



Enhancing Human Potential: Learning and Measuring What Matters

*Harvard GSE Applied Learning Expo 2020-21
Virtual Meeting, August 8, 2020*



Presenter: Vyjayanthi Sankar

About...

Founder & Executive Director (2015-Present) Centre for Science of Student Learning

Fulbright Humphrey Fellow (2013-14) and Ashoka Fellow (2015-16)

Founder & Vice President (2003-14) Educational Initiatives' Large Scale Assessment Division

South Asia's Leading Assessment Specialist

140 Large Scale Assessment Whole Country Reform projects in India, Bhutan, Maldives, South Asia

Advisory Board Member – NCERT, SSA Mission – MHRD – Govt. of India

Advise 21 National Governments in Eastern and Southern Africa - UNICEF ESARO, Brookings, The World Bank

Partners: Harvard University, University of Newcastle, World Bank, UNICEF, Unesco, Google, Michael Susan and Dell foundation, USAID, FICCI, Hewlett Foundation, MacArthur Foundation, McKinsey, Naandi Foundation, Room to Read, Govt of India, several State Governments in India, Royal Govt of Bhutan, Govt. of Maldives, corporate CSR and NGOs

Expertise: Diagnostic student assessments, Impact Assessments, Teacher Assessments, Psychometrics (IRT), Capacity building, Research - Curriculum, Pedagogy and How Children Learn, Social and Emotional Learning

Who we are

“South Asia’s Leading Assessment Specialists”

- Founding team pioneered large scale assessments and bring in **experience of more than 140 large scale assessment projects** across South Asia and **tested 15+ million children**
- Members represented on senior **Central and State Govt. Committees**
- Our team includes members from IITs, IIMs, **leading universities** internationally and India’s top colleges
- Most members have **hands on teaching or research experience**

Our Board



Vyjayanthi Sankar
Founder/Executive Director, CSSL

Ashoka Fellow,
Fulbright Humphrey Fellow



Hoi K Suen
Distinguished Prof. Emeritus
(Educational Psychology)

Advisory Board, CSSL



Geeta Gandhi Kingdon
Professor
University of London

Advisory Board, CSSL



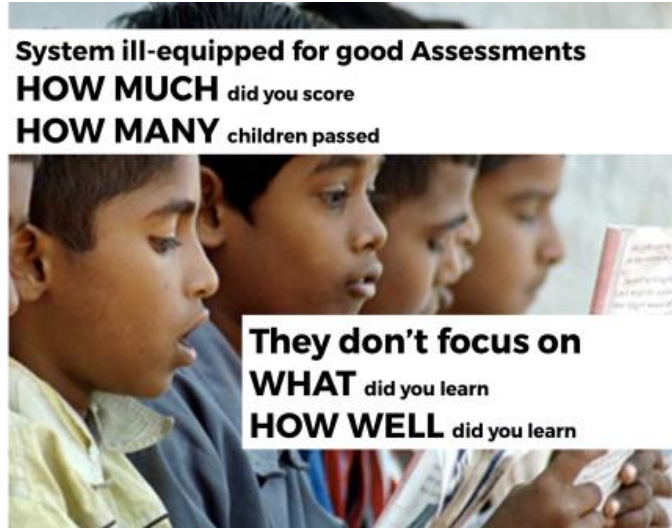
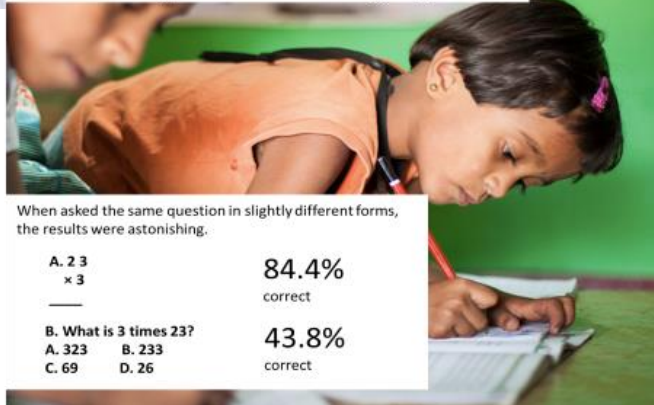
Amita Chudgar
Associate Professor
Michigan State University

Advisory Board, CSSL

What drives us



And.. they are learning by rote.



No Institution in India that trains and certifies for Educational Measurement or Research into Science of Learning

YET

Lots of Testing

- Board Exams - 31 State Boards and 3 National Boards
- More than 100 entrance exams for admissions to Tertiary Education
- All states carry out large scale learning achievement surveys

21st Century

Not only are we going to be working differently, we do need to be smart in a different way.

- “One suicide attempted every 3 seconds.” - *Economic Times, 2018.*
- “Mental Depression – Second largest killer in this decade.” - *The Global Report 2020, WHO*
- “9.8 million Teenagers in the age group 13-17 years suffer from mental health disorders” - *YourStory, 2019.*

Our Work

We build Assessment Capacity



Systemic Capacity



Institutional Capacity



Individual Capacity

We Research into the Science of Student Learning



Impact Studies



Cognitive & Affective Learning



Psychometrics Research

We Build Open Source Tools



Test Papers



Question Bank



Data Tools

Some of Our Partners



CENTRAL SQUARE FOUNDATION



Michael & Susan Dell FOUNDATION



EkStep



CENTRE FOR CIVIL SOCIETY



Tata Institute of Social Sciences

PORTICUS

echidna giving

BCG

mda
MAKE A DIFFERENCE



NITI Aayog

(National Institution for Transforming India)
Government of India

THE WORLD BANK

Stakeholder Recognition

CSSL awarded by the President of India for Ashoka as one of the 12 ideas that could change India.



ONLY assessment organisation selected by MoE for building capacity

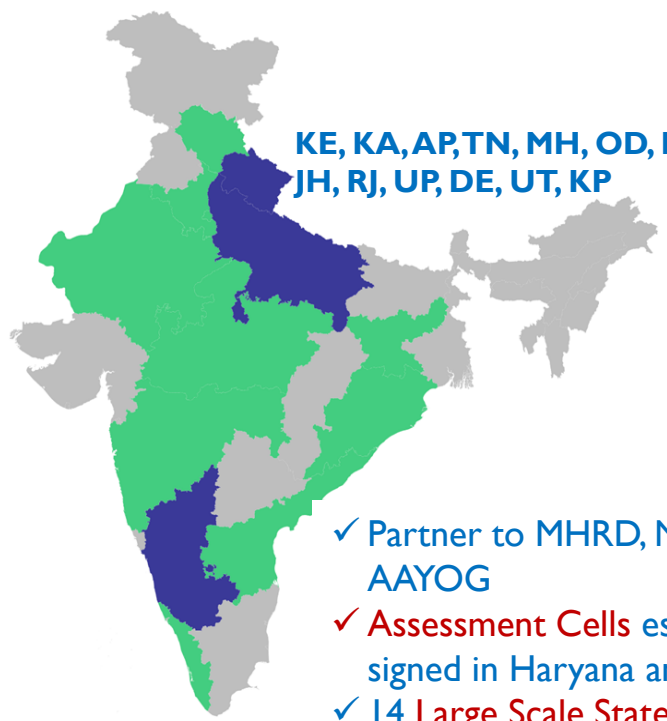
Considered as one of the 5 key lessons on system reform by Niti Aayog

Education reform needs a systematic approach
Academic interventions like competence-linked teaching, learning and assessments need to be accompanied by an overhaul of the existing governance structures.
ANALYSIS Updated: Mar 26, 2019 07:45 IST
frit
Amalish Kari

A photograph showing a group of young children in a classroom, some sitting on the floor and some at desks, engaged in reading books.

To effect a large-scale transformation in education, what is needed is a comprehensive approach to coordinate academic and administrative change.(HT File Photo)

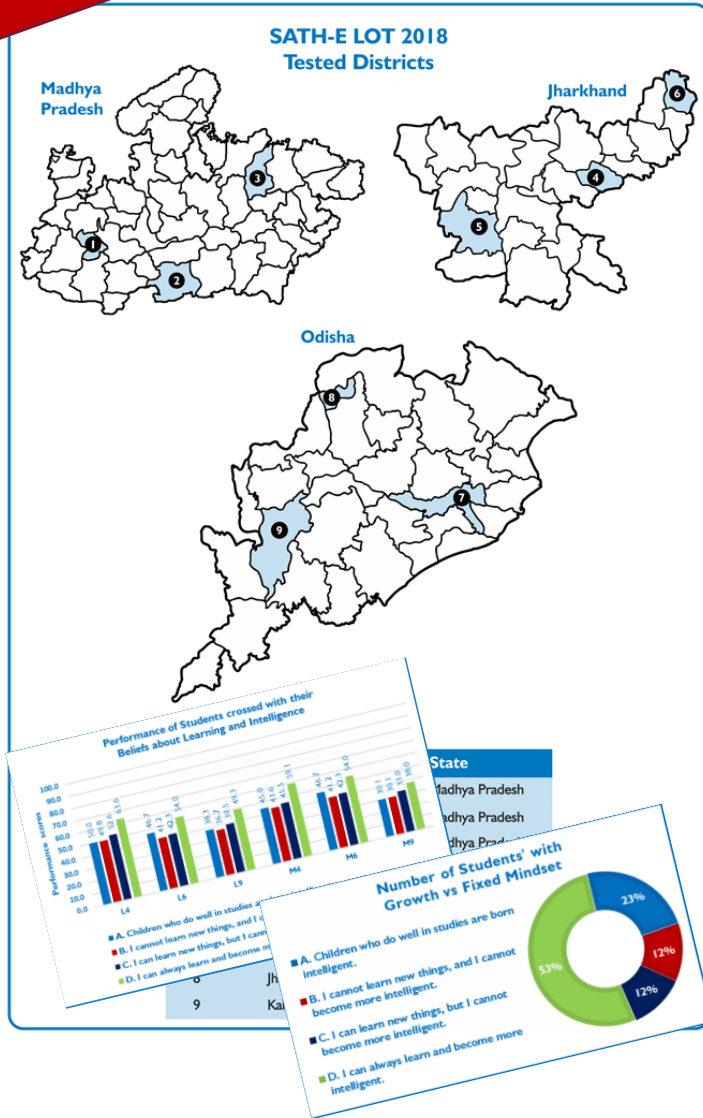
Our Reach 2016-20



KE, KA, AP, TN, MH, OD, MP, JH, RJ, UP, DE, UT, KP

- ✓ Partner to MHRD, NCERT, NCTE, NITI AAYOG
- ✓ **Assessment Cells** established in AP, signed in Haryana and in bid in MP
- ✓ **14 Large Scale State Assessments**
- ✓ **17 Interventions Assessed for Impact**
- ✓ **India's First Standard Setting Workshop**
- ✓ **50+ Capacity Building Workshops: 10 states**
- ✓ **3500+ Teachers Trained**
- ✓ **1.2 lakh Teacher Assessments**
- ✓ **24+ Lakh Student Tests**

Some of Our Key Projects



- Measurement of Learning Outcomes in 9 districts across the 3 SATH-E states for NITI Aayog and The World Bank
- Carried out entirely independently end to end by a single external agency (probably the biggest of its kind in India - with testing on same day using external evaluators)
- Tests for Classes 4, 6 and 9 - Language and Maths - Hindi and Odia Versions
- Extensive Coverage: 64445 students from 3394 Government schools
- Scientifically Designed Testing Cycle - Specially Assembled Test Papers, Full Length, Jumbled Test Forms
- Background Questions
- Test Administration by CSSL's specially Trained External Evaluators
- Scale Anchoring: Knowledge and Ability Benchmarks for the first time for SATH-E states
- Detailed Diagnostic Reports including Misconceptions
- Detailed District Reports for Personalised Action

State Assessment Cells for Improving Learning Outcomes

Assessment Cells in 2 States; 3500 Teachers Trained; 2 Lakh students covered in Sample Assessments; 15 Lakh students in Census Assessments

1

Dedicated In-House Capacity by establishing a 12 - member Assessment Cell and improving quality of all state assessments

2

Build "Assessment Cell" capacity through a **3 Yr International Master's Certification Course** on Large Scale Assessments along with hands-on practice

3

Improve Student Learning Outcomes in the state through yearly State Learning Achievement Surveys and advanced data analytics

3 Year Assessment Cell Certification Course on Large Scale Assessments (Andhra Pradesh)



Innovation/Best Practice

3 Year

Trained through rigorous coursework which is one of its kind globally

ONLY PROGRAMME MHRD SELECTED



Sophisticated course on psychometrics



Content by CSSL, Penn State



Medical College Hospital Model



Elite assessment corp

GyanSetu Certifications for Improving Learning Outcomes

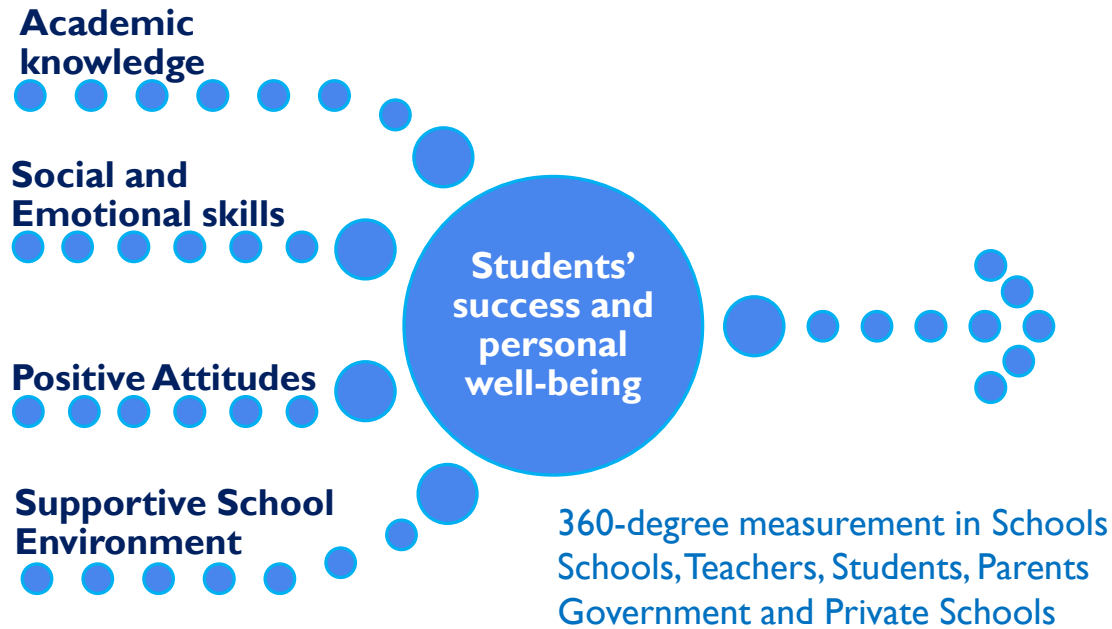


- Learning Enhancement Programme for grades 1-9; Digital MIS – biometric attendance, MDM data, etc.; Tablets for schools and Officials
- Schools certified as Bronze, Silver or Gold based on achievement of learning outcomes
- 40000 schools across ALL 24 districts of Jharkhand
- 300 schools assessed every month
- End to End assessment solution by CSSL
- Awards and Incentives at each level for motivation

Cognitive and Affective Skills Study



Model Based on Research in Science of Learning








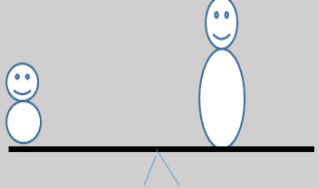
What is Unique?

- Model validated on empirical data 3 States, 5 Metro Cities
- Piloted in India with its complex diversity (e.g., contexts, languages, class)
- Tools in Multiple Languages (English, Hindi, Telugu, Marathi, Odia)
- Has potential for application in a variety of contexts and for **varied stakeholders**
- Brings in Eastern and Western approaches
- Can change the way SEL is thought about worldwide
- If it works in India, can work in most places globally

Do all Assessments Result in Improving Learning Outcomes

- ...not when they are designed mainly for shock value /advocacy
- ...not when they are largely seen as data collection exercise for higher ups
-not when it checks for what was taught and not what was learnt

Teacher meant to test for concept of simple machines but question ended up checking for equality of numbers!

<p>Class 6: Science</p> <p>Balance the SeeSaw.</p> 	<p>Student Answers</p> <p>SAMPLE 1</p>  <p>SAMPLE 2</p>  <p>SAMPLE 3</p> 
<p>Class 6: Science</p> <p>Balance the SeeSaw.</p> 	

Our Approach

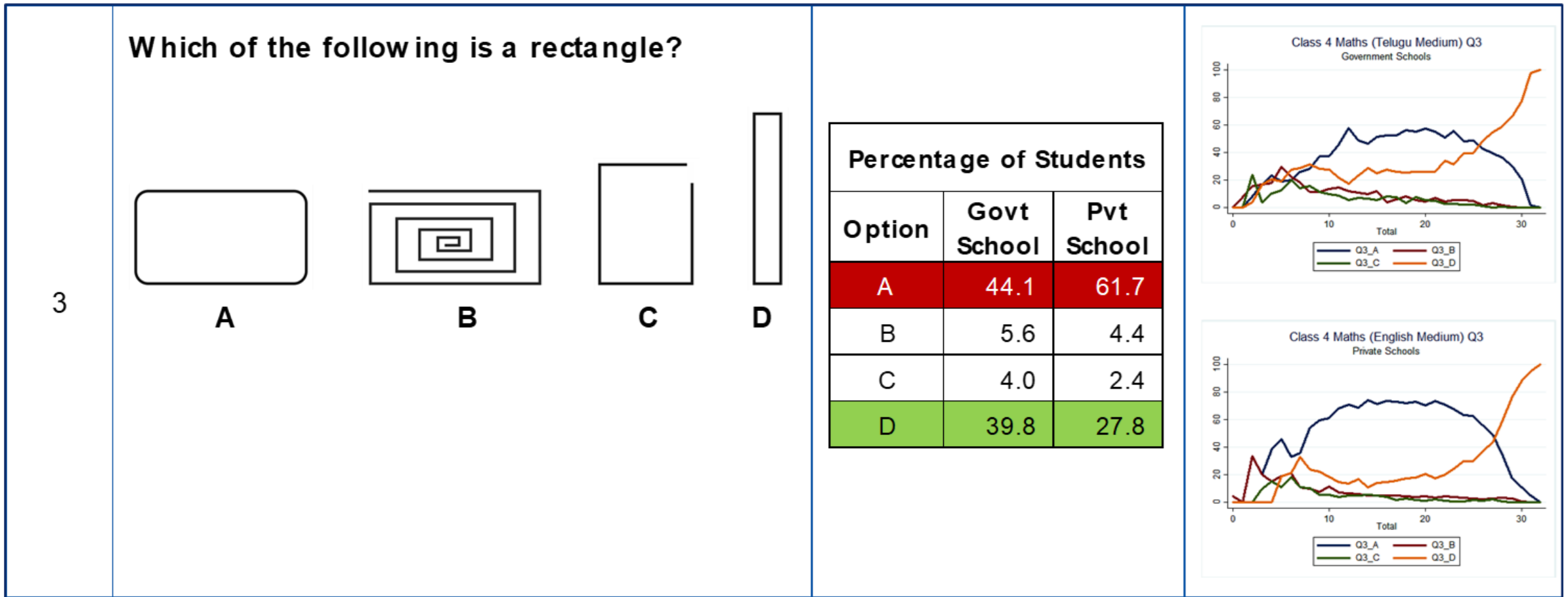
Design for 'Diagnosis' rather than 'Monitoring'



- Pay Attention to Item Design
- Standardised data collection – granularity and quality influences extraction of conclusions for policy
- Feedback loop to curriculum and pedagogy is a must for classroom change
- Analysis has to go beyond averages, scaled scores and ranks for a meaningful change
- Large scale dissemination and actionable targets critical for improvement

Wrong answer more important than right answer

Students harbour certain misconceptions, and make specific common errors which indicate that there may be learning gaps in their understanding of the concepts.



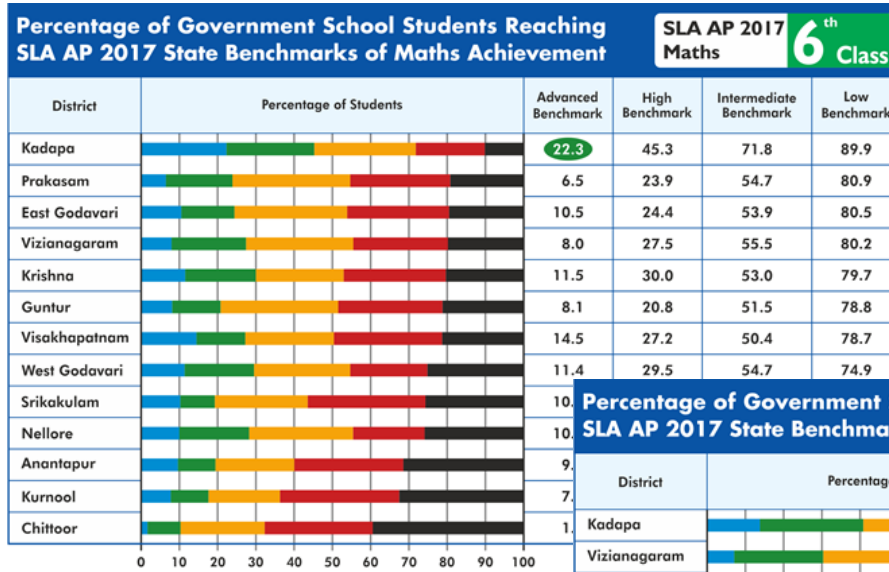
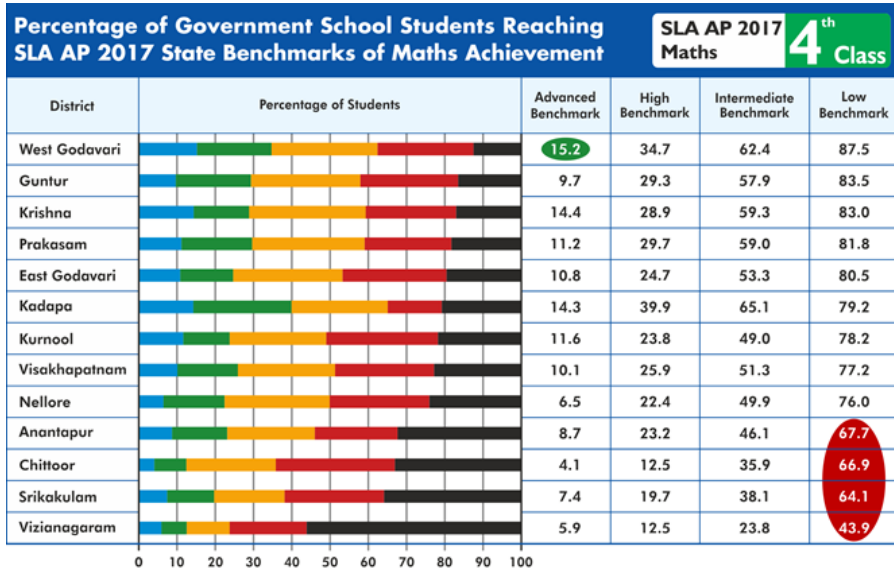
SCALE ANCHORED: KNOWLEDGE & ABILITY BENCHMARKS

○ Informs Curriculum and Pedagogy (teacher training)

Class 9: Language		
<p>Low Benchmark (25th Percentile)</p>	<p>In which year was the Produnova successfully performed first?</p> <p>A. 1980 B. 1999 C. 2012 D. 2013</p>	<p>Upon reading a descriptive passage, students can locate an explicitly-stated fact.</p>
<p>Intermediate Benchmark (50th Percentile)</p>	<p>What is the reason for Dipa's success?</p> <p>A. she did not have an opponent B. the guidance from other gymnasts C. she was lucky as it was her first attempt D. her determination to do the vault</p>	<p>Upon reading a descriptive passage, students can draw an inference requiring analysis of information given in the passage.</p>
<p>High Benchmark (75th Percentile)</p>	<p>What is the most important criteria for the gymnast to complete the Produnova?</p> <p>A. to land on both feet B. to complete it in shorter time than others C. to be graceful and artistic while doing it D. to do the vault in the first attempt</p>	<p>Upon reading a descriptive passage, students can make connections and identify a fact that is not explicitly stated in the passage.</p>
<p>Advanced Benchmark (90th Percentile)</p>	<p>Produnova is called the 'Vault of Death' because _____.</p> <p>A. many gymnasts have died attempting it B. its high score puts an end to failure C. it can break a gymnast's neck or back D. an Egyptian nearly died performing it</p>	<p>Upon reading a descriptive passage, students are able to arrive at an idea by forging connections between causes and effects.</p>

Class 4: Concept of Addition and its Associated Concepts		
<p>Low Benchmark (25th Percentile)</p>	<p>Find the answer.</p> $\begin{array}{r} 46 \\ + 37 \\ \hline \end{array}$ <p>A. 73 B. 83 C. 713</p>	<p>Students can add 2-digit numbers vertically with regrouping</p>
<p>Intermediate Benchmark (50th Percentile)</p>	<p>Find the answer.</p> <p>17 + 20 = _____</p> <p>A. 19 B. 27 C. 37 D. 1720</p>	<p>Students can add 2-digit numbers horizontally without regrouping.</p>
<p>High Benchmark (75th Percentile)</p>	<p>Find the answer.</p> <p>496 = _____</p> <p>A. 4 + 9 + 6 B. 40 + 9 + 6 C. 400 + 90 + 6 D. 4000 + 900 + 6</p>	<p>Students can write 3-digit numbers in the expanded form as addition of its hundreds, tens and ones.</p>
<p>Advanced Benchmark (90th Percentile)</p>	<p>Find the answer.</p> <p>3 × 5 = _____</p> <p>A. 3 × 3 × 3 × 3 × 3 B. 3 + 3 + 3 + 3 + 3 C. 5 × 5 × 5 D. 3 + 5</p>	<p>Students can understand multiplication as successive addition of same number.</p>

Scale Anchored: Knowledge & Ability Benchmarks



Scale Anchoring Benchmark (Maths) show that Chittoor, Kurnool, Anantapur has about 40% of students NOT reaching the low benchmark

EXAMPLE OF A LOW BENCHMARK: M9

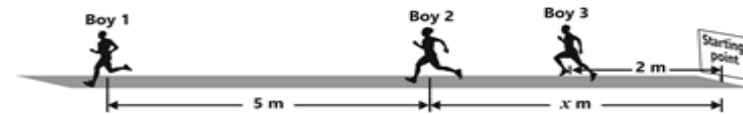
Which integer will make the following sentence true?

_____ $\times -5 = 15$

- A. -75
- B. 75
- C. 3
- D. -3

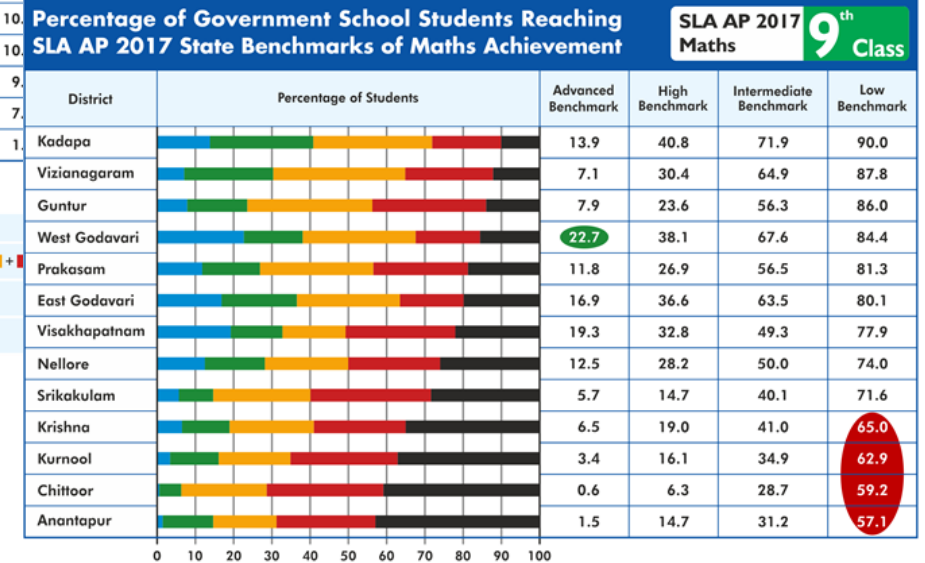
EXAMPLE OF AN ADVANCED BENCHMARK: M9

In a race, the positions of three boys in a given point of time are as shown.



What is the distance between Boy 1 and Boy 3?

- A. $x + 5$
- B. $x + 2 + 5$
- C. $x - 2 + 5$
- D. $5 + 2 - x$



Legend:

- Percentage of students at or above **Advanced** Benchmark.
- + ■ + ■ + ■ Percentage of students at or above **Low** Benchmark.
- + ■ Percentage of students at or above **High** Benchmark.
- Percentage of students **below Low** Benchmark.
- + ■ + ■ Percentage of students at or above **Intermediate** Benchmark.

Actionable Feedback for Different Stakeholders

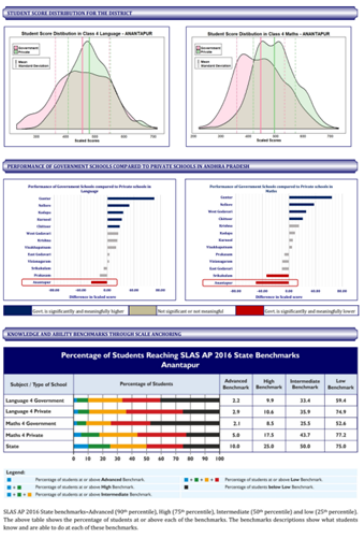
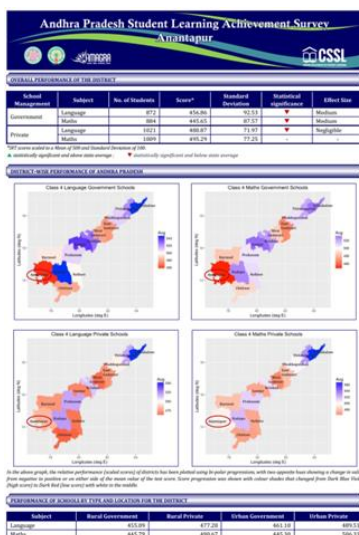
Class Performance - Bird's Eye View of each Student on Every Question

State Report



District Reports

UID	Name	Category	Gender	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Total	Percent
5	AKSHAY S.L	OBC	B	D	/	B	/	A	/	/	/	/	/	/	B	/	/	/	D	D	/	/	A	B	/	C	/	/	15	54
9	ANUSHREYAS	OBC	G	D	/	/	/	A	/	/	/	/	/	/	/	/	/	/	D	/	/	/	/	/	/	B	A	/	20	80
3	ADITHYA.M	GEN	G	/	/	/	/	A	/	/	/	/	/	/	/	/	/	/	A	/	/	/	/	/	/	/	/	23	92	
6	ANAKHA.N	OBC	G	/	/	/	/	B	/	/	/	/	D	A	/	/	A	/	/	B	/	/	/	/	/	C	/	19	76	
10	ARYAS	GEN	G	D	/	/	/	A	/	/	A	/	/	/	/	/	/	/	D	/	B	/	/	/	/	B	A	B	17	68
4	VIJITH.W.R	OBC	B	A	A	/	A	A	/	/	/	/	/	/	/	/	/	/	A	B	B	/	/	/	B	/	/	17	68	
1	ABHIRAMI.M.J.Nair	GEN	G	/	/	/	/	B	/	/	A	/	/	/	/	/	/	/	A	D	/	/	/	/	/	/	/	21	84	
8	ANITHS	SC	B	/	/	/	/	A	/	/	/	/	/	/	/	/	/	/	D	/	/	/	/	/	/	B	A	/	21	84
7	ANANTHU.M.KRISHNA	GEN	B	A	C	B	A	B	/	/	/	/	/	/	B	/	/	/	D	D	D	B	A	B	/	/	C	B	11	44
2	ADITHYA.A	GEN	G	88	/	/	/	B	88	/	A	/	/	/	/	/	/	/	A	D	/	/	/	88	D	/	A	/	15	54
School Average				0.4	0.8	0.8	0.8	0	0.9	1	0.7	1	0.9	0.9	0.8	1	0.9	1	0.1	0.5	0.5	0.9	0.8	0.7	0.8	0.5	0.4	0.8	18	72
State Average				0.6	0.6	0.8	0.8	0.1	0.7	0.7	0.4	0.7	0.6	0.6	0.5	0.6	0.6	0.7	0.4	0.7	0.5	0.5	0.5	0.5	0.6	0.4	0.4	0.5	14	56



Overall School Performance



Skill Performance Report



Question Wise Comparison



About the Roles

Educational Specialist (E,M,S,SS,L)

Background Research, Build Assessment Frameworks, Blueprints, Write Items, Develop Scoring Rubrics, Research Misconceptions, Write Reports

You will know the role will fit you if you have:

- Strong academic fundamentals
- Master's degree in the Subject
- Experience in Data Analysis (e.g., Item Response Theory) will be a desirable (not mandatory)
- Teaching/research experience is desirable
- Passionate about education and understanding how children learn
- Able to think innovatively, likes to read
- Comfortable with internet surfing and usage
- Comfortable with MS- office tools such as MS-Word and MS-Excel
- Good communication skills
- Excellent English written and oral communication is a must
- Working knowledge of a regional language is highly desirable
- Focused on team success and work well in a team environment
- Willingness to learn

SEL Specialist

Research existing literature, measurement tools/inventories, Develop Assessment Frameworks, Blueprints, Write Items, Develop Scoring Rubrics, Analyse Data, Write Reports

You will know the role will fit you if you have:

- Strong academic fundamentals
- Master's degree in the Psychology, Sociology or related fields
- Experience in Data Analysis (e.g., factor analysis, latent class analysis, SEM) will be a desirable (not mandatory)
- Teaching/research experience is desirable
- Passionate about education and understanding how children learn
- Able to think innovatively, likes to read
- Comfortable with internet surfing and usage
- Comfortable with MS- office tools such as MS-Word and MS-Excel
- Good communication skills
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Thank You!

Reach out to me: vyjayanthi.sankar@cssl.in