Digital Education in K-12: Response to COVID-19 in India
Within just 8 weeks of launching the program, 4.3Mn (~20% of total) parents reached and 1.3Mn total weekly viewership on WhatsApp with ~0.3Mn increased digital access via TV. However, digital divide limited greater uptake; only 40% of population have 3G/4G access.

Digital education can reach the bottom segment - 35% of users come from families owning smartphones worth less than $70. 70% of total users are first timers.

Strong preference for WhatsApp with YouTube video links, while TV content well received in absence of WhatsApp - 80% of those who accessed both, prefer WhatsApp over TV owing to ease of access, ability to pause/rewind. Of those watching TV content regularly, 80% willing to watch in the long term.

Viewership time increased in higher grades - Only 33% of class 1-2 users spent more than 30 minutes watching videos everyday, which increases to 58% for class 11-12 users.

Activating teachers is the key to drive uptake - Teachers’ degree of engagement is the primary determinant of student viewership. Relevant for initial on-boarding and sustained engagement.

Students prefer revision/remedial content over at-grade - When primary grades were given access to remedial content, ~80% viewership towards remedial material due to learning level disparities; Stronger preference for fun, story-based, animated content rather than serious content.

Urgent need to address content and subject level gaps - Need to improve vernacular content, language learning in primary grades and non-science subjects in secondary grades. Focus on practice quotient, simpler explanations and shorter videos to improve viewership.

Teacher professional development is big white space - Strong latent demand for high quality teacher professional development content however existing content is very limited.

Rapid behavioral change is being witnessed; strong longer term potential - Learning impact is nascent but shifts in preference and field innovation is observable even in 2 months. 80-90% of teachers and parents want program to continue in the long term.
COVID-19 was declared a global pandemic...

..and India responded with a complete lockdown, rendering..

**250Mn**
Indian school students losing access to schooling¹

**8Mn**
School teachers' efforts being underutilized or redirected¹

Within just 2 weeks, BCG began laying out a comprehensive digital library

We received support from a range of partners

And also collaborated with specific state partners

Source: 1. U-DISE 2018-19; 2. UNESCO
A structured e-learning strategy was conceptualized for state govts..

**Student Learning**
Continuous access to learning content through a public, high quality, digital content library

**Teacher Professional Development**
Quality professional development opportunities which are typically lacking during the year

**Parent Engagement**
To recognize and improve the role of parents as co-educators

..along with a multi-modal approach to share content with students/teachers

- **WhatsApp** cascades setup to share content uploaded on YouTube
- **TV channels** airing content at dedicated time slots daily
- **Daily hour-long radio sessions** for primary students
- **Videos on government Diksha portal** mapped to QR codes of textbooks

**Project Background**

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In April 2020, BCG launched a digital learning program across 3 states:

**Targeting 22Mn students and 0.8Mn teachers across class I-XII of all government schools**

- **Rajasthan**
  - 8Mn students
  - 0.3Mn teachers

- **Madhya Pradesh**
  - 9Mn students
  - 0.4Mn teachers

- **Jharkhand**
  - 5Mn students
  - 0.1Mn teachers

..and put together data collection sources & reflection mechanisms

- **YouTube Analytics**
  - Total Views, Unique Users
  - Viewing time etc.

- **Feedback & Compliance Forms**
  - % Parents/Students added on WhatsApp
  - Daily compliance and engagement
  - Content feedback

- **Telephonic Surveys**
  - Program awareness and penetration
  - Teacher and user engagement
  - Qualitative insights on preferences, challenges

- **Online VCs**
  - Best practices
  - Challenges and constraints
  - Implementation feedback

---

**Note:**

1. Total govt. school student enrolment and teacher strength, UDISE-2019
2. Parents added on WhatsApp groups by teachers and cluster officials. While Rajasthan (RJ) & Madhya Pradesh (MP) had a starting database, Jharkhand had no such database. A parent could be on multiple groups owing to multiple school going children per household.
Only 40% of total population are unique subscribers with 3G/4G data access in India; similar digital divide in other countries too

### Countries with smaller populations like Ukraine and South Africa can also launch a similar program

<table>
<thead>
<tr>
<th>Country</th>
<th>Unique mobile phone subscribers</th>
<th>Unique smart-phone subscribers</th>
<th>Unique subscribers with access to 3G/4G</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>57%</td>
<td>42%</td>
<td>40%</td>
</tr>
<tr>
<td>Nigeria</td>
<td>72%</td>
<td>47%</td>
<td>48%</td>
</tr>
<tr>
<td>Egypt</td>
<td>66%</td>
<td>61%</td>
<td>44%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>77%</td>
<td>61%</td>
<td>65%</td>
</tr>
</tbody>
</table>

**Similar countries that can replicate the Indian model**

<table>
<thead>
<tr>
<th>Country</th>
<th>As % of total population in 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>57%</td>
</tr>
<tr>
<td>Nigeria</td>
<td>72%</td>
</tr>
<tr>
<td>Egypt</td>
<td>66%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>77%</td>
</tr>
</tbody>
</table>

Source: 1. Total population, mobile phone and smartphone penetration for 2020 (Forecasted), Forrester Analytics 2. 3G/4G Penetration for 2020 (Forecasted), Ovum by Informa 3. Assumed ratio of multi-sim : single sim holders to be 70:30 in India, Nigeria and Vietnam as per BCG study
Despite low digital penetration, the program reached ~2 million

WhatsApp was the most preferred viewing mode

- 58%\(^2\) of total HHs have TV access and 35% have only TV
- Of those who access both WhatsApp & TV, 80% prefer WhatsApp over TV
  - Convenience for pausing & rewinding
  - Less susceptibility to power cuts
- Radio programs reached 25% of total HHs, these HHs did not have access to WhatsApp and/or TV\(^3\)
- However, limited appeal and learning impact
  - 66% radio users claim content is uninteresting and/or uninformative\(^3\)
- Only 3% of total HHs used govt. learning apps and watched app content at least once\(^4\); Diksha App used the most
  - High download requirement and low digital literacy

However, TV content appreciated by segment without access to WhatsApp

- ~3.4% of total students in Rajasthan and MP were aware of TV program and watched TV content at least once\(^5\)
- 80%\(^6\) of the those who watched TV content are interested even post lockdown because of -
  - Savings on internet recharges
  - Convenience for multiple children to watch together

Source: 1. Based on 22.5Mn total students with an assumption of 1.6 school going children per household 2. BARC 2018 report for TV penetration by state 3. Remaining HHs who don’t have TV and/or Smartphones (75%) in 2020  3. Based on 200 calls for radio program in Rajasthan only 4. Based on VFS calls to 510 parents across 3 states 5. 25KIVR responses with 220 verification7 VFS calls in Rajasthan in Week 11  6. IVR & ~1100 VFS calls in Rajasthan and MP in Week 11 7. BCG Analysis on YouTube data
TV program reached ~0.6Mn students (~3.4% of total) across Madhya Pradesh and Rajasthan states, of which ~0.3Mn students were not accessible via WhatsApp.

- 7.7Mn Students (44% of total) have access to TV across Rajasthan and Madhya Pradesh
- 0.6Mn Students (3.4% of total) have watched TV content at least once
  - Rajasthan: 0.4Mn (4.6% of total in RJ)
  - Madhya Pradesh: 0.2Mn (2% of total in MP)
- ~0.3Mn Students (of the 0.6Mn students) had not WhatsApp access and rely only on TV content.

TV increased digital access by ~0.3Mn

Viewers appreciate:

- Access to content in absence of smartphones
- Ability to watch TV without being constrained by parents' working hours
  - “I encourage children to watch TV program as they can’t watch it on WhatsApp. Their father is away for work and phone is with him” - Parent
- Good quality audio-visual content, especially for Science subjects

Note: TV program was run extensively in Jharkhand but viewership number are excluded in estimations as data is not available.

Source: VFS calls to ~1100 parents on TV viewership in Madhya Pradesh between 29 Jun to 6 July 2020. 25k IVR call responses in Rajasthan (29 Jun to 1 Jul 2020) and verification of IVR responses through VFS calls to 220 parents in Rajasthan between 5 Jul to 15 Jul, 2020.
In most households multiple children shared devices to watch videos...

...and adults also took interest in learning

“Teachers taught in groups and encouraged to watch TV programs in absence of smartphones”

“Average of 1.7 per device”

“My children have made WhatsApp groups with their friends and are actively using it to discuss studies together” - Parent

“My wife, who has not attended school ever, has also been taking more interest in learning than my children!” - Parent
Communities came together to climb a mountain and accessed the internet after a 3000 ft climb!

We observed disproportionate efforts being made to access digital learning...

Location: West Singhbhum district, Jharkhand
Veer Singh Devgam, a social worker took his daughter and other kids without smartphones up the mountain everyday

Some gave up on new festive clothes to buy smartphones instead

Location: Bokaro, Jharkhand
Shabbir Ansari, a factory labourer bought a smartphone for his 3 daughters instead of new clothes
Moreover, momentum created by the digital program led to several innovations to reach non-digitally connected population as well.

**Teachers across green zones initiated Mohalla schools**

**'Roving teachers' brought classrooms to their students' home**

**Elders and older siblings came together to teach younger students**

“Students were away from digital learning program due unavailability of phones, so I teach them separately” - Manorama Jha, Headmaster, school from Deoghar district

Engaging with parents/students and checking on their learning status - all while they are at home

Parents/elders filled in for teachers and helped their younger ones
Involving senior-most government leaders went a long way in kicking off the program strongly. Resources for awareness must be arranged for on priority for a fast ramp-up and maximum reach.

All of this was driven by a range of digital, print and on-ground awareness measures to boost uptake.

- CM sent the first message to parents, launching the program.
- Program Directors’ regular VCs with officials, teachers & parents.
- Coverage in the press (Non-Paid).
- Awareness video sent to parents.
- Awareness resources for teachers to circulate further.
- Paid advertisements.
- Wall graffiti for last-mile awareness.
- Teacher recognition programs.
Amongst the various levers tried, teachers’ intervention and engagement was the primary driver for student engagement.

State efforts to activate teachers

1. Group formation and individual school trackers
2. Weekly VCs
3. Teacher recognition programs
4. IVR calls to teachers

Many teachers made special efforts -
From door to door awareness and giving homework sheets to live VCs with students from other schools

However, 40% teachers interacted less than 3 days a week due to two major reasons:

34% Teachers said they are personally engaged with:
- COVID-19 response; Food distribution
- Personal problems due to COVID-19

66% Teachers observed to have a lack of motivation
- Do not have contact of parents till date
- “Parents don’t have smartphones/are in no network zones”

In schools, where teachers were activated led to huge increase in viewership by students

Teacher initiatives led to increase in students connected by 75% and overall weekly usage by ~4x

<table>
<thead>
<tr>
<th>Teachers initiatives</th>
<th>School 1: UGHS</th>
<th>School 2: KGBV</th>
</tr>
</thead>
<tbody>
<tr>
<td>On ground awareness &amp; doubt clearing sessions</td>
<td>✓</td>
<td>×</td>
</tr>
<tr>
<td>#students reached everyday</td>
<td>9 on all weekdays</td>
<td>4 on 3 days/week</td>
</tr>
<tr>
<td>Additional teacher engagement</td>
<td>Live classes by all</td>
<td>Only 3 teachers</td>
</tr>
<tr>
<td>Extent of student interaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>%parents added on groups</td>
<td>70%</td>
<td>40%</td>
</tr>
<tr>
<td>#days of engaged in a week</td>
<td>4-5</td>
<td>2-3</td>
</tr>
<tr>
<td>#videos watched per day</td>
<td>3-4</td>
<td>~2</td>
</tr>
<tr>
<td>Data recharges by parents</td>
<td>All in 1-2GB/day</td>
<td>~20% &gt;1GB/day</td>
</tr>
</tbody>
</table>

Such schools must be identified early on and recognized as a model approach

Learnings and Insights

Engagement Enhancing Strategies

Many teachers made special efforts -
- From door to door awareness and giving homework sheets to live VCs with students from other schools

However, 40% teachers interacted less than 3 days a week due to two major reasons:

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State efforts to activate teachers

1. Group formation and individual school trackers
2. Weekly VCs
3. Teacher recognition programs
4. IVR calls to teachers

Note: Location - Belkappi, Barkatha, Hazaribagh Jharkhand; Source: VFS calls across all grades; School 1 - 10 teachers & 16 parents; School 2 - 8 teachers & 16 parents.
Good teachers went beyond the call of duty and involved students beyond learning videos and also created their own videos.

In Jharkhand alone, 18% teachers recorded their own videos.

"Not only do I want to teach from this content, I also plan to keep my WhatsApp group active throughout the year as it is a novel way to keep students engaged" - Teacher

Filled homework sheets indicating a great learning momentum.
Class 6-8 and Classes 10,12 had the highest viewership; all else being same, we expect higher usage at higher grades. 

Students in early grades had clear preference for remedial content over at-grade content. 

- ~80% viewership for class 3-5 inclined towards revision content than new at-grade content.
- Higher preference to view remedial videos suggestive of very high learning level disparities in class 3-5 students.

Note: Viewership is regardless of whether students of a class watch remedial content or at-grade content or both.

Source: 1. Analytics from YouTube Channels of the 3 states from April 13 - June 6, 2020 2. BCG analysis on YouTube viewership data in Jharkhand (1 Jun 2020 - 6 Jun 2020)
In addition, socio-emotional learning content was shared every Sunday to make learning fun!

Students engaged in fun learning apart from core academics

Students engaged in painting and craft through DIY videos
Content curation and analysis helped us derive subject and competency level insights instrumental to bridge digital content gaps

Curation process helped us identify specific areas with low digital content coverage

1. Secondary grade digital content skewed towards Science

2. Primary grade Hindi/English content is not suited for language learning

3. No single source of high quality digital vernacular content

4. Teacher professional development content is a big whitespace

And we also analyzed student preference on specific subjects, topics and videos

<table>
<thead>
<tr>
<th>Subjects in order of viewership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1-5</td>
</tr>
<tr>
<td>Hindi</td>
</tr>
<tr>
<td>English</td>
</tr>
<tr>
<td>Math</td>
</tr>
</tbody>
</table>

Source. 1. BCG analysis on all YouTube viewership data in across 3 states between 25 May 2020 and 6 Jun 2020. 2. English and Hindi viewership only from Madhya Pradesh (MP). 3. Class 11-12 content viewership only from Jharkhand & Rajasthan. 4. Geography content sent in only in Rajasthan and Political Science only in Jharkhand.
Quizzes were run to measure learning outcome impact; ~20% students scored full marks on new concepts being sent

Launched in: Jharkhand (remedial for class 1-8, at-grade for class 9-10) and participation up to 22k/quiz
Rajasthan (at-grade content) and participation up to 19k/quiz

<table>
<thead>
<tr>
<th>Primary grades (Class 3-8)¹</th>
<th>% of full scorers in Week 7</th>
<th>% of &gt;40% scores in Week 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jharkhand</td>
<td>20%</td>
<td>74%</td>
</tr>
<tr>
<td>Rajasthan</td>
<td>30%</td>
<td>87%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Secondary grades (Class 9-10)²</th>
<th>% of full scorers in Week 7</th>
<th>% of &gt;40% scores in Week 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jharkhand</td>
<td>19%</td>
<td>53%</td>
</tr>
<tr>
<td>Rajasthan</td>
<td>21%</td>
<td>76%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Secondary grades (Class 11-12)³</th>
<th>% of full scorers in Week 8</th>
<th>% of &gt;40% scores in Week 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rajasthan</td>
<td>20%</td>
<td>59%</td>
</tr>
</tbody>
</table>

- % of primary students in Jharkhand saw a drop in scoring full marks from Week 1, likely due to higher grade students attempting lower grade competencies
- Secondary graders in Jharkhand and all students in Rajasthan indicates actual learning outcome given at-grade content quizzes
- Performance for secondary graders improved for the students who took interest and prepared for quizzes every week
- Should not taken to be representative of state-wide performance

“I finally scored a perfect 10 in my third quiz attempt! Practice questions on distance, speed and time in the videos surely helped” - Class 9 Student, Jharkhand

Source: 1. Based on google form responses in Jharkhand (N = 22K), Rajasthan (N=24K), 1-6 June, 2020
2. Based on google form responses in Jharkhand (N=37K), Rajasthan (N=15K), 25-30 May, 2020
3. Based on google form responses in Jharkhand (N=37K), Rajasthan (N=15K), 25-30 May, 2020
On the downside, penetration was muted - only 20% of the households that knew they received the content on WhatsApp viewed it on a regular basis

- 35% of our viewership comes from bottom of pyramid owning smartphones worth <INR 5K (~$70) but are prone to difficulties
- Of 80% HHs who are able to recharge, 75% have adequate data owing to inexpensive 3G/4G data in India

Source: 1. VFS calls made to officials, teachers and parents across MP and Jharkhand
2. Assumed average smartphone penetration in India (40%) to be uniform across the 3 states
3. Tracking and verification forms in MP and Jharkhand for officials and teachers; Rajasthan parent database
4. Based on 700 VFS calls to parents across 3 states between May 25 - June 5, 2020
5. BCG analysis on YouTube data from April 13 - June 6, 2020 (1.7 students/device)
TV program impact has been limited majorly due to lack of awareness

93% of those with access to TV are still unaware of program:
- Teachers only inform parents about WhatsApp channel but not TV programs
- Lack of motivation to make the child study
  - “My child plays all day long, and does not want to study. We don’t know what to do”

Reach can be further increased to these students

But was well received amongst TV content viewers despite challenges; however content quality needs to improve

80% of regular TV viewers are willing to watch post lockdown despite socio-economic challenges:
- Frequent electricity outages
- Inability to repair TVs at home

But lacks content quality and convenience:
- Single-paced content; difficult for slow learners
- Difficulty in understanding Math concepts without teachers; language learning is easier
- Lower primary students face challenges; don’t fully understand the language
- Limited subjects on TV (e.g. Arts/Commerce for 11-12)

“My child takes notes while watching. Language is easier to understand but Math is difficult” – Parent

“TV content is on Biology only. My brother (in 10th) watched TV a few times. We regularly watch YouTube links” - Class 12 Commerce student

“I like when he watches educational programs instead of entertainment.” - Parent

Note: TV viewership for Jharkhand is excluded in estimations
Source: VFS calls to ~1100 parents on TV viewership in Madhya Pradesh between 29 Jun to 6 July 2020. 25k IVR call responses in Rajasthan (29 Jun to 1 Jul 2020) and verification of IVR responses through VFS calls to 220 parents in Rajasthan between 5 Jul to 15 Jul, 2020
Despite socio-economic and technical challenges, we believe that direct-to-student digital education has a potential reach about 50% of the population.

Given this demand, we can reach at least 50%* of the population by:

- Activating teachers
- Ensuring mass public awareness - especially post lockdown
- Enabling easy access through simple platforms with limited digital literacy required

**Rapid growth in user engagement to 1.3 Mn weekly users (6% of population) in just 8 weeks**

<table>
<thead>
<tr>
<th>Week</th>
<th>0.58</th>
<th>0.83</th>
<th>1.31</th>
</tr>
</thead>
</table>

Moreover, ~0.6Mn students are estimated to watch TV content, ~0.4Mn in Rajasthan and ~0.2Mn in MP

70% first time users with 90% wanting content sharing to continue in the long term

Teacher initiatives led to increase in students connected by 75% and overall weekly usage by ~4x

*40% through WhatsApp and additional ~10% through TV

Source: 1. Analytics from YouTube Channels of the 3 states from April 13 - June 6, 2020 2. VFS calls to ~1100 parents on TV viewership in Madhya Pradesh between 29 Jun to 6 July 2020. 25k IVR call responses in Rajasthan (29 Jun to 1 Jul 2020) and verification of IVR responses through VFS calls to 220 parents in Rajasthan between 5 Jul to 15 Jul, 2020 3. Based on 700 calls to parents across RJ, JH, MP
Potential of digital also supported by rapid behavioral change and positive inclination across officials, students and parents

- Teachers and officials inclined to make a digital leap
  
  85% teachers keen to integrate digital content post lockdown, given devices
  Mass VCs enabled two-way conversations

  "Video conferences are such an effective tool. Why have we not been doing this from before?!" - Government official

- Peer learning gaining momentum among students
  
  70% students are seeing learning videos online for the first time

  "Zoom calls are now very famous in my village as students are now creating and conducting their own meetups online" - Teacher

- Parents stretching to make it happen
  
  90% parents said they would like to receive WhatsApp learning content even post COVID-19

  "I have bought a new phone so that my children in classes 7-8 can study and not feel left behind. The teacher convinced me to do this and I have made arrangements to pay for the phone over time" - Parent

Source: Based on 700 calls to parents across RJ, JH, MP
Way forward: Programs like DigiSATH/DigiLEP/SMILE have created several assets across 3 states which can be leveraged in the long run

Comprehensive digital content library across all grades, subjects, and competencies

WhatsApp cascades with last mile connectivity to 20-30% of parents

Strong relationships with a variety of EdTech organizations and partners

Demand for digital products: Lakhs of first timers interfacing with digital education with growing demand

Significant political will, both state & central, to invest in digital and integrated into regular curriculum

Three-pronged approach to leverage in the long run

Inside school
How can the teacher leverage existing content and use it as a part of daily instruction to better enable classroom transactions

Outside school
How can we continue to ensure reach of digital education content directly to homes/parents/students and leverage the communication network that has been set up?

Teacher Professional Development
How do we take advantage of the power of digital technology to better enable our teachers and upskill them?

Note: Use-cases such as ICT Labs; personalized learning software etc. are part of a larger digital strategy
Content to be accessed through standardized platforms: Online microsite repository (DigiSchool) and government Diksha portal will be the primary modes of increasing access. Home TVs/mobile apps unlikely to be effective.

Hybrid model of content dissemination as opposed to current model where only the state shares content. Teachers can decide daily content to be shared and the state can intervene for difficult concepts, quizzes etc. once a week.

Influence policy towards greater access and connectivity: Given limited options to increase digital penetration, states may consider crowdsourced data recharges and devices as rewards for high performing students.

TVs with offline access via pen drive likely to be the feasible solution for in-classroom usage. Permission for offline access from content providers essential.

Direct linkages to curriculum/workbooks and corresponding assessments will have to be facilitated to increase relevance and usage inside classrooms.

Fund and address existing content gaps: Key focus on improving vernacular content, language learning, non-science subjects (e.g. arts, commerce) and socio emotional learning (SEL) content.

Teacher Professional Development requires significant investment: Limited options (e.g. Teacher App & Peepul) are emerging but comprehensive and end-to-end support for teachers is still a big whitespace.

Way Forward

What will it take to continue digital learning in the long run?

1. Content to be accessed through standardized platforms: Online microsite repository (DigiSchool) and government Diksha portal will be the primary modes of increasing access. Home TVs/mobile apps unlikely to be effective.
2. Hybrid model of content dissemination as opposed to current model where only the state shares content. Teachers can decide daily content to be shared and the state can intervene for difficult concepts, quizzes etc. once a week.
3. Influence policy towards greater access and connectivity: Given limited options to increase digital penetration, states may consider crowdsourced data recharges and devices as rewards for high performing students.
4. TVs with offline access via pen drive likely to be the feasible solution for in-classroom usage. Permission for offline access from content providers essential.
5. Direct linkages to curriculum/workbooks and corresponding assessments will have to be facilitated to increase relevance and usage inside classrooms.
6. Fund and address existing content gaps: Key focus on improving vernacular content, language learning, non-science subjects (e.g. arts, commerce) and socio emotional learning (SEL) content.
7. Teacher Professional Development requires significant investment: Limited options (e.g. Teacher App & Peepul) are emerging but comprehensive and end-to-end support for teachers is still a big whitespace.
What does this mean for various stakeholders?

**Government bodies**
- Invest in digital infrastructure in schools
- Map digital content to curriculum, assessments etc. via SCERT
- Explore innovative ways to increase digital penetration - community champions, device distribution etc.
- Engage and activate teachers - in digital content creation, usage, and dissemination. Capitalise on momentum for adoption of digital content at scale and in schools
- Increase awareness of TV programs

**Education Foundations**
- Invest in digital content whitespaces - primary grade languages, vernacular content, non-Science senior secondary subjects etc.
- Invest in high quality teacher professional development content

**Ed-Tech organizations**
- Address high demand for digital content (e.g. vernacular)
- Map existing content to common competency structure and target remedial competencies to students
- Improve content quality by leveraging access to best teachers given varied requirements (narration/practice based)
- Differentiate between TV & WhatsApp/YouTube content - TV content needs to be *simpler and slower*
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