.
Educational Initiatives believes in creating systemic capacities and institutions that can continue to develop people. Keeping this in the mind, with a vision to create Tamil Nadu Assessment Cell, the project to create 2016 SLAS through state capacities was conceptualized.

Figure.57: Stages of Capacity Building



The capacity building approach in Tamil Nadu was based on basic learning strategies outlined below.

1. Need analysis by meeting state experts and consultants and reviewing existing assessments:
EI met the SPD and consultants working with SSA who oversaw SLAS to understand administration and tool design process of previous rounds. With this background analysis, an 18-workshop proposal was given to the state for the first year along with the agenda and outcomes for each workshop.

2. Identification of motivated participants:
300 applications were reviewed to select 100 teachers who displayed a willingness to embark upon a journey of learning transformation that went above and beyond their regular teaching and administrative duties. The selection process was completed with the support of SSA and involved reviewing teachers' submitted statement of purpose and assessment abilities.

3. Shared learning through workshops on assessment principles:
Workshops were held for assessment design, sampling, standardized test administration and interpretation of assessment data. The outcomes of the workshops were:

1000+ approved questions created for tool developed

Robust sampling across multiple strata

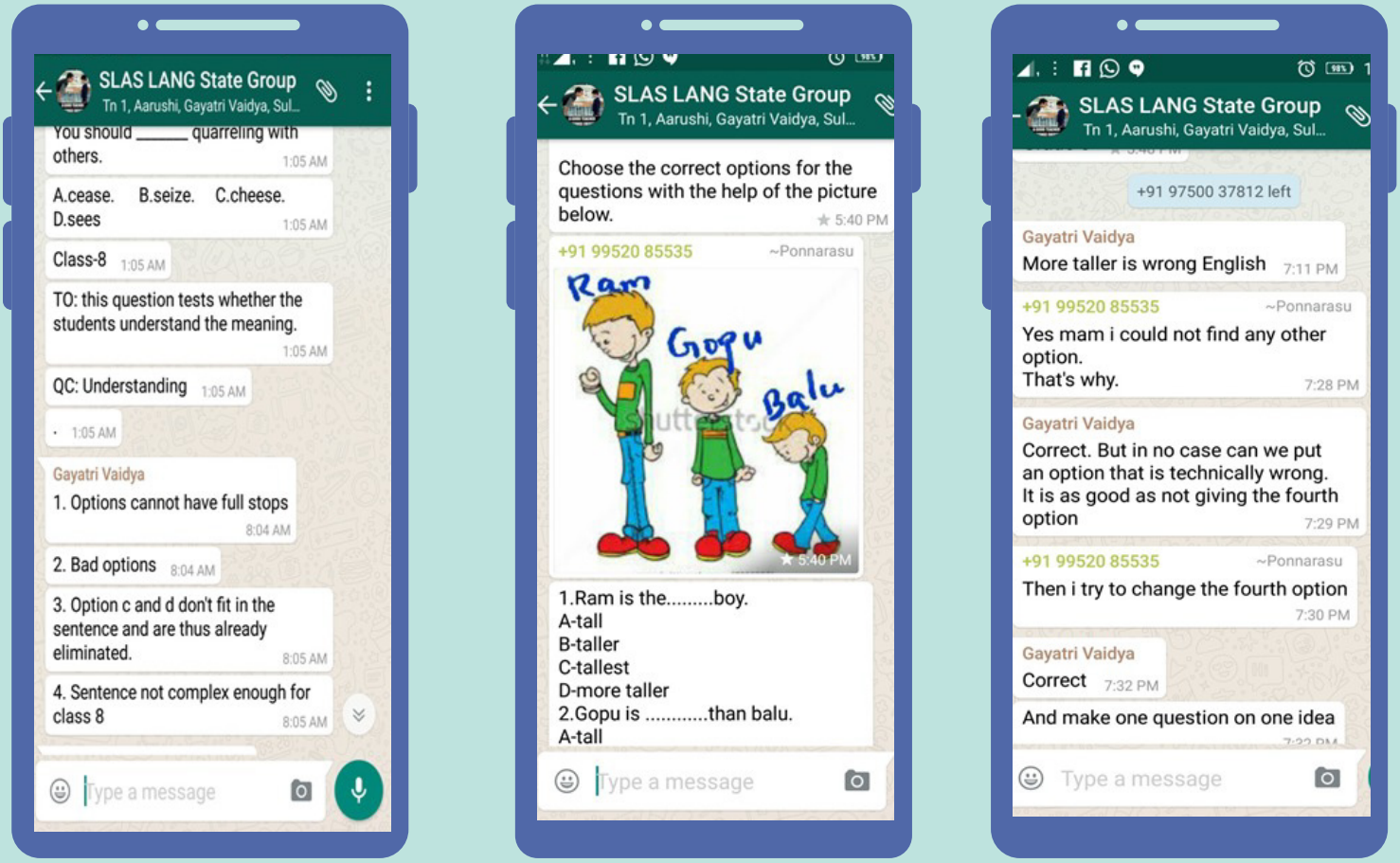
Establishment of standardized test implementation processes

Enablement of participants to analyse data and understand student learning gaps, overall average performance, strata-wise performance

By the end of these workshops, teachers shared the joy of seeing their questions working as misconception questions. They visited schools, interacted with children, and came back with knowledge of students' thinking processes. Teachers then designed specific classroom activities to correct misconceptions. Part of the literature generated made its way to the SCERT and Tamil Nadu's teacher training materials.

4. Reinforcement of learning through assignments; continued support through electronic media-based interactions:
High-touch workshops were coupled with follow-up assignments for review and practice through hands-on tasks. Subject-wise groups were created for the participants on WhatsApp. These groups actively engaged in question creation, commenting on each other's questions and doubt clarifications.

Figure 58: Subject-wise WhatsApp groups created for the participants in Tamil Nadu



2017-18: Going the digital way: Piloting formative assessment on tablets with EkStep collaboration

173 schools across districts of Tamil Nadu were identified for building capacity in digital assessments. The approach taken was based on the strategy of continued assessment capacity building and providing training support to the teachers to adopt DIKSHA - the digital platform through which assessments were to be conducted.

After 3 months of unit end formative assessments (4 per month) and a final summative assessment in April 2019 in 173 schools, the pilot data were collected and analyzed for trends. The project led to an understanding that while it was possible to scale up in terms of creating assessments, the procurement costs, logistics and other operational needs were difficult to monitor without a systemic set up. While this pilot study helped in building more capacities and move an inch forward towards a formal Assessment Cell, the digital assessments required more planned procurement, management, and logistics and operation to make it a scaled success.

2018-19: Tamil Nadu Assessment Cell and building of capacities

The State Leadership continued to strive towards establishing an Assessment Cell for the state along with collaborative efforts from EkStep and Educational Initiatives. In June 2018 the Tamil Nadu Assessment Cell (TNAC) was inaugurated at the Anna Centenary Library, Chennai, Tamil Nadu. The TNAC was inaugurated by Smt. Reena Ray, Education Secretary, Department of School Education, India. The structure was created for the TNAC in a consultative fashion with the state leadership.

Lessons from the Tamil Nadu project

1. Creating systemic capacities and bringing teacher-led assessment reforms is possible.
The state resource groups created because of capacity building activities continued to contribute to the state machineries beyond the assessment needs. The teachers could create questions and assessment tools that could help in identifying learning gaps which triggered textbook revision dialogues for all the grades. Six to eight participants from each subject group are now in the core teams for textbook reforms and SCERT trainings for the state. The other participants who were active in their BRC or CRC roles, continue to influence their blocks or clusters through their learnings.

2. Accompanying in-person workshops with digital inputs (in terms of video courses or interactives) can help in continued engagement.
The continued engagement through instant messaging and assignments through emails supported the capacity building exercise. Engagement can be accentuated by providing more learning content through technology.

3. Capacity building initiatives require a long-term association
Like any reform, assessment reforms led through capacity building requires a consistent, long term focused approach with dedicated resources and continued leadership engagement.

During this project, every year there were leadership changes, and every leader came with an extended vision of the capacity building idea which allowed more explorations. However, it also diluted the efforts that were planned for assessment cell creation.

4. Constitutionalizing the capacities as an institution can make it administration agnostic and allow for consistent and continuous monitoring
Creating the assessment cell as a constitutional entity in itself could have helped with a clear vision, mission and staffing for the cell. During this project, the assessment cell carried out multiple functions, other than focusing only on assessments. This also might have influenced the staffing for the cell differently.

APPENDIX 4

Madhya Pradesh - Rashtriya Madhyamik Shiksha Abhiyan, Directorate of Public Instruction – **Request for Proposal Sample**

Madhya Pradesh Rashtriya Madhyamik Shiksha Abhiyan, Directorate of Public Instruction, Bhopal (M.P.) invited tenders in 2018 for building institutional capacity for conducting diagnostic learning assessments in secondary and higher secondary classes to improve learning outcomes. The following section details out the eligibility criteria and terms of reference of the RFP.

The minimum eligibility criteria for the bidders has been extracted from the RFP as below:

Description	Scoring Criteria	Maximum Score	Supporting Document
1			
Minimum of 2 projects demonstrating independent capacity to prepare and conduct a large scale assessment (i.e. at least 50,000 students) end to end (P). Demonstrated expertise in each of the following areas: a) High quality assessment instrument creation, sampling and field trialing b) Logistics: Dissemination of instruments, test administration and collation of valid data c) Data analysis and report writing: IRT, multivariate analysis, summary of insights	P<2: 0 pt; P=2: 5pt; P=3: 7pt; P=>4: 10 pt	10	Report on the assessments demonstrating size, quality and outcomes of assessment, and details of responsibilities undertaken. Letter of award of contract from the state government/ agency Letter of successful completion of contract
2			
Minimum one project on establishment of an assessment cell (P) including: a) Defining assessment cell composition and hiring b) Executing the recruitment process for the Assessment Cell	P<1: 0 pt P=>1: 5 pt	5	Report on composition, recruitment and establishment of the cell; Letter of award of contract from the state government
3			
Minimum two projects on capacity building for a state government assessment team including (P): a) Developing a curriculum/ plan for capacity building b) Implementing	P<2: 0 pt P=2: 5pt P >=3: 15pt	15	Document on competencies to be covered during capacity building, and number of days for each group of participants.Sample modules and materials used for practical capacity building to be provided.
4			
Core team of 4 people for the project, and subject/ other experts brought in from time to time. The detailed team and qualification requirements (academic and professional) are specified in the Objectives and Background section in Section 2. 40% of the points allotted will be assessed on the basis of academic / professional qualifications and 60% on the basis of professional / experience	Points basis CVs: ***Core Team:*** Program Manager (5) Assessment expert (5) Data expert (5)	40	Resumes

Description	Scoring Criteria	Maximum Score	Supporting Document
4			
	Communication Expert (2) ***Other Experts:*** Expert on values and attitudes assessment (5) Maths Expert, Physics Expert, Chemistry Expert, Hindi Expert, English Expert, Economics Expert 3 points per expert (18)		
5			
Proposal document and presentation on: a) Technical Approach and Methodology, indicating detailed understanding of scope of work b) Suggested work plan, deliverables, proposed Organization and Staffing	20 points (10 points on the basis of documents provided, 10 points on the basis of presentation)	20	
Total		**90**	

The terms of reference have been extracted from the RFP as below:

Objectives and Background

The broad objectives as envisaged in this Assignment include:

1. Establishing the state assessment team for Classes 9-12 of government schools at state level

2. Building the capacity of the state assessment team 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, trainings etc.; Also building 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.

3. 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 5 subjects for grade 11 (Physics, Chemistry, Maths, Hindi, Economics)

4. Assist in conducting an assessment/ study of values and attitudes of a sample of children from all grades 9-12

The detailed scope of work for each of these objectives is set out below.

Each Bidder will be required to propose a timeline for completion of the detailed scope of work as outlined. It is envisaged that this project will require 2 years for the completion of all 4 components of the scope of work. This contract may be extended to a third year on terms mutually acceptable to both parties.

17. Assisting the School Education Department to establish Assessment Team

17.1 Need for an assessment team

Assessments conducted for grades 9-12 include monthly and half yearly exams conducted by the Directorate, and board exams for classes 10th and 12th conducted by the Board of Secondary Education. As of date, the design, data capture and analysis on these assessments is such that it does not provide competency wise understanding of the learning levels of students. Also, in the absence of a unifying rubric, the scores across years are not scientifically comparable. The Directorate realizes the need to strengthen the ongoing assessments for grades 9-12 and to build internal capacity to conduct valid, reliable and fair learning assessment systems, which can facilitate evidence-based policy and other decisions. The learning outcomes data thus generated will be the basis of long-term strategic decisions e.g. curricular planning and reforms, teachers' training design, the development of material for schools, etc., as well as shorter-term interventions e.g. for remediation. The information emerging from these assessments will also offer an opportunity for discourse with parents on issues related to learning.

In order to achieve this vision, it is imperative that the Directorate develops the capacity of its internal resources for assessments and research into student learning, and seeks to establish a forward-looking, reform-oriented state assessment team at the secondary level. The team will be responsible for designing and administering high-quality assessments that test higher order thinking skills and learning competencies. It will also be responsible for collecting the data generated from these assessments and undertaking a robust data analytics exercise. The insights from this data should then be collated to provide state, district and block level 24 officers' actionable information for various purposes. These purposes include the revision of current in-classroom processes and materials, undertaking additional interventions and for accountability related measures. In the medium term, the Directorate also wishes to develop internal capacity to conduct student assessments on non-cognitive aspects like attitudes and values which are equally important for overall success of children beyond cognitive learning alone.

17.2 Proposed composition of the state assessment team to be deputed by the DPI

This section lays out a suggested structure for the state assessment team and recommended qualifications for each officer. ***This structure is only indicative and the Bidder will be required to design and submit its recommended structure along with job roles and qualifications for each officer*** of the assessment team.

BROAD ARCHITECTURE

State Headquarter team (henceforth called Headquarter team)–This team would be stationed in Bhopal and would be trained on all aspects of assessments.

Assessment design experts – This team of subject experts would be called in from the field as and when there would be requirement at the Headquarter. They would receive specific training to design better assessments in their respective subjects.

District Key Resource Group – This group would be identified from DIETs/SRG/others, and there would be specifically 2 DKRG for each district. They would primarily be trained in item designing and test administration.

The following team of state officers would be based at the State Headquarter in Bhopal:

1. Project manager who will function as the head of the team (1)

a. Post graduate qualification required
b. Program management experience in education - a minimum of 5 years required
c. At least 3 years' experience with item creation, execution of assessments and results analysis

2. Subject Experts (Language, Maths, Science, Social Studies) (4)

a. Master's degree in the subject and a Bachelors in Education (required) b. Practicing teachers with over 5 years' experience preferred
c. Past experience of participation in item generation for state's centrally designed exams preferred
d. Proficiency in Word and Excel

3. Data officers (2)

a. Masters in Statistics/ Mathematics/ Economics/ Econometrics or B. Tech / M. Tech
b. Experience in item response theory and multivariate analysis (desirable)
c. Experience in handling large data sets; experience in SPSS (desirable)
d. Familiarity with the technological architecture of large databases
e. Computer literacy and knowledge of excel

The following team of officers would be trained as subject experts and would be called in for workshops and at the time of designing and rolling out assessments:

4. Assessment Design Experts (at least 2 per subject taught in secondary classes):

The bidder would help in identifying subject experts who would be trained as assessment experts in the respective subjects. Further, the diagnostic assessments would be developed by these trained assessment design professionals in addition to the core team stationed at the Headquarter, with support and supervision from the bidder.

5. District Key Resource Group (DKRG):

In addition to establishing the assessment team at the state level at RMSA, the Bidder will also assist the Directorate in identifying two district-level resources in every district. These district level personnel should be from the District Institutes for Education Training (DIETs/SRG/others) or teachers from the district. The Bidder will design and conduct trainings to build their capacity to assist with item development, oversee piloting and final test administration, and assist with post-testing dissemination. It is envisaged that DKRG will also serve as a pool of human resources for the assessment team, as and when additional manpower is required. The Bidder should define the minimum qualifications required for the District Key Resource Group.

17.3 Selection Process for the above State Assessment team, establishment and staffing of the Assessment team

1. The Bidder should clearly define the various stages of the selection process and timelines associated with each stage. The Bidder will be required to design all preparatory materials for the selection, including the testing instruments and the interview guides for the process.

2. The Bidder will coordinate with the Directorate to release the call for applications for staffing of the Assessment team.

3. On the basis of qualifications outlined in the call for applications, the Bidder will shortlist candidates for the next stages of the selection process.

4. A combination of a written test and in-persons interviews are recommended for the additional stages of the process. However, the Bidder may finalize the process as it deems best based on discussions with the Directorate.

5. It is recommended that the Bidder itself conduct one round of in-person interviews to shortlist candidates for a final interview, which is then jointly undertaken by the Directorate and Bidder

6. The Bidder should provide the final merit list to the Directorate. The Directorate will take final decisions for approval and deputation/ hiring as appropriate.

**For complete details and access to the RFP document, please reach out to KPMG*

APPENDIX 5

Role of good questions in assessments[89]

[89] Appendix 6, "ROLE OF GOOD QUESTIONS IN ASSESSMENTS" is contributed by Educational Initiatives (EI)

Questions are central to any good assessment and the quality of the questions determine the quality of the insights that one can derive based on the data on those questions. A good question is one that challenges and stimulates a child to think deeply and to apply concepts learnt. The ability to ask questions that make students think both at the time of instruction and assessment, is the hallmark of a good teacher. A good question, correctly framed, can help a teacher understand the thought processes of students and how well a child has internalized a concept or mastered a skill.

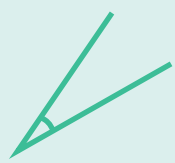
Good questions can influence how students learn – the right kind of questions stimulate thinking

Let us look at the following two

Name the phase of the Moon during which it appears completely round.	VS	Why do we see different phases of the Moon?

Both these questions are related to the concept of 'phases of the Moon'. The key difference is that the first one simply checks whether students 'know' the names of the phases of the Moon whereas the second one checks whether students 'understand' the reason behind seeing the different phases of the Moon. While there is nothing wrong with the first question, it only checks whether students can recall a name correctly or not. On the other hand, what the second question can do is influence the way students learn. Even if the student doesn't know the answer, it may stimulate thinking and trigger a series of thoughts, which is more important than the ability to recall a fact.

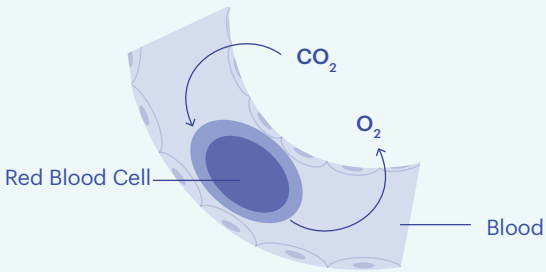
Good questions can distinguish mechanical learning from real learning, with understanding

Which of the following is an obtuse angle?					Which angle has the greatest degree measure?				
									
A.	B.				A.	B.			
			VS						
C.	D.				C.	D.			

Both these questions are related to the concept of 'angles'. The first question tests whether students know what 'obtuse angle' means and can identify the obtuse angle whereas the second question tests whether students understand the concept of angle and can identify the angle of the greatest degree measure. A subtle difference is the way the visual options are arranged. In the first question, all the angles have a base that is horizontal, whereas in the second question, the angles are arranged in different orientations and the arm lengths are also different. Therefore, the second question can be answered only if students understand what angle means. Data on the second question reveals that many students don't understand what angle means and harbor different misconceptions. For example, many children believe that the longer are the arms of an angle, greater is its measure. Only a good question like the second question can distinguish if students have really understood the concept or have rote-learnt it.

Good questions can trap misconceptions and common errors

Given below is a diagrammatic representation of a process taking place in the human body.



In which of these regions/organs could it be occurring?

1. Lungs | 2. Heart | 3. Brain

A. Only in Lungs

B. Only in Heart

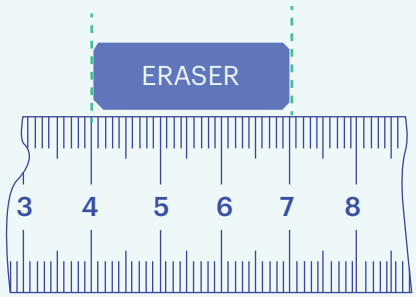
C. Only in Heart and Brain

D. All of the above

22, 131 students attempted this question. Around 21 per cent students selected the correct answer, option D. Around 38 per cent students selected option A and 29 per cent students selected option B indicating that they have a misconception that the gaseous exchange happens only in certain organs. They don't understand that it happens in all the parts of the body. Depending on the choice of distractors, different misconceptions and ways of thinking can be captured using good questions.

Good questions can provide feedback on what students are really learning

Sahil used a broken ruler to measure the length of his eraser as shown below.



What is the length of the eraser?

A. 3cm

B. 4cm

C. 7cm

D. (The length cannot be measured by a broken ruler)

A question like the one shown above can be a very powerful way to check whether students really understand what length is and how to measure it. It is different from a typical textbook question asking to measure length because - i) the object is not starting at 0 and ii) the ruler is shown to be broken. The broken ruler is used intentionally to check if students have a misconception that we cannot measure length with a broken ruler. Surprisingly, data indicates that there are around 13 per cent to 15 per cent class 5 students in the private schools who have this misconception. 37 per cent class 5 students count individual points (4, 5, 6, 7) instead of the distance between the points (4-5, 5-6, 6-7) and hence arrive at the incorrect answer B, 4 cm. It is by a simple change in asking question like the one shown above that can reveal what students are really learning.

Aspects of a good question

A good question should:

- test a skill or concept that is worth understanding
- be valid – it should test what it is intended to test
- be able to distinguish candidates of different abilities
- be able to point out specific wrong notions/mistakes made by the candidates
- be interesting and stimulate thinking
- be appropriate for the target audience
- state what is expected in clear and unambiguous terms
- use clear, concise and age-appropriate language
- be error free

A good question should NOT:

- be biased towards any specific race, religion or gender
- check for trivial or inconsequential details
- be taken directly from the wordings in the reference books

APPENDIX 6

Sample Diagnostic Questions Used in Large Scale Assessments[90]

[90] Appendix 5, "SAMPLE DIAGNOSTIC QUESTIONS USED IN LARGE SCALE ASSESSMENTS" is contributed by Centre for Science of Student Learning .

The heart of any diagnostic learning assessment is its instrument design. To understand the quality of student learning, questions need to go beyond the 'rote' to check whether students have understood the concepts and can apply them and be creative.
Hence, the questions included in a diagnostic assessment must aim at assessing students' understanding and ability to apply what they had learnt and not just the ability to recall information or use formulae or procedures. Further the focus in such questions should not be only on checking if students can give the right answers but in identifying the types of wrong answers to extract the misconceptions students have and identify the common errors they make.
CSSL classifies questions into 3 different types based on the cognitive dimension addressed. These are the procedural, conceptual and analytical thinking (Mathematics) and Creativity (Language).

Procedural (P)
This dimension focuses on tasks that draw largely on memory and do not require much effort or thought. Question ideas and item types that are generally seen in the textbooks and which students are very familiar with and which involve responses that have a high element of recall or reproduction are included here. In Math, this dimension includes facts, procedures, theorems, identities, etc. It involves solving problems using methods directly from the textbook and solving straight forward items. In Language, this includes knowledge of letters, words and their spellings, and straight-forward applications of retrieving information that is stated explicitly in a text.

Conceptual (C)
This dimension focuses on the ability of students to apply knowledge and conceptual understanding to solve problems. In Math, questions that may have intrinsic elements of comprehension, interpretation, reasoning, logic, etc. will fall under this dimension. In Language, this dimension includes the ability of students to use words appropriate to context, comprehend beyond stated facts in a variety of materials such as narrative, authentic, etc.

Analytical Thinking (A)
In math, analytical thinking goes beyond the solution of routine problems to encompass complex situations, contexts and multi-step problems. It involves a methodical step-by-step approach to thinking that allows you to break down complex problems into single and manageable components.

Creativity (C)
In language, questions on creativity checks for student ability to think creatively on given contexts and use language as a vehicle to express their thoughts in writing.
Given below are some examples of questions and question types that check the different cognitive dimensions described above.

Given below are sample CSSL questions that are used in large scale assessments in India:

A. Questions that check for learning that is straightforward or text-bookish

Class 5 (Language)
Cognitive Domain - Procedural

Which of the following is the correctly spelt word?

A. plesant

B. plasent

C. plecent

D. pleasant

The question checks if students can identify the correct spelling of a word

Class 5 (Language)
Cognitive Domain - Procedural

My best friend moved to a different town, and now we _____ see each other.

Which word will complete the sentence suitably?

A. yet

B. ever

C. lately

D. hardly

The question checks if students can complete the sentence using the correct adverb based on the given context clues

Class 4 (Maths)
Cognitive Domain - Procedural

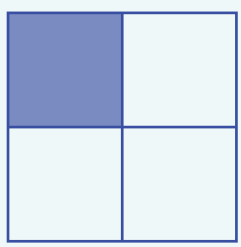
What part of the shape given below is shaded?

A. 1/2

B. 1/3

C. 1/4

D. 3/4



The question checks if students can identify the correct spelling of a word

Class 7 (Maths)
Cognitive Domain - Procedural

Read the graph shown and answer the following question.

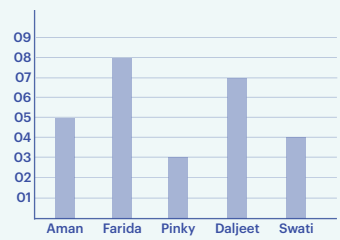
Who has got exactly four more books than Pinky?

A. Aman

B. Farida

C. Swati

D. Daljeet



The question checks if students can complete the sentence using the correct adverb based on the given context clues

B. Questions that check for deeper understanding of concepts

Class 5 (Language)
Cognitive Domain - Conceptual

Passage Excerpt:

"Have you heard the good news?" said the Fox.
"What news?" asked the rooster curiously.
"All animals have agreed to live in peace and friendship. From now on, no animal will kill or eat another."
"Really? Will lions and tigers agree to eat leaves and grass?" asked the rooster.
"If you don't believe me, let's go together and ask them," said the fox.
For a moment the rooster thought about it. But he made no effort to go down the tree.
"What are you waiting for?" the fox called out anxiously. ...

Why was the fox anxious?

A. because the rooster was not believing him

B. because he wanted to go quickly to the lions and tigers

C. because he had forgotten about an important work

D. because the wild dogs were approaching them

Class 9 (Language)
Cognitive Domain - Conceptual

Passage Excerpt:

At a gathering, a group of people were discussing what qualities a good mango should have. The famous poet, Mirza Ghalib said, "There are only two points, they should be sweet and they should be plentiful." ...

What could possibly be the reason for Mirza Ghalib to specify 'plentiful' as a quality for good mangoes?

A. because only few of them will finally become sweet when ripe

B. because the farmers can then sell them throughout the year

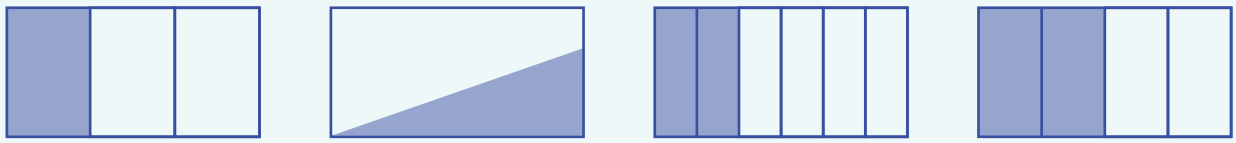
C. because it should be easily available for everyone who wants it

D. because the King prefers only the ones that are available in abundance

The two sample questions given above check for student's comprehension of unstated information that is implied by reading between the lines and connecting ideas given in different lines.

Class 4 (Maths)
Cognitive Domain - Conceptual

Which of the following shapes is 1/2 shaded?



a. b. c. d.

This question checks how deeply the students understand the concept of fractions and if they can identify the shape that is ½ shaded when two out of four equal parts are shaded.

C. Questions that check for reasoning ability

Class 5 (Language)
Cognitive Domain - Conceptual

Mother told Gauri, "Go to the shop and buy apples. If there are no apples, buy bananas."
Gauri went to the shop and came back with apples.

What can be definitely concluded from the situation above?

A. The shop had apples, but not bananas.

B. The shop had both apples and bananas.

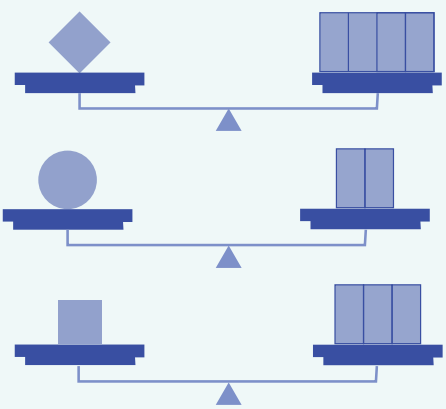
C. The shop did not have either apples or bananas.

D. The shop had apples, but nothing can be said about bananas.

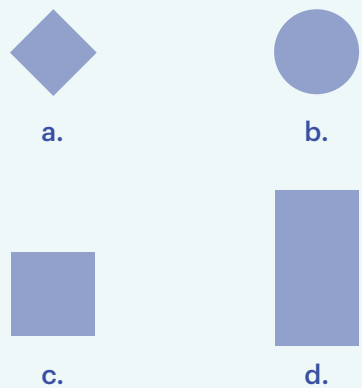
This question checks if students can reason and come to conclusion about why Gauri bought apples and not bananas from the explicit and implicit information provided.

Class 6 (Maths)
Cognitive Domain - Conceptual

Look at the picture below.



Which object is the heaviest?



a. b. c. d.

This question checks if students can reason and conclude about the object that is the heaviest.

D. Questions that check for application of concepts

Class 8 (Maths)
Cognitive Domain - Conceptual

For every step I take, my friend takes two steps. My friend's step is half as long as mine.

If I travel a distance of 'x' metres, how much does my friend travel?

A. x

B. x/2

C. 2x

D. x + 2

This question checks if students can apply the concepts of LCM to solve a problem in a real-life context.

Class 7 (Maths)
Cognitive Domain - Conceptual

Seeta goes to market every 6th day and Geeta goes to market every 7th day.

If Seeta and Geeta both went to market today, after how many days will they go to the market on the same day again?

A. 13 days

B. 21 days

C. 35 days

D. 42 days

This question checks if students can apply the concepts of LCM to solve a problem in a real-life context.context.

Class 7 (Maths)
Cognitive Domain - Conceptual

Raju maintains a record of the ice-creams that he sells every week using pictographs. The graph that he drew for the last week's sales is given below.

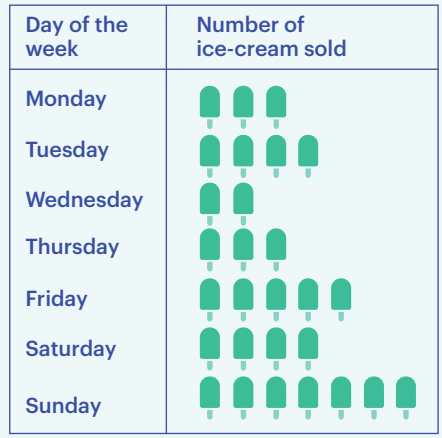
He forgot to write the scale used by him, but he remembers that he sold 15 ice-creams on Monday. What is the number of ice-creams sold by him on Friday?

A. 5

B. 15

C. 20

D. 25

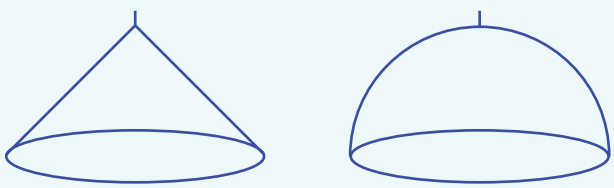


This question checks if students can identify the scale of the pictograph based on the information given and then answer the question.

E. Questions that check for the ability to handle complex situations and concepts

Class 10 (Maths)
Cognitive Domain - Analytical

Sonam has a conical candle of height 4.32 cm and radius of base 10 cm. She melts it and uses all the wax to make another candle in the shape of a hemisphere.



Height = 4.32 cm
Radius of base = 10 cm

Radius = ?

What will be the radius of the hemispherical candle?

A. 5 cm

B. 6 cm

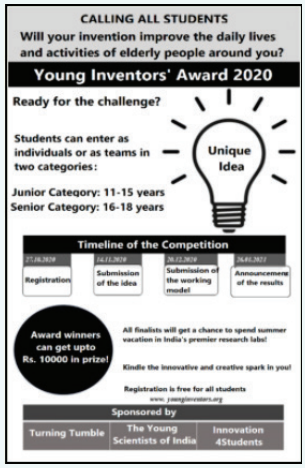
C. 9 cm

D. 122 cm

This question checks if students can analyse the given situation as conservation of volume of solids and apply the concepts of volume of cone and hemisphere to solve it.

F. Questions that check for comprehension of authentic material

Class 8 (Language)
Cognitive Domain - Procedural



What benefit are all finalists likely to get in the competition?

A. They will get a cash prize.

B. They will get help in selling their invention

C. They will get a free chance to participate next year as well

D. They will get to share and sharpen their ideas with senior scientists

This question checks if students can analyse the given situation as conservation of volume of solids and apply the concepts of volume of cone and hemisphere to solve it.

Class 8 (Language)
Cognitive Domain - Conceptual

Raju maintains a record of the ice-creams that he sells every week using pictographs. The graph that he drew for the last week's sales is given below.

Name (Age)	Type (Category)	Invention	Functions	Useful to
Aravind (16) & Neeraja (16)	Senior - Team	Intelligent Walking Stick	Emergency alarm, fall detector & automatic torch	Elderly & Visually Challenged
Pradeep (11)	Junior - Individual	Solar Powered Seed Drill	Planting of seeds of different sizes at different depths	Poor Farmers
Supriya (12)	Junior - Individual	Mobie Home Security System	An alarm system for locking the front door, turning off the lights	All living alone

Among the competitors given in the table above, who is NOT likely to win a prize?

A. Pradeep

B. Supriya

C. Aravind and Neeraja

D. Everyone has a chance to win.

The question tests the ability of the students to understand and internalise the information given in the competition poster.

G. Questions that check for holistic language learning

Class 5 (Language)
Cognitive Domain - Conceptual

Which is the correct sequence of words that will fill the blanks suitably?
(Fall, Horse, misfortune, zameendar)

As a _____ was riding past a poor man's hut, his _____ stumbled and he fell. "I saw your face and fell off the horse. Your face brought me _____! You should be hanged!" shouted the zameendar. "Sir, before you hang me, consider this - by seeing my face you only suffered a _____, by seeing yours, I'm going to die!" said the poor man.

A. horse - zameendar - fall - misfortune

B. zameendar - horse - fall - misfortune

C. horse - zameendar - misfortune - fall

D. zameendar - horse - misfortune - fall

Cloze items are considered as holistic items to test language learning. In addition to general reading and language skills, a cloze test item requires abilities such as – knowledge of vocabulary, attention to nearer and farther context, knowledge of collocation and colligation and flexibility as to word and context interchangeability. The question given above is a guided cloze question which require students to recognise the correct word to fit in the blanks. The answer choices need not only fit in each blank appropriately, but the choice of all words must complete the passage meaningfully.

H. Questions that check for creative writing ability

Class 4 (Language)
Cognitive Domain - Creativity

This question checks if students can engage in creative writing by forming meaningful sentences that describe and fit the narration of the picture.

Class 10 (Language)

Passage Excerpt:

The Principal of Vidya Niketan school received the following letters from two concerned parents, after announcing the school's policy to introduce school uniform compulsorily from class 2 onwards. Read the two letters and answer the questions below.

Letter A

Dear Principal,
As a concerned parent, I strongly support the school's new policy to introduce school uniforms. It is well known that uniforms make sure that the students focus on their educations, not their clothes or what their friends are wearing. Children may argue and find it restrictive, but it saves both the parents and the teachers a valuable amount of time too...
Sincerely,
Mrs. Arora

Letter B

Dear Principal,
As a concerned parent, I strongly support the school's new policy to introduce school uniforms. It is well known that uniforms make sure that the students focus on their educations, not their clothes or what their friends are wearing. Children may argue and find it restrictive, but it saves both the parents and the teachers a valuable amount of time too...
Sincerely,
Mrs. Arora

Which of the two letters do you agree with? Explain your reason using the arguments in the letter, but in your own words.

This question checks if students can explain point of view of the writer by referring to the content of one or both letters in their own words.

I. Questions that are international equivalents (e.g., PISA)

Class 10 (Maths)
PISA ITEM LEVEL - 4

International Calling

Aditi (staying in Amsterdam, Netherlands) and Anu (staying in Delhi, India) often communicate with each other on phone. To find a suitable time to call, Aditi looked up a chart of world times and found the following:

Greenwich
12 midnight

Amsterdam
1:00 AM

Delhi
5:30 AM

Aditi and Anu are not able to call each other between 8:00 AM to 2:00 PM their local time, as they have to go to school. Also, from 11.00 PM till 7:00 AM their local time they cannot call each other because they will be sleeping.

When would be a good time for Aditi and Anu to talk? Write the local times in the table given below.

Place	Time
Delhi	
Amsterdam	

This question tests if students can conclude the best time to call based on given restrictions.

Anu's friend Abha stays in Wellington, New Zealand. Wellington is 13 hours ahead of Greenwich mean time, that is if it is 12 midnight in Greenwich, the time in Wellington will be 1 PM.

At 9 AM in Delhi, what will be the time in Wellington?

Answer: _____

This question tests if students can find the time in one city when the time in another city and the time difference is given.

APPENDIX 7

Defining **Grade Level Competency**

The definition of grade level can vary across assessments and assessment partners. Some believe the right method to use is a test instrument consisting only of grade-appropriate questions, covering a majority of the syllabus, and setting a benchmark of 70-80 per cent accuracy or higher. Others believe that for a country like India, where majority of the students in government schools are first generation learners, the ability to measure progress over time is critical. Having a high benchmark with low initial learning levels may not allow for that analysis. Thus, another way of determining grade level is to conduct a pre-assessment benchmarking round where the norm of the population is calculated and used alongside the theoretical benchmark to create the cut-off for grade level.

It is important to note that grade-level is an artificial construct we use to differentiate and, therefore, act on student learning levels. Therefore, a child who tests below grade-level on an assessment may still excel at certain topics or skills but, his/her cumulative performance is below the defined expectation. The question that then arises is how to determine where the grade-level marker sits. Many students in government schools are first generation learners who get minimal or no augmentation at home and the current curriculum design does not take this into account. Therefore, a criterion referenced grade-level becomes a bar that is too high and demotivating for students, teachers and the system alike. Instead, taking a nudge approach and setting growth targets that are more attuned to current learning levels (norm-referenced), but aspirational in terms of gain expected in one academic year are more meaningful, actionable and proven to actually deliver growth in learning outcomes.

To arrive at a norm-reference, a benchmark test is conducted to measure current performance levels in the state. This performance is treated as the norm-reference and is usually significantly behind the expected learning levels. A panel of State Council of Educational Research and Training (SCERT) experts are then asked to review the test instrument to understand grade-level as per the curriculum expectations (criterion reference). CGI uses a combination of data analytics and item response theory to set stretch targets that are possible to achieve in an academic year, which may or may not match the criterion reference. The idea is to develop a 'growth mindset' and focus on continuous improvement, rather than making a judgement based on a reference that is not designed for the existing student population in the state.