



Ministry of Education
Government of India

DIKSHA - Learnings from India Experience

India's Ongoing Story of Digital Innovation in Education

Presentation by

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Secretary, Department of School Education and Literacy, Ministry of Education, Government of India

16th December 2021

India K-12 Education System is big, diverse & complex



1.5 Million +
of Schools



20+
**Regional language
as a medium of
instruction**



60+
**Educational boards of
instruction across
country (central &
states)**



260 Million +
**# of Students in
schools**



155 Million +
**# of students in Govt
and aided schools**



95 Million +
**# of students in
private and other
schools**



9.6 Million +
of Teachers

We have clear policies - National Education Policy (NEP) 2020

1

Enhance education system that contributes to an equitable and vibrant knowledge society, by providing high-quality education to all



3

Instils skills, values, and dispositions that support responsible commitment to human rights, sustainable development and living, and global well-being, thereby reflecting a truly global citizen.

2

Develops a deep sense of respect towards the fundamental rights, duties and Constitutional values, bonding with one's country, and a conscious awareness of one's role and responsibilities in a changing world

Which emphasize upon Access, Capability, Quality, Equity & Outcomes



Unique Capabilities

Recognizing, identifying them in each student.



Emphasize Conceptual Understanding

Rather than rote learning and learning-for-exams



Critical thinking and Creativity

To encourage logical decision-making and innovation.



Use of Technology

In teaching and learning, removing language barriers, for Divyang students, and in educational planning and management.

Respect for Diversity & Local Context



In all curriculum, pedagogy, and policy.

Equity & Inclusion



As the cornerstone of all educational decisions

Continuous Review

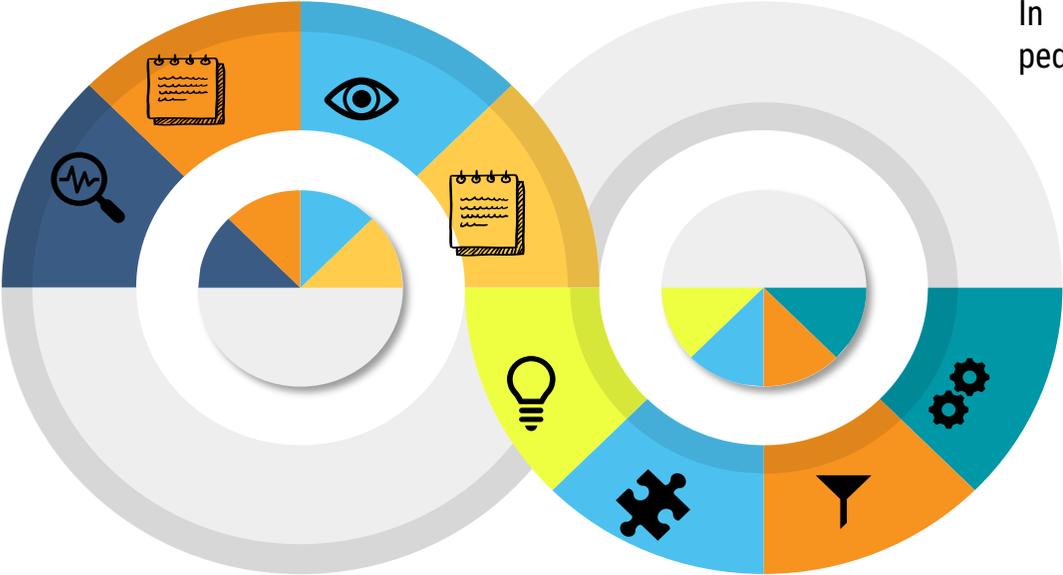


Based on sustained research and regular assessment by educational experts.

Community Participation



Encouragement and facilitation for true philanthropic private and community participation.



To implement these policies, we wanted digital innovations that can work at our scale, diversity & complexity



National Education Policy (NEP) 2020 has multiple provisions for inculcating and promoting digital innovations ... (1/2)



Content creation, digital repository, and dissemination

- Coursework, Learning Games & Simulations, item banks, TPD, virtual labs
- Augmented Reality and Virtual Reality apps,
- Gamification of Indian art and culture



Addressing the digital divide and equity

- Use of television, radio, and community radio;
- Removing language barriers - Content in all Indian languages;
- e-content for disabled students.
- Partial access to devices



Training of teachers

- ICT integrated pedagogy
- How to become high-quality online content creators themselves



Promoting digital learning

- Through different effective models of blended learning

NEP 2020 has multiple provisions for inculcating and promoting digital innovations ... (2/2)



Laying down standards

- Content
- Technology
- Pedagogy for online/digital teaching-learning
- Guidelines for e-learning by States, Boards, schools.



Mathematical and computational thinking

- Starting with the foundational stage itself, through use of puzzles/games
- Activities involving coding will be introduced in Middle Stage.



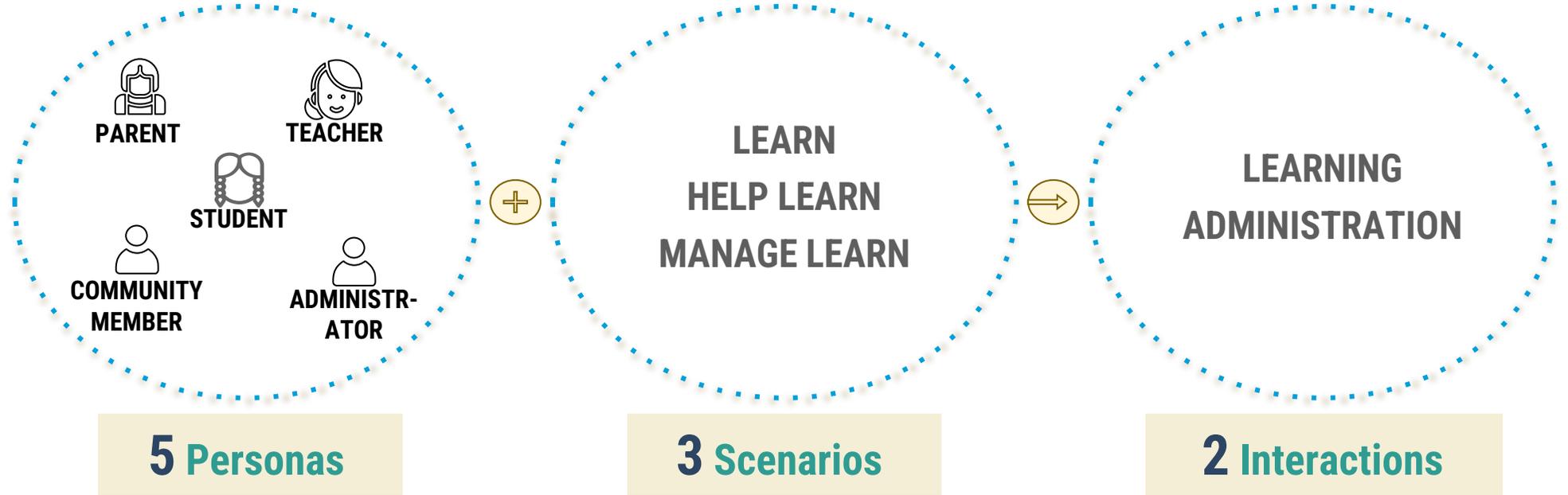
Other special areas for online learning

- Vocational courses
- Teaching of languages, and Knowledge of India
- Rich e-content for gifted children, open school, adult education, e-libraries, virtual/e-museums, etc.

We wanted a plug and play digital infrastructure that could work for all of India, and not just a specific solution



Catering to diverse scenarios and user types



DIKSHA's building blocks were used for multiple use cases with complete sovereign control



1. Energised Textbooks



2. Teacher Professional Development



3. Question Bank



4. Content Sourcing



5. Content Authoring



6. Quizzes



10. Digital Credentials



11. Collaboration



12. Phygital



13. cQube



14. Surveys



15. Language Translations



7. Content Consumption



8. Data Tools & Dashboards



9. Chatbot



16. Mentoring



17. Sunbird Registry and Credentials

Leading to unparalleled usage of the world's largest, most diverse school education platform

4.18 Billion +

Learning Sessions

50.07 Billion +

Learning Minutes



27.8 Billion +

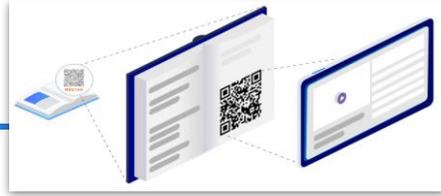
Page Hits

30+

Languages

Resiliency during Covid shock: Multiple programs to continue learning & training

Energized Textbooks (ETB)



Physical Textbooks to 'Phygital' Textbooks

Content Sourcing



Sourcing high quality content in a controlled manner

National Quizzes



Interactive & competitive learning



PM eVidya

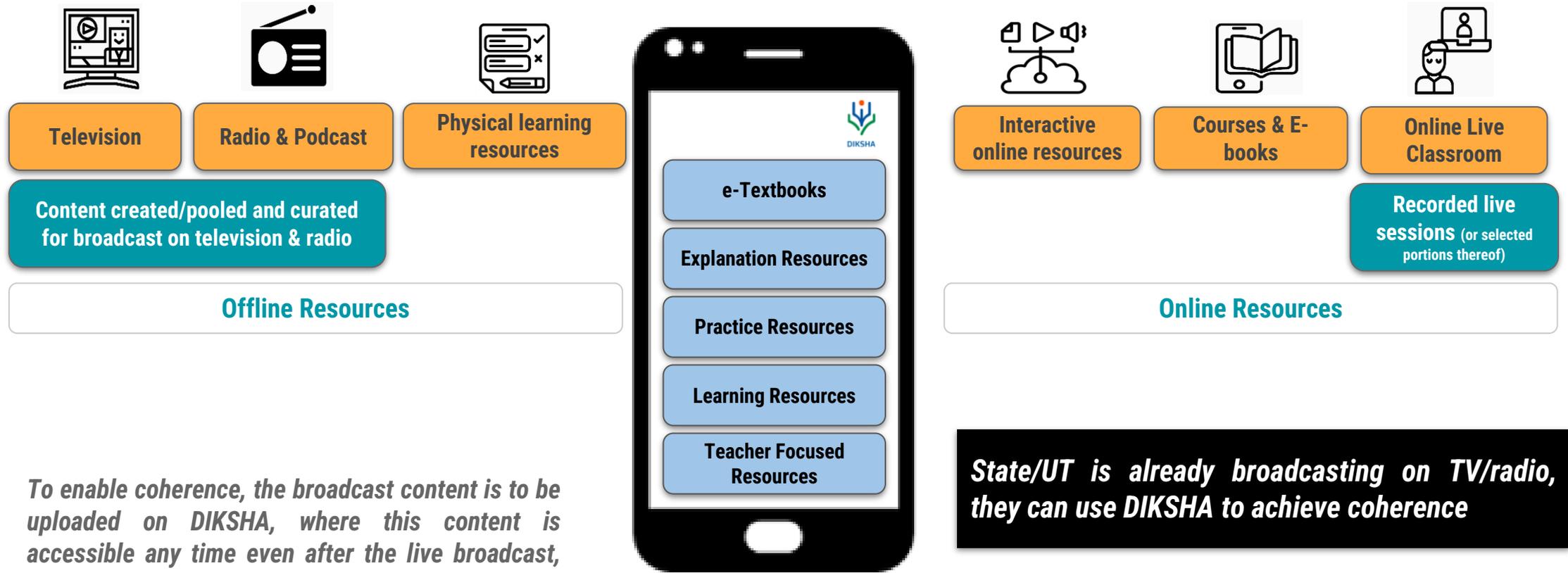
Aims to unify all efforts related to digital/online/on-air education to enable equitable multi-mode access to education



Digital Teacher Training

A nationwide capacity building programme for "Improving Quality of School Education through Integrated Teacher Training"

Coherent Access under PM eVidya program ensures inclusive, equitable access to education for all and also enabled our response to Covid



To enable coherence, the broadcast content is to be uploaded on DIKSHA, where this content is accessible any time even after the live broadcast, along with additional digital resources

State/UT is already broadcasting on TV/radio, they can use DIKSHA to achieve coherence

Bridging of physical and digital worlds by 'energizing' textbooks...



**Instant, relevant, trusted help:
'Energised' textbooks with QR codes**

4,800 +
Energized Textbooks with QR codes on DIKSHA

**600 Million + energized textbooks have
been printed and distributed across the
country**

200 Thousand + diverse contents

180 Million + students

7 Million + teachers

...which lead to ease of access to relevant digital content across the nation and enable continuity of learning

State board, Grade 5th Textbook

ಅಧ್ಯಾಯ - 1
ಗುಣಕಾರ



R1G4B4

ನೀವು ಈ ಅಧ್ಯಾಯದ ಅಧ್ಯಯನದ ನಂತರ ಕೆಳಗಿನ ಸಾಮರ್ಥ್ಯಗಳನ್ನು ಗಳಿಸುವಿರಿ :

- 3-ಅಂಕಿಯ ಎರಡು ಸಂಖ್ಯೆಗಳ ಗುಣಲಬ್ಧವನ್ನು ಕಂಡುಹಿಡಿಯುವುದು.
- 4-ಅಂಕಿಯ ಸಂಖ್ಯೆಯನ್ನು 1 ಅಥವಾ 2 ಅಂಕಿಯ ಸಂಖ್ಯೆಯಿಂದ ಗುಣಿಸುವುದು.
- 5-ಅಂಕಿಯ ಸಂಖ್ಯೆಯನ್ನು 1 ಅಂಕಿಯ ಸಂಖ್ಯೆಯಿಂದ ಗುಣಿಸುವುದು.
- ಗುಣಕಾರ ಕ್ರಿಯೆಯನ್ನು ಆಧರಿಸಿದ ಸಮಸ್ಯೆಗಳನ್ನು ಬಿಡಿಸುವುದು.

ಗುಣಕಾರವು ಗಣಿತದ ಮೂಲ ಕ್ರಿಯೆಗಳಲ್ಲಿ ಒಂದು ಎಂದು ನಮಗೆ ತಿಳಿದಿದೆ. ಗುಣಕಾರವು ಪುನರಾವರ್ತಿತ ಸಂಕಲನ. ಎರಡು ಸಂಖ್ಯೆಗಳನ್ನು ಒಂದೇ ಬಾರಿಗೆ ಗುಣಕಾರ ಮಾಡಬಹುದು. ಗುಣಿಸಲ್ಪಡುವ ಸಂಖ್ಯೆಯನ್ನು 'ಗುಣ್ಯ' ಎಂದು ಮತ್ತು ಗುಣಿಸುವ ಸಂಖ್ಯೆಯನ್ನು 'ಗುಣಕ' ಎಂದು ಕರೆಯುತ್ತೇವೆ. ಈ ಎರಡು ಸಂಖ್ಯೆಗಳ ಗುಣಕಾರದಿಂದ ಪಡೆದ ಸಂಖ್ಯೆಯನ್ನು 'ಗುಣಲಬ್ಧ' ಎಂದು ಕರೆಯುತ್ತೇವೆ.

ಗುಣ್ಯ × ಗುಣಕ = ಗುಣಲಬ್ಧ

ಗುಣಕಾರದ ಗುಣಲಕ್ಷಣಗಳು

- 1) ಯಾವುದಾದರೂ ಒಂದು ಸಂಖ್ಯೆ ಮತ್ತು ಸೊನ್ನೆಯ ಗುಣಲಬ್ಧವು ಯಾವಾಗಲೂ ಸೊನ್ನೆಯಾಗಿರುತ್ತದೆ. ಉದಾ: $12 \times 0 = 0$, $8 \times 0 = 0$
- 2) 1 ಮತ್ತು ಯಾವುದಾದರೂ ಒಂದು ಸಂಖ್ಯೆಯ ಗುಣಲಬ್ಧವು ಯಾವಾಗಲೂ ಅದೇ ಸಂಖ್ಯೆಯಾಗಿರುತ್ತದೆ. ಉದಾ: $9 \times 1 = 9$, $6 \times 1 = 6$
- 3) ಗುಣ್ಯ ಮತ್ತು ಗುಣಕದ ಸ್ಥಾನವನ್ನು ಬದಲಾಯಿಸಿದಾಗಲೂ ಅವುಗಳ ಗುಣಲಬ್ಧವು ಒಂದೇಯಾಗಿರುತ್ತದೆ. ಉದಾ: $4 \times 7 = 28$, $7 \times 4 = 28$.

ಪುನರಾವರ್ತನ ಅಭ್ಯಾಸ

I ಗುಣಲಬ್ಧವನ್ನು ಕಂಡುಹಿಡಿಯಿರಿ.

| | |
|-------------------|---------------------|
| 1) 35×0 | 4) 1×235 |
| 2) 164×1 | 5) $0 \times 1,001$ |
| 3) 100×0 | 6) 1×55 |

1

NCERT, Grade 8th textbook



2

Land, Soil, Water, Natural Vegetation and Wildlife Resources



In a small village in Tanzania, Africa, Mamba gets up very early in the morning to fetch water. She has to walk a long way and returns after a few hours. She then helps her mother in the house and joins her brothers in taking care of their goats. All her family owns is a piece of rocky land around their small hut. Mamba's father can barely grow some maize and beans on it after toiling hard. This is not enough to feed their family for the whole year.

Peter lives in the heart of the sheep rearing region in New Zealand where his family runs a wool processing factory. Everyday when he returns from school, Peter watches his uncle taking care of their sheep. Their sheep yard is situated on a wide grassy plain with hills in the far distance. It is managed in a scientific way using the latest technology. Peter's family also grows vegetables through organic farming.

Mamba and Peter stay in two different parts of the world and lead very different lives. This difference is because of the differences in the quality of land, soil, water, natural vegetation, animals and the usage of technology. The availability of such resources is the main reason places differ from each other.

Let's do

Observe the land, type of soil and water availability in the region you live. Discuss in your class, how it has influenced the lifestyle of people there.

Do you know?

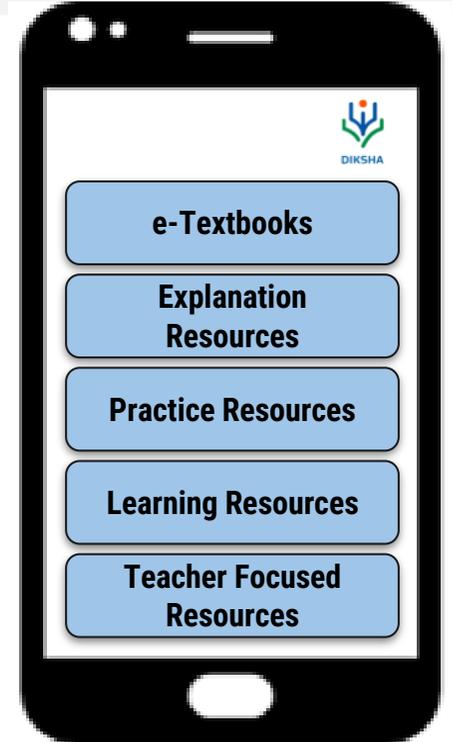
Ninety per cent of the world population occupies only thirty per cent of land area. The remaining seventy per cent of the land is either sparsely populated or uninhabited.

LAND

Land is among the most important natural resources. It covers only about thirty per cent of the total area of the earth's surface and all parts of this small percentage are not habitable.

The uneven distribution of population in different parts of the world is mainly due to varied characteristics

QR Code linking to relevant e-content (student and teacher facing content)



Enabling learning in 30+ languages



Digital Teacher Training has enabled continuity in training of teachers during Covid

18 Modules

Contextualised and translated in 10 regional languages for NISHTHA

3 Months

Program Time v/s Full last year

10+

Languages / Medium of Instructions



2.5 Million +

teachers trained at primary and upper primary level (grades 1-8)

44 Million+

Digital Certificates issued

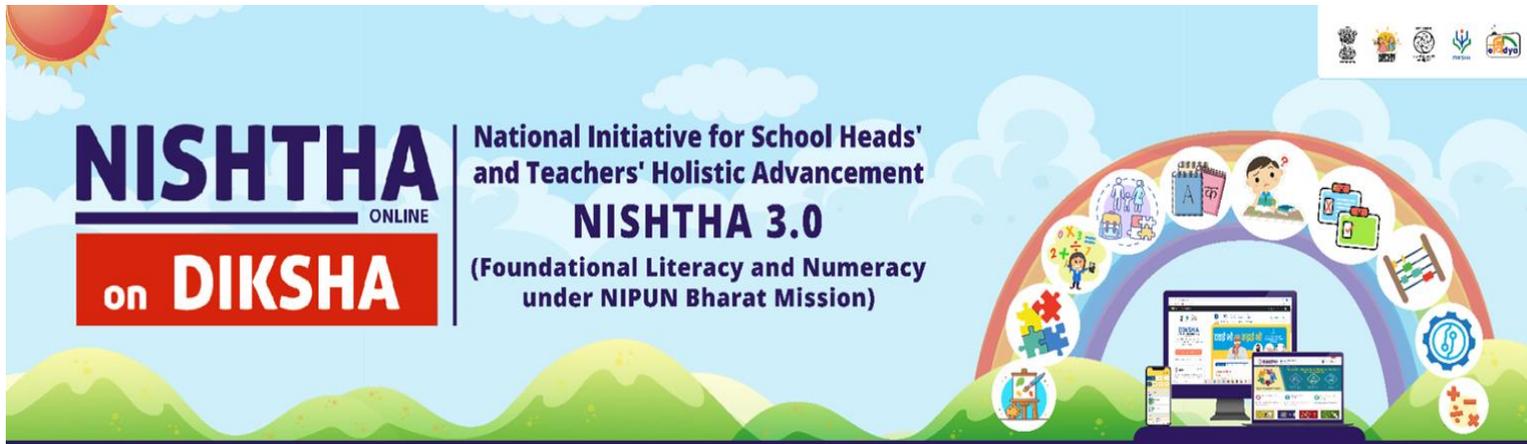
Trained at **5% cost**

and **4x speed**

NISHTHA for Secondary and for Foundational Literacy and Numeracy is ongoing



The banner features a blue background with white icons representing various educational fields. On the right, there are logos for the Government of India, Ministry of Education, DIKSHA, and eGyaan. The text on the left reads: **NISHTHA** ONLINE on **DIKSHA**. To the right of this, it says: National Initiative for School Heads' and Teachers' Holistic Advancement **NISHTHA 2.0** (Secondary Level). On the right side of the banner, there is an illustration of a desktop monitor, a laptop, and a smartphone, all displaying the NISHTHA 2.0 interface.



The banner features a light blue background with a sun, clouds, and green hills. On the right, there are logos for the Government of India, Ministry of Education, DIKSHA, and eGyaan. The text on the left reads: **NISHTHA** ONLINE on **DIKSHA**. To the right of this, it says: National Initiative for School Heads' and Teachers' Holistic Advancement **NISHTHA 3.0** (Foundational Literacy and Numeracy under NIPUN Bharat Mission). On the right side of the banner, there is an illustration of a rainbow arching over a desktop monitor, a laptop, and a smartphone, all displaying the NISHTHA 3.0 interface. Various educational icons like a notebook, a child, a calendar, a first aid kit, a abacus, a gear, and puzzle pieces are scattered around the rainbow.

3.5 Million +

teachers are getting trained at
secondary and FLN level

We also conducted a variety of assessments

5 Questions a Week (5QAW)

The screenshot shows a chemistry assessment interface. On the left, there is a periodic table titled "UNIT - Periodic trends in atomic properties". The table is color-coded by groups and periods. On the right, there is a navigation menu with tabs for "All", "Video", "Interactive", and "Docs". Below the tabs, there is a list of questions for various weeks of the year, such as "All Questions for the 3rd week of December (Science)". At the bottom right, there is a blue "Ask Tara" button with a chatbot icon.

5 questions are shared every week to **enhance higher order competencies of learners and connect learning with real life solutions**

Quizzes on DIKSHA

The screenshot shows a mobile app interface for a quiz challenge. The title is "Aryabhata Ganit Challenge 2020" by CBSE. There is a green "Join course" button. Below it, there is a "Last date to join 19/11/2020" notification. The interface also shows "Course details" and "Course modules" sections. The course is relevant for Class 10, Class 9, and Class 8, with a medium of English. The course end date is 19/11/2020. The app also promotes learning about Indian Mathematicians and practicing math questions.

The banner for the "Discover Gandhi Quiz" is yellow and features a portrait of Mahatma Gandhi. It states "Launched on: 2nd October, 2020" and "The last date to participate in the Discover Gandhi Quiz is extended to 30th January, 2021".

The banner for "KNOW OUR CONSTITUTION A Quiz" is orange and features the Indian national flag and the DIKSHA logo. The text reads "KNOW OUR CONSTITUTION A Quiz".

Quizzes on **joyful mathematics, science, reading comprehension Constitution of India, Yoga, etc.** have been launched on DIKSHA

Quizzes promote **Interactive, engaging and competitive learning**

VidyaDaan - a program to source high quality content in a controlled manner leading to diversity in content

2

Central Organizations (NCERT and CBSE) obtaining content via VidyaDaan



14

States doing VidyaDaan



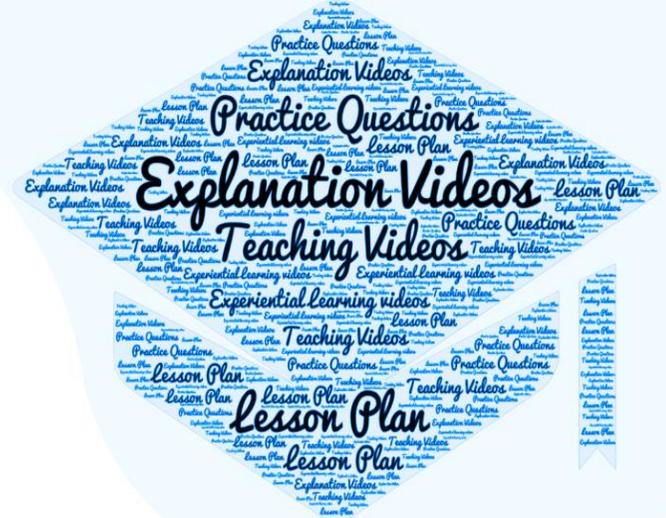
A program of the nation, for the nation and by the nation to ensure continuity of quality learning

38,000+

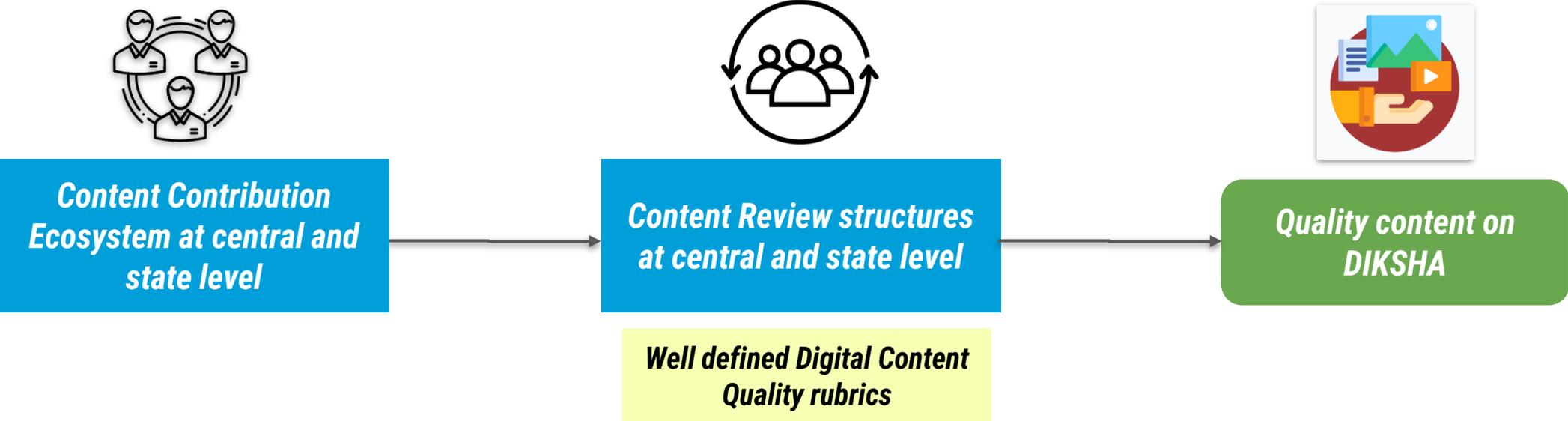
Digital content contributed through VidyaDaan

29,000+

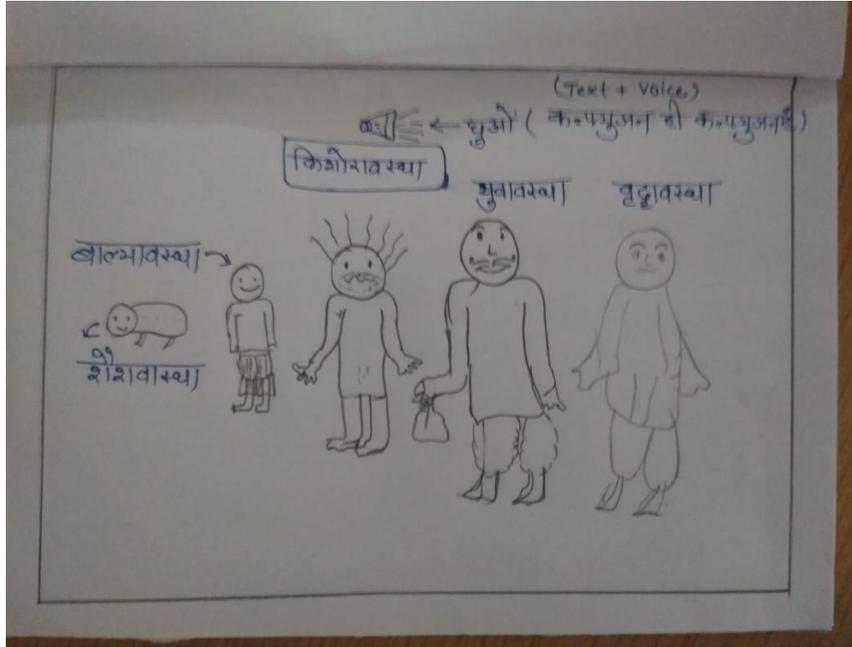
Digital content approved through VidyaDaan



Programs follow a well defined decentralised model of content contribution and review governed by central and state institutional structures to ensure quality



Teachers play a crucial role in content development (1/2)



Journey of a content starts with storyboarding which visualises creator's thoughts



Teachers pledging to pioneer the movement of teacher created content

Teachers play a crucial role in content development (2/2)



Experienced creators coach new content creators to develop digital content

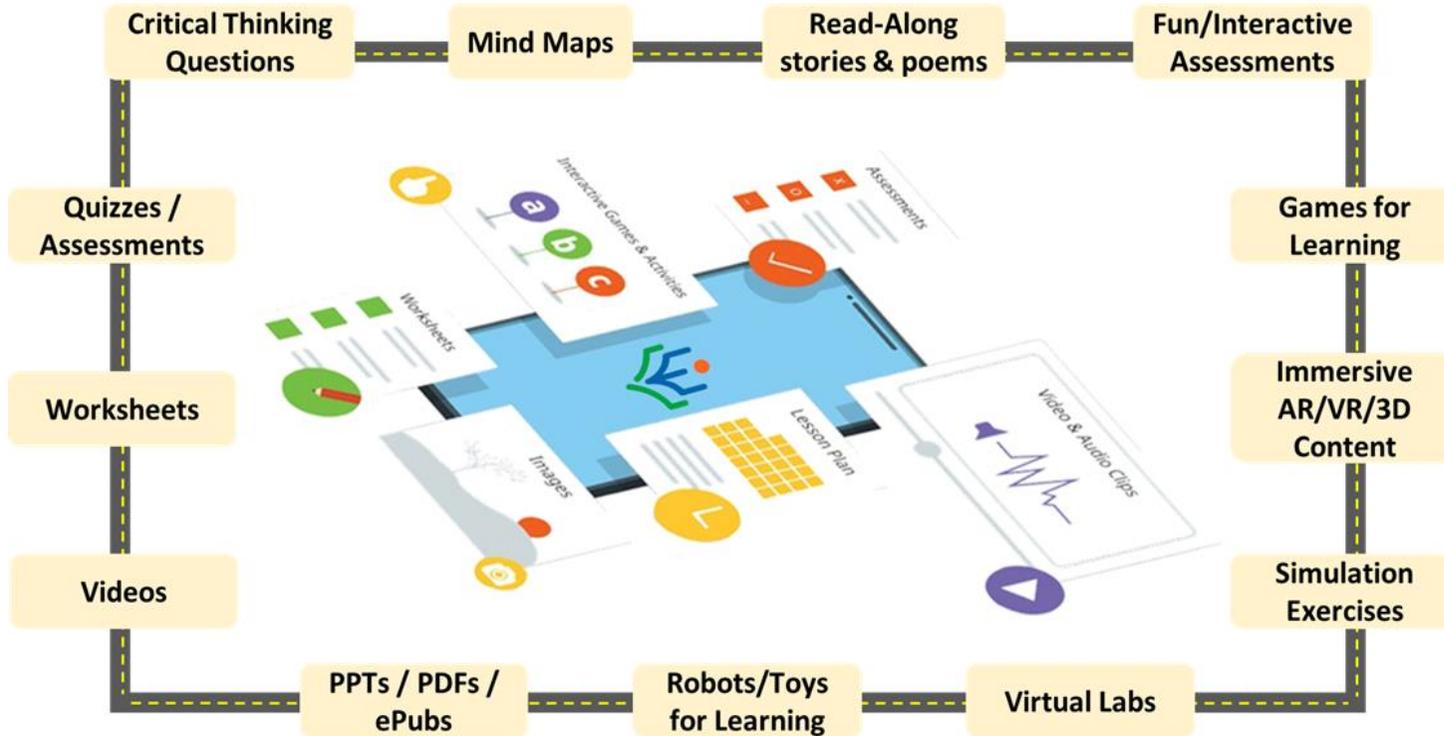


Dedicated subject matter experts thoroughly review the content as per the guidelines



Felicitation of content creators and reviewers for their valuable contribution

Leading to variety & diversity in content



A journey from content to competence

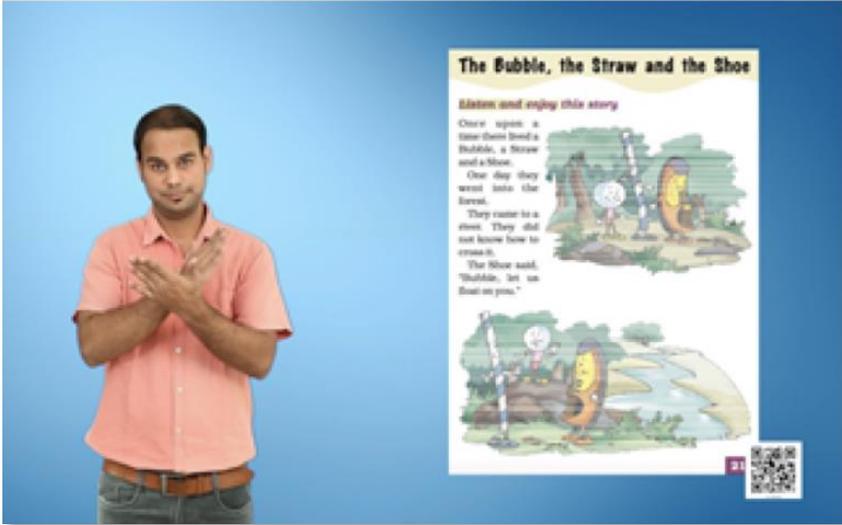
200 Thousand + Contents and Courses

11,000+ Organizations and Individuals contributed

40+ State institutions and Central Organizations

Content is available in 30+ languages

...including content for Children With Special Needs



Content for hearing impaired in sign language



Content for visually impaired in Digital Accessible Information System (DAISY)

DIKSHA is built on free open source platform “SUNBIRD”
‘Made in India’



sunbird.org

github.com/project-sunbird

docs.sunbird.org

Built through collaborative PPP (Public Private Partnership)



Ministry of Education

Government of India

DIKSHA Programme Sponsor

विद्यया ऽ मृतमश्नुते



एन सी ई आर टी
NCERT

DIKSHA Programme Owner



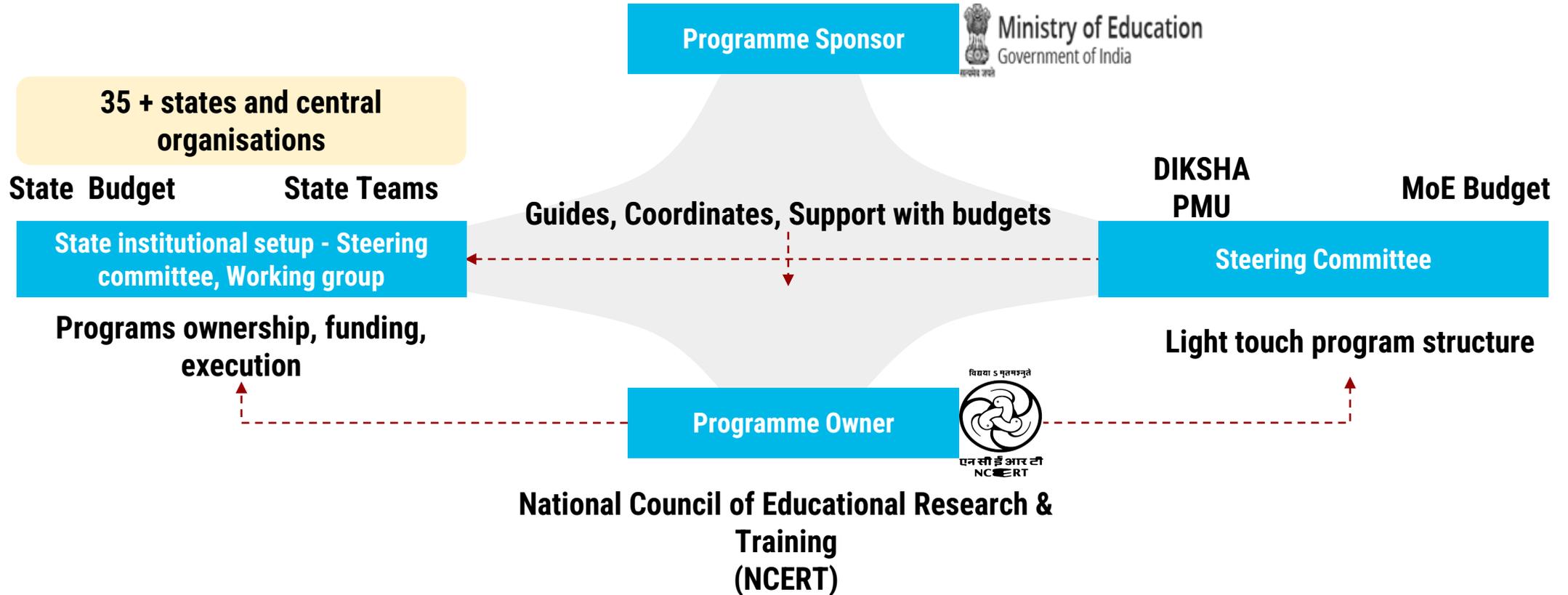
**EkStep Foundation:
Open-Source Technology and Program Management Partner**



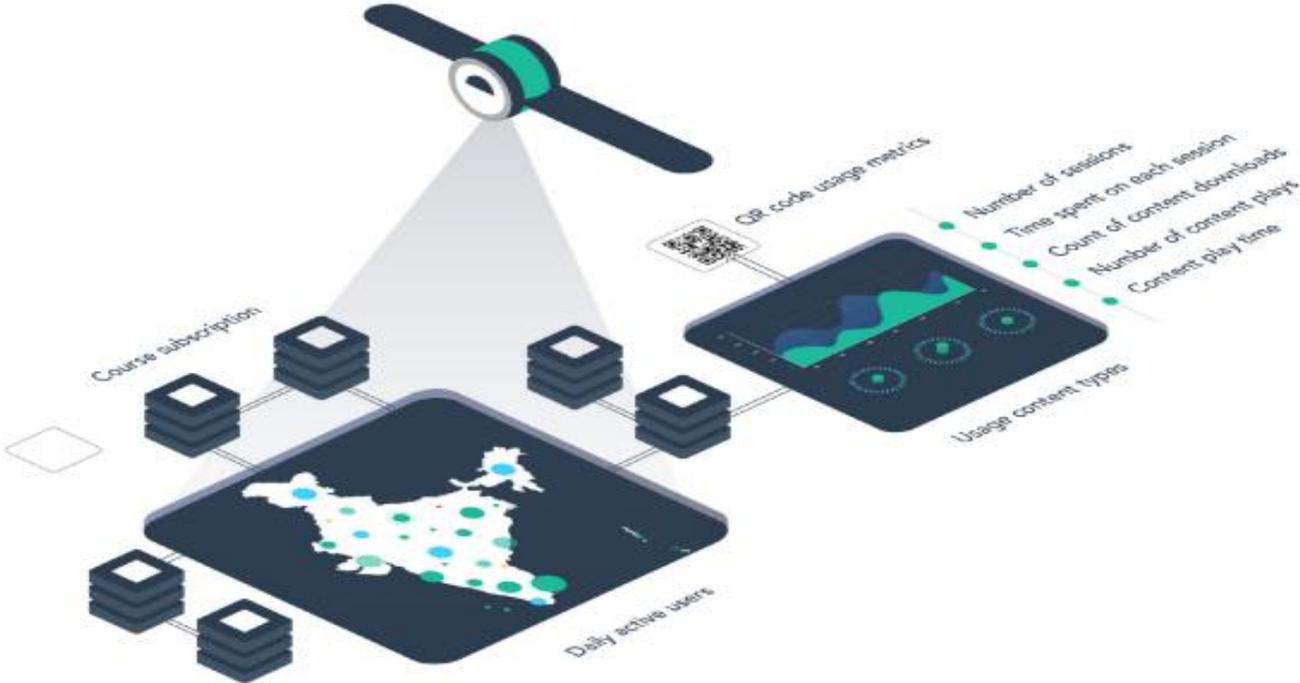
**CENTRAL SQUARE
FOUNDATION**

**Partner to Enable
Implementation**

Implemented through our existing federated and decentralised structure

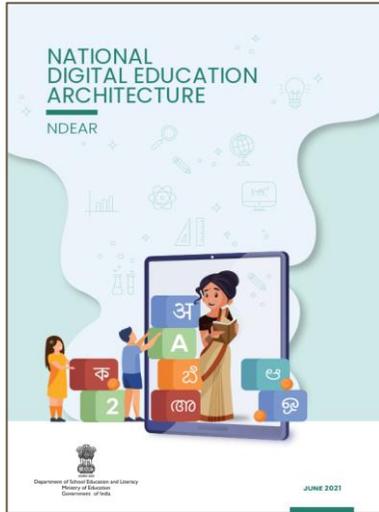


And, helping us see & monitor policy implementation and drive reforms



DATA FROM DIKSHA PROVIDES THE ABILITY TO SEE AND EMPOWER RELEVANT STAKEHOLDERS

India has recently launched NDEAR as policy framework, which provides building blocks, standards for development of federated and interoperable systems



Vision: A globally pioneering effort in education - A unifying national digital infrastructure to **Energise** and **Catalyse** the education ecosystem

NDEAR is federated, unbundled, interoperable, inclusive, accessible and evolving. It aims to create and deliver diverse, relevant, contextual and innovative solutions that benefit **Students, Teachers, Parents, Communities** and **Administrators** and result in timely implementation of policy goods,

DIKSHA has been identified as a Digital Public Good by Government of India

Platform for Digital Public Goods



DIKSHA leverages NDEAR policy framework, building blocks and standards

DIKSHA as Digital Public Good - Areas where Govt. of India can offer help



DIKSHA software code can be easily offered as Digital Public Good to the world.
(<https://diksha.gov.in/help/diksha-oss/>)



DIKSHA programs' open data can be offered as Digital Public Good to the world.



DIKSHA Content can be offered as Digital Public Good to the world.



NDEAR policy framework document, which maps and explains every building block, is available on the website can be offered as Digital Public Good to the world.



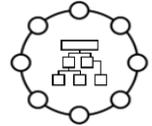
In Summary, here's '*the Recipe*' from our DIKSHA journey

- **Consider your Policies**



- **Take & Tweak** Technology to build/modify sovereign solution(s) as per sovereign control

- **Plug & Play (implement)** in the context of Programs & Budgets with accountability mechanisms & existing institutional structures



- **Measure & Improve** through Data (Ability to See) and navigate reforms to policy destination

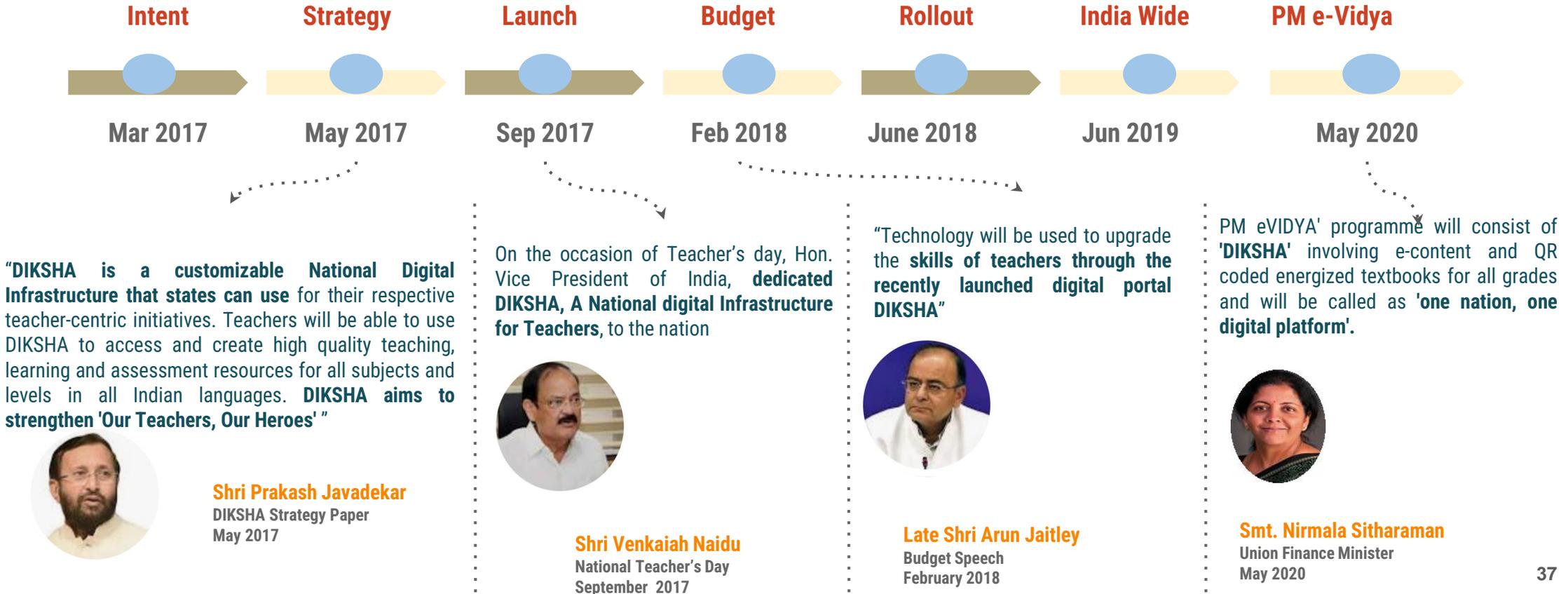
You too can do this- Sovereign programs, Sovereign solutions, Ability to See to help you drive reforms and find your own path to meet your policy objectives

Please contact ncert.diksha@ciet.nic.in for discussion on collaboration



Appendix 1 - DIKSHA & Technology

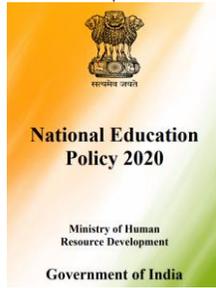
DIKSHA - Journey so far (1/2)



DIKSHA - Journey so far (2/2)

NEP Rollout

July 2020



Extending horizons of DIKSHA in alignment with NEP 2020

NISHTHA on DIKSHA

October 2020



In collaboration with MoE and MeitY, the World Bank conducted the webinar to enable remote learning through state-of-the art digital education platform - DIKSHA, in post-COVID world.

India-Africa Knowledge-sharing Webinar

December 2020

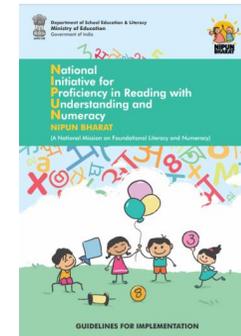


Hon'ble PM interacted with the beneficiaries of DIKSHA during 'Digital India' event and heard about the experiences with DIKSHA App and how it was useful for education during lockdown.

6th Digital India anniversary

1st July 2021

DIKSHA shall be integrated with the new Curriculum Framework by the States/UTs.



NIPUN Bharat Launch

5th July 2021

NDEAR Blueprint Launch

29th July 2021



DIKSHA contains several building blocks that enable and support various use-cases, multiple languages and solutions for teaching and learning

DIKSHA is the “ONE NATION ONE PLATFORM” for School Education

Aatmanirbhar Bharat



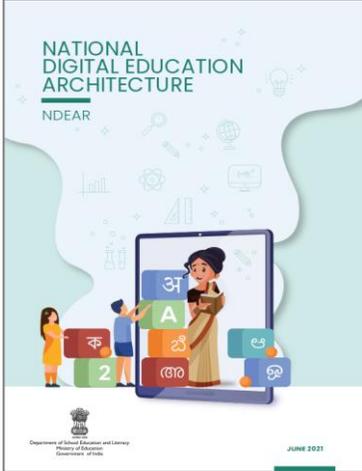
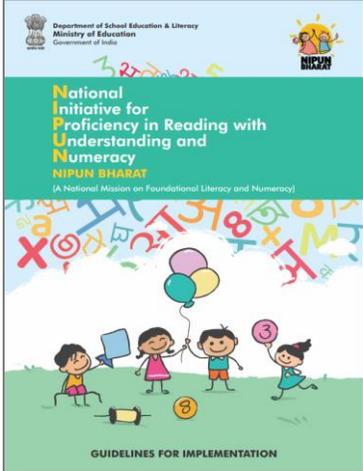
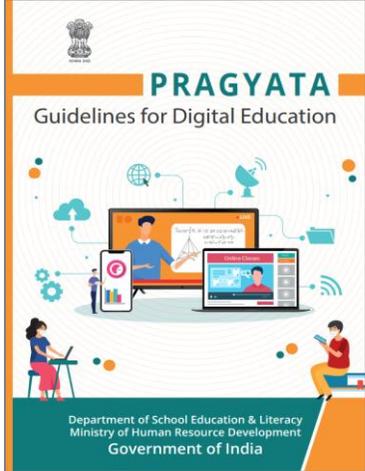
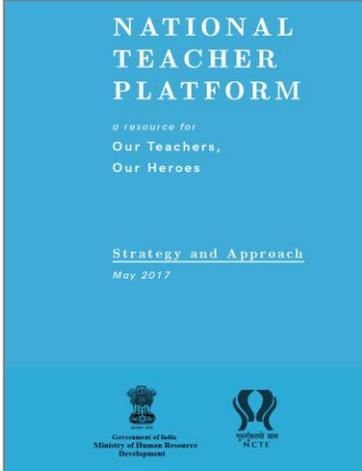
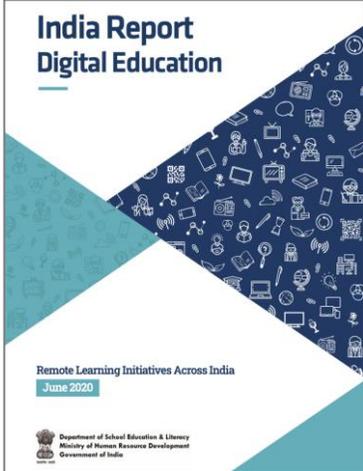
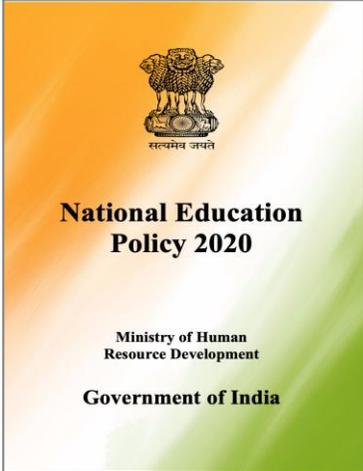
Technology Driven Education with Equity Post-COVID (1/2)



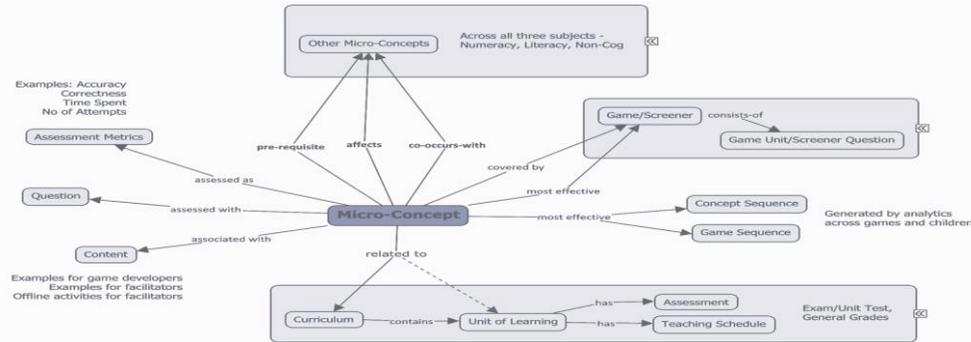
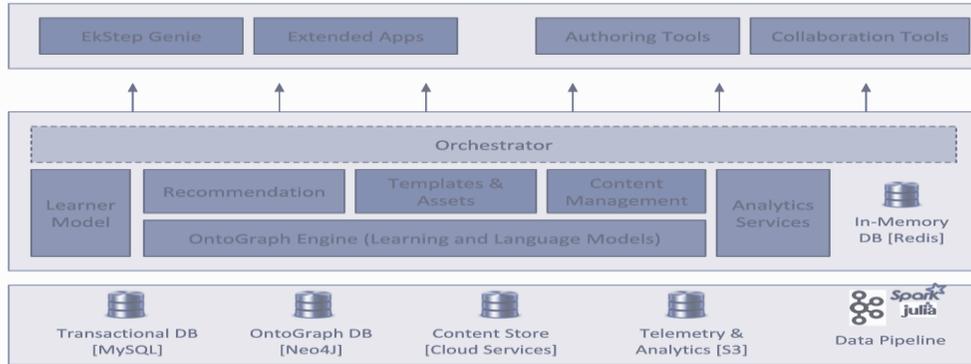
- **PM eVIDYA**- A programme for multi-mode access to digital/online education to be launched immediately; consisting of:
 - **DIKSHA** for school education in states/UTs: e-content and QR coded energized textbooks for all grades (**one nation, one digital platform**)
 - One earmarked TV channel per class from 1 to 12 (**one class, one channel**)
 - Extensive use of **radio, community radio and podcasts**
 - Special **e-content for visually and hearing impaired**
 - **Top 100 universities** will be permitted to automatically start online courses by 30th May, 2020

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Key References

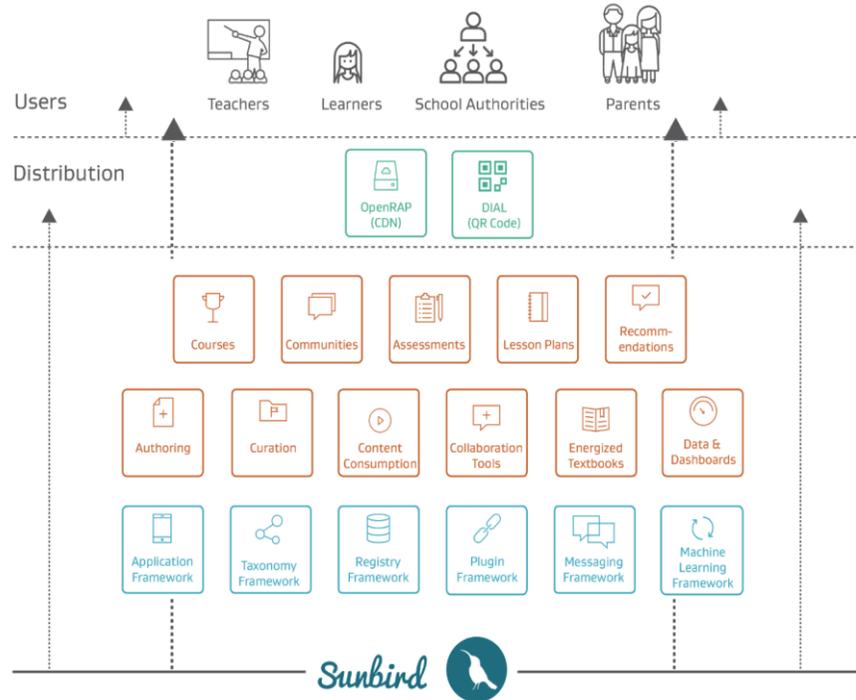


DIKSHA is built using strong technology architecture principles



- Unbundled not monolithic
- Microservices and API based
- Interoperable
- Evolvable
- Configurable
- Multi-tenanted
- Observable through data
- Scalable
- Resilient
- Extensible
- Privacy and security “by design”
- Allows unified system, but not uniform

DIKSHA is built keeping Indian requirements in mind



- Changing learning paradigm of micro-content, on-demand, continuous process of learning anytime anywhere
- Federal structure of India's education
- Scaling to entire population of India
- Diversity of languages, use cases, and contexts including learning domains beyond school education (skilling, health, financial literacy, etc)
- Addresses connectivity & device diversity
- Openness and interoperability for content, taxonomy, credentials, & data
- Ecosystem approach - participation of government, civil society and private organisations for coverage, inclusion, quality, and innovation
- Using data for smart policy making, implementation, monitoring for continuous evolution

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| SOLUTIONS LAYER | Teacher Learning | Early Learning | School Education | School Administration | Leadership Education | Capacity Building | ... |
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| PERSONALIZATION LAYER | Adaptive Learning | Contextual Recommendations | Quick Remediations | Smart Creation & Curation | Personalized Lesson Planning | ... |
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| MEASUREMENT LAYER | Telemetry | Open Data | Aggregations | Monitoring | Predictions | Modeling | Data Locker | ... |
|--------------------------|------------------|------------------|---------------------|-------------------|--------------------|-----------------|--------------------|------------|

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| CONTENT LAYER | Content | Courses | Assessments | Books | Worksheets | Quizzes | Certificates | ... |
|----------------------|----------------|----------------|--------------------|--------------|-------------------|----------------|---------------------|------------|

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| KNOWLEDGE LAYER | Taxonomy | Wordnet | Creation & Curation | Concept Map | Tagging | Assets | Templates | Hard Spots | ... |
|------------------------|-----------------|----------------|--------------------------------|--------------------|----------------|---------------|------------------|-------------------|------------|

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| INFRA LAYER | Identity | Auth | Registry | Attestation | Security | Community | Notification | Rating | Indexing | ... |
|--------------------|-----------------|-------------|-----------------|--------------------|-----------------|------------------|---------------------|---------------|-----------------|------------|

Thank You