NEP 2020: From Policy to Praxis

Theme 1: Foundational Learning and Early Childhood Care and Education

Consolidated Extended Abstracts

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1. **From Policy to Practice: What Drives Learning Gains in India's FLN Mission?** By Vaishali Tiwari, Puja Solanki, Rishika Rathore, and Anirudh Agarwal (Educational Initiatives and Central Square Foundation)

Extended   **Abstract:**

In Uttar Pradesh (UP), the scale of the foundational learning crisis remains stark. ASER 2024 shows that only 34% of Grade 3 children in rural areas can read a Grade 2 text, and just 24% can solve a basic subtraction problem. These outcomes reflect a broader national challenge, where a majority of children struggle to acquire essential skills in the early grades. It was in response to such gaps that the National Education Policy (NEP) 2020 placed foundational literacy and numeracy (FLN) at the heart of India's education reform agenda, mandating universal acquisition of basic reading and numeracy skills by Grade 3. To realise this vision, the Government of India launched the NIPUN Bharat Mission, and Uttar Pradesh translated it into the state-specific Prerna initiative, aimed at ensuring that every child achieves grade-appropriate FLN competencies by 2026–27.

This paper presents findings from a three-year mixed-methods impact evaluation (2022–2025) of the NIPUN Bharat Mission in UP, undertaken by Educational Initiatives (Ei) in partnership with Central Square Foundation (CSF) and Language and Learning Foundation (LLF). The evaluation examined variations in program effectiveness under different implementation models: state-led implementation (SNP) and district-level implementation support (DIS). The State NIPUN Program (SNP) represents the mission as led and implemented directly by the state government. The District Implementation Support (DIS) model, in contrast, supplemented the state mission with additional on-ground support from NGO partners. Within DIS, two intensity levels were studied: a high-intensity model in Sewapuri block of Varanasi and a low-intensity model in other Varanasi blocks. Thus, the evaluation compared three models in total—SNP, DIS-Low Intensity (DIS-LI), and DIS-High Intensity (DIS-HI).

A quasi-experimental design with Coarsened Exact Matching (CEM) was employed to ensure comparability between groups. Blocks in Varanasi (DIS sites) were matched with Unnao and Siddharth Nagar (SNP sites). The sample included roughly 3,000 students per round per cohort. Data were collected at baseline and endline using Early Grade Reading Assessment (EGRA) and Early Grade Mathematics Assessment (EGMA) tools. Two cohorts were tracked: Cohort 1, which included students in Grades 1–3 with three years of exposure to the program, and Cohort 2, which included students in Grades 1–2 with two years of

exposure.

Findings from Cohort 1 showed substantial baseline-to-endline gains across all three models, though improvements were largest in DIS models. In literacy, Oral Reading Fluency (ORF) increased by 75.8 words per minute (wpm) in DIS-HI, 76.2 wpm in DIS-LI, and 54 wpm in SNP. Numeracy also improved across groups: in subtraction, gains were 73 percentage points in DIS-HI, 69 percentage points in DIS-LI, and 60 percentage points in SNP. Beyond absolute gains, difference-in-differences (DiD) analysis indicated that DIS models achieved additional effects. In literacy, ORF gains translated into a DiD gain of 21.8 wpm (0.94 SD) in DIS-HI and 22 wpm (0.93 SD) in DIS-LI. In numeracy, subtraction gains translated into a DiD gain of 13 percentage points (0.42 SD) in DIS-HI and 9 percentage points (0.29 SD) in DIS-LI. These results show that while SNP improved outcomes, additional district support amplified gains, especially in higher-order skills.

The picture was more mixed for Cohort 2. Literacy outcomes showed ORF gains of 33 wpm in DIS-HI, 43.9 wpm in DIS-LI, and 29 wpm in SNP. Numeracy outcomes showed subtraction gains of 12 percentage points in DIS-HI, 29 percentage points in DIS-LI, and 22 percentage points in SNP. Although absolute gains were visible in all three models, DiD analysis provided insights into effectiveness of different models. In the DIS-LI model, significant DiD gains were observed: 11 percentage points (0.34 SD) in ORF and 7 percentage points (0.19 SD) in subtraction. By contrast, the DIS-HI model showed negligible or negative effects, with a DiD of -13 percentage points (-0.37 SD) in ORF and -10 percentage points (-0.32 SD) in subtraction. This suggests that low-intensity support may offer a more sustainable model in the long run.

Taken together, the findings highlight three insights into the enactment of NEP's FLN agenda. First, state-wide programs like SNP can generate broad improvements at scale. Second, district-level support adds value, with especially strong effects in advancing higher-order skills. Third, the divergence between high- and low-intensity support shows that policy translation is non-linear: effectiveness depends on how intensity and sustainability are calibrated to local context. By tracing these variations, the study illustrates how the afterlife of NEP is shaped by state capacity, local adaptations, and NGO partnerships. Uttar Pradesh's experience with NIPUN Bharat/Prerna offers a critical window into how national policies travel, and materialise on the ground.

2. Improving Numeracy Outcomes through Student Practice: Learnings from Math Toolkit Pilot By Gundeep Kaur & Surbhi Nagpal (Peepul)

Extended Abstract:

Context and Policy Linkage:

National Education Policy (NEP) 2020 has placed the highest priority on achieving Foundational Literacy and Numeracy (FLN) for students by Grade 3. As a result, the states have been actively working on their respective FLN missions. These efforts aim to help students achieve foundational learning outcomes and build a foundation for lifelong learning.

Focusing on foundational numeracy, NEP (2020) argues that an emphasis on mathematics and mathematical thinking right from the foundational stage is important given the advancements in fields like machine learning, AI, data science, etc. Mathematic instructions should enable logical problem-solving, reasoning, and creativity by enabling students to see and use mathematics in their daily life (NCFSE, 2023). The framework further suggests teaching and learning material and pedagogy must consider the cumulative nature of mathematics. The students must be given opportunities to build conceptual clarity at the foundational stage. This can be achieved through use of puzzles, games, mathematical discussion/talk and hands on-activities (GoI,2020).

Math toolkit Design

In Delhi, Peepul has been working closely with MCD to support the state FLN mission. Our third-party assessment revealed a critical foundational numeracy gap in 2023-24, where only 33% of students were performing at grade level in Grade 3. Therefore, to translate NEP's vision and recommendation for foundational numeracy and mathematics teaching Peepul designed the Maths toolkit for Grades 1-3.

By spending time in Math classrooms and conversing with the teachers, we saw a clear pattern: while the teachers were aware of the Concrete Pictorial Abstract (CPA) approach and Experience Language, Picture and Symbol (ELPS) frameworks, there was a missing link. While we saw the teachers using concrete material in the classrooms, there still remained a gap in either using the pictorial material or establishing a connection between the three stages of Concrete-Pictorial-Abstract. Additionally, the teachers used concrete/pictorial material for demonstration and students had either no or very limited opportunity to interact with the material and manipulate it. To develop mathematical

proficiency and conceptual understanding, it is important to provide practice opportunities to students to do, think and engage in mathematical discussions (Van de Walle et.al,2018; Anthony & Walshaw,2009).

This insight became the basis of our work and led to the development of the Math toolkit.

Math toolkit was designed keeping in mind two primary factors:

1. Aligning with the expectations stated for the TLMs in the NEP 2020 and NCFSE, and

2. Addressing the gaps in teaching and learning in the Math classrooms.

The TLMs and tools developed by the Peepul content team focused heavily on providing hands-on practice towards building conceptual understanding through games and activities.

Research Question

The Math toolkit was designed to provide hands on experience to students and effective student practice time to enhance student engagement. Therefore, post the design and implementation of the toolkit, we decide to explore the following question.

How did the Math Toolkit Implementation translate into increase in student practice and engagement for all students in the mathematics classrooms?

Methodology

During the process of developing the Math toolkit, we simultaneously tried and pressure tested it in the Math classrooms of the three partnership schools, where Peepul works in collaboration with MCD. The experience and feedback from here were looped back into the toolkit design which was then taken for pilot to one zone of MCD comprising of 90+ schools.

In 2023-24, the phase started with training the 200+ teachers on Math pedagogy and using the Math toolkits for effective teaching and learning, and it was followed by visiting 50+ classrooms, not only to understand the adoption of toolkit but also to look into the challenges faced by the teachers while implementing the practices from the toolkit during Math lessons. Based on our findings, in 2024-25, we adapted our model to include teacher coaching in addition to the previous year's inputs for the one deep dive zone. Consequently, we are also taking strategic steps to scale the Math toolkit to 1500+ schools of MCD.

Key findings

With a focus on specific learning outcomes, multiple visits with each teacher and targeted coaching, we were able to see an increase in student practice in the classroom.

The classroom observations after the teacher training indicated that there was now a focus on student practice. We witnessed a jump from 53% in 2024 to 69% during the first visit, post the workshop in 2025. During the next two visits, coaching practices addressed challenges, providing targeted feedback, which further increased the number of classrooms conducting student practice to 72% on the second visit and 75% on the third visit.

Towards the end of the academic year, we conducted spot assessments with 273 students across 9 schools to assess students' foundational numeracy skills which had a mix of high and low rigor questions. On average, students answered 60% of the questions correctly.

Implications

The pilot in one zone clearly highlighted that targeted coaching support to teachers post-training led to increase in student practice time in classrooms. This indicates that only training workshops or providing structured activities for implementation are not enough. Effective implementation requires sustained onsite support to teachers which offers scope to reflect on their practice and address key challenges.

Also, a key driver that helped with adoption and acceptance of the Math toolkit was providing a direct mapping of teaching-learning resources and manipulatives in the Math toolkit with NCERT learning outcomes, MCD curriculum and lesson plan. These insights from the pilot exercise in this specific zone informed the scaling strategy of the toolkit.

3. Paths to Word Reading in an Alpha-Syllabary: Evidence from Hindi Readers By Michael Creighton and Mehak Khurshied (The Community Library Project)

Extended Abstract:

The National Education Policy 2020, the National Curriculum Framework for Foundational Stage 2022 (NCF-FS 2022) and NIPUN Bharat all recognise the crucial importance of foundational literacy. While the NCF-FS 2022 and NIPUN Bharat both call for instruction in decoding and phonological awareness, there is no discussion of what emerging research says about how these skills develop in Indic alpha-syllabaries; neither is there discussion of the possible instructional implications of this research. Our research aims to close that gap.

The pivotal role played by phonemic awareness in reading acquisition is well established in alphabetic languages, but research is sparse when it comes to Brahmi-derived alpha-syllabaries. Several studies have found that phonemic awareness tends to emerge more slowly in readers of alpha-syllabaries than would be expected in readers of alphabetic scripts, but there is no consensus on the relative importance for word reading of syllable-level awareness as compared with phonemic awareness (Nag 2007; Jayaram, 2008; Menon et al., 2017; Nag & Snowling, 2012; Wijaythilake et al., 2018).

There is broad agreement that the orthographic breadth of akshara is challenging for readers and that orthographic knowledge takes longer for readers to master than alphabetic knowledge (Nag, 2007; Jayaram, 2008; Nag and Snowling, 2012; Nag, 2014; Nag & Narayanan, 2019; Nag et al., 2014; Menon et al., 2017; Nesan et al., 2019; Wijaythilake et al., 2018; Wijaythilake & Parrila, 2019; Wijaythilake et al., 2019); several of these studies suggest this likely slows reading acquisition.

Based on our interpretation of Share's 'self-teaching hypothesis' (1995, 2008), and the model of orthographic mapping outlined by Ehri (2005, 2014) and Kilpatrick (2015), we posited 'two paths' to reading in an alpha-syllabary: a 'syllabic path' and an 'alpha-syllabic path.' The 'syllabic path' would require syllabic awareness, 'whole akshara' knowledge, and extensive paired-associate learning. The 'alpha-syllabic path,' by contrast, would require insight into what Nag (2022) calls the 'Alpha-Syllabic Principle'—a combination of syllabic and phonemic awareness, along with an understanding of the phonemic markers within complex akshara. We hypothesized that this path would allow readers to orthographically map, rather than memorise, complex akshara.

Research Questions (RQs)

Our research addresses two questions. RQ1 asks which is a stronger predictor of Word Reading Efficiency (WRE), phonemic awareness or syllabic awareness? RQ2 asks whether a systematic programme to teach alpha-syllabic phonological awareness and phonics would lead to improved word recognition skills.

Methodology & Data Sources

In Study 1, we conducted a cross-sectional study involving 276 people with education levels ranging from Grade 2 to the end of university. The study took place in Delhi/NCR in three community libraries, which serve mostly working class children and young adults. We measured phonological awareness using the Alpha-Syllabic Awareness Probe–Hindi (ASAP-H), adapted from Kilpatrick's Phonological Awareness Screening Test (2017). WRE was assessed using 'Word Reading Efficiency Probe-Hindi' (WREP-H), a timed word list based on both the Test of Word Reading Efficiency (TOWRE) and a similar assessment tool adapted to Marathi by Bhide et al. (2014).

In our sample, phonological awareness was highly correlated with WRE (r=0.82). Performance on phonemic awareness tasks was a stronger predictor of WRE than performance on syllabic awareness tasks when compared in linear regression. Our data suggest that 'syllabic path' is unlikely to lead to skilled reading: in the top quartile of readers, all but one reader demonstrated some level of phonemic awareness, and 90 percent demonstrated proficiency with some of the most advanced kinds of phonemic awareness tasks assessed.

One important idea that has emerged from the 'Science of Reading' research in the west is that word recognition is most effectively taught through programmes that systematically teach phonological awareness and phonics skills, while giving students ample time to practice those skills while reading connected text (Kilpatrick, 2015).

To see if systematic instruction in alpha-syllabic phonological awareness and phonics would lead to improved reading skills, in Study 2, we developed a low-cost foundational Hindi literacy programme for first and second grade students. Akshara recognition instruction is multi-sensory; students learn by both encoding and decoding, and aksharas are presented with embedded visual mnemonics. Oral Hindi phonological awareness activities are patterned on Kilpatrick's English 'one-minute activities'(2017). Daily word study activities focus on alpha-syllabic phonics, vocabulary and morphology. Each lesson includes

connected text: before most students can independently read, this comes mostly in the form of read alouds and shared reading; later, the emphasis shifts to reading of decodable text and real books in pairs and individually.

We used a quasi-experimental design to evaluate the programme, assessing students before instruction and at the mid-point, after 16 weeks of instruction. We used a basic phonics inventory to assess identification of swar and vyanjan; WRE was assessed using the WREP-H; Phonological Awareness was assessed with the ASAP-H; phonics skills were measured by an untimed, structured word list where words become progressively more complex (i.e., one-syllable words with no matras; two-syllable words with no matras; one-syllable words with matras, etc.).

We conducted 30-45 minute classes 4-5 times a week, in two Delhi/NCR government schools, one near South-Extension/ Kotla, and one in Sikanderpur, Gurugram. The school in South Extension is English medium, but the dominant medium of instruction in primary grades is Hindi; the school in Sikanderpur is Hindi medium. Both draw primarily from working class neighborhoods. We worked in three first grade classrooms and five second grade classrooms and assessed 223 students before the programme began and 210 at the mid-point. We began the programme in mid-July and took mid-point data in November, after 16 weeks of instruction. Post assessments are planned at the end of the year in March.

Key Findings / Results

Results reported here are based on mid-line assessments. On all measures, the median first grade student in November performed as well or better than the median second grade student had performed on our pre-assessment before the programme started. Our untimed word list assessment showed the median first grader was able to accurately read two-syllable words without matras, and the median second grader was able to accurately read one-syllable words that included all matras.

At the mid-point, phonological awareness was correlated strongly with WRE (r=0.72), and, as in Study 1, linear regression showed that most of that effect came from phonemic, not syllabic, awareness tasks. Students with the largest gains in phonological awareness made the largest gains on both word-reading measures.

In the one school where we worked with second graders last year before developing this programme, the median second grade student had stronger word reading skills this November, as measured by our untimed word list, than the median second grade student

had at the end of last year.

Policy Implications & Relevance to NEP 2020

These findings suggest that FLN implementation under NEP 2020 would benefit from clearer guidance on word recognition instruction. While NIPUN Bharat and the NCF-FS emphasise phonological awareness and decoding, they do not distinguish between syllable-level and phoneme-level skills. Our results indicate systematic instruction in alpha-syllabic phonological awareness and phonics would likely lead to better outcomes. The observed gains were achieved through a low-cost programme implemented within regular government classrooms, suggesting feasibility within existing implementation structures.

4. **The Role of a Remedial Program in Bridging Learning Gaps from Grades 2-5** By Malika Subramaniam, Hiral Waghela and Sumedha Poddar (3.2.1 Education Foundation)

Extended Abstract:

India's National Education Policy (NEP) 2020 places Foundational Literacy and Numeracy (FLN) at the core of school education, recognising it as the basis for all future learning and mandating universal attainment of FLN by Grade 3. The policy signals a shift away from rote-based practices towards competency-driven, learner-centred instruction. However, despite this strong policy intent, national and state-level assessments continue to highlight substantial learning gaps in early and middle grades, across all schools.

The 3.2.1 Remedial Programme was developed to bridge existing learning gaps across grades 2-5 as an immediate remediation. This is closely aligned with the priorities of NEP 2020 and the NIPUN Bharat Mission. Anchored in the principle of structured, evidence-based pedagogy, the programme prioritises conceptual understanding, skill progression, and continuous reinforcement. It aims to bridge learning gaps and help students attain grade level proficiency.

Targeting Grades 2–5, the programme supports learners in consolidating foundational competencies while preparing them for more advanced curricular demands. Its flexible design allows it to function effectively across school and after-school contexts, where it plays a critical role in restoring learning continuity and accelerating progress for students who are behind grade-level expectations.

The design of the 3.2.1 Remedial Programme draws on over a decade of implementation experience focused on improving foundational learning outcomes and instructional quality. These experiences highlighted the need for a remedial model built on structured pedagogy capable of responding to diverse learner profiles and socio-economic contexts. The resulting curriculum adopts a Multi-Grade, Multi-Level (MGML) framework, enabling learners to engage with content aligned to their current competency levels rather than age or grade expectations. This approach reflects scaffolded learning progressions that move from foundational skills to grade level and higher-order competencies.

The program is being implemented across a wide range of geographies, including Jammu, Jodhpur, Lucknow, New Delhi, Maharashtra, Gujarat, and parts of Tamil Nadu and Karnataka, and currently works with 6,248 students and 160 teachers. The programme

emphasises fluency, comprehension, and conceptual understanding, ensuring that learners consolidate skills before progressing.

Program delivery includes teacher orientations, a teacher guide with lesson plans, demonstration clinics, continuous mentoring calls, and an App-based self-learning course for teachers. The remedial curriculum is structured across levels basis certain competencies to be mastered, with sequenced worksheets that build skills progressively-from sound recognition to paragraph reading in English, and from number recognition to complex operations and word problems in Mathematics. Students advance through levels only after completing a level-specific assessment, reinforcing mastery-based progression.

Methodology and Data Sources

The evaluation of the 3.2.1 Education Remedial program is longitudinal in nature to examine learning outcomes and instructional effectiveness across varied contexts. The programme operates in both school-based and after-school settings. Competencies mapped to NCF have been identified and critical competencies from this are selected for assessments. Assessments are level based and are conducted at three checkpoints - Start of Year, Mid-Year and End of Year assessments. Start of Year assessments are used to level and group children and assessments thereafter are used to track their learning progress.

To maintain consistency and reliability, assessments are administered by trained teachers, with tools and protocols centrally designed and overseen by 3.2.1 Programme Managers. To correlate learnings from these assessments, we also gather qualitative data through classroom observations and teacher reflections. Taken together, these data sources create a layered picture. Classroom observations show what teachers do, student work shows what is produced, and assessment data indicates whether learning shifts. This strengthens the credibility of the findings.

Key Findings/Results

Findings from the 3.2.1 Education Remedial program draw on quantitative assessment data and qualitative insights from teacher reflections and classroom observations. Across centres, assessment data indicate progress, particularly when instruction is aligned to students' learning levels rather than grade expectations. Students demonstrated measurable improvement over the academic year, supporting the programme's core assumption that level-appropriate, scaffolded instruction is effective in addressing foundational learning gaps. Teachers reported increased student engagement and

confidence, especially among learners previously unable to participate meaningfully in grade-level instruction.

Literacy Findings

In a year's intervention students showed strong performance in foundational literacy skills, including:

- Grade 2 : Percentage of students who could read and comprehend a 60 word paragraph improved dramatically from 17% to 42%.
- Grade 5 : Percentage of students who could read and comprehend a 60 word paragraph improved dramatically from 51% to 64%.

Challenges persist in paragraph-level comprehension, particularly in inferential understanding and retention of meaning. These findings point to the need for continued emphasis on explicit comprehension instruction and sustained reading practice.

Numeracy Findings

In numeracy, students demonstrated improvements in:

- Grade 2 : Percentage of students who could do subtraction with regrouping improved dramatically from 22% to 59% in the academic year 2024-25.

- Grade 5 : Percentage of students who could do subtraction with regrouping improved dramatically from 57% to 75% in the academic year 2024-25.

This underscores the importance of early intervention to bridge learning gaps so that students are able to access their grade level text books.

Policy Implications & Relevance to NEP 2020

Evidence from the 3.2.1 Education Remedial program offers important insights for strengthening the implementation of NEP 2020, particularly its focus on FLN.

1. The programme demonstrates that pedagogical models, when grounded in structured curriculum design and supported by continuous teacher development, can improve foundational skills across diverse socio-economic contexts.
2. By prioritising conceptual understanding and mastery, the programme operationalises NEP 2020's shift towards competency-based learning. Its MGML structure translates the policy vision of level-based learning into classroom practice

and offers immediate remediation as a scalable model that can be implemented within existing systems.

3. The program establishes the importance of remedial interventions to supplement other systemic improvements. This is required to help students bridge learning gaps before it is too late.

NEP 2020: From Policy to Praxis

Theme 2: Causal Inference, Scale and the Politics of Evidence in Education Reform

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1. **Designing, Implementing, and Evaluating School Leadership Training: Reflections from an RCT within a Dynamic Government Education System in Telangana** By Apurva Sankar and Ismeet Gulati (Alokit)

Extended   **Abstract:**

1. Context & Policy Linkage (NEP 2020)

The National Education Policy (NEP) 2020 positions teachers at the centre of educational reform, recognising them not merely as implementers of curriculum but as key agents of systemic change. The policy emphasises continuous professional development, recommending a minimum of 50 hours of annual professional learning, mentoring-based support structures, and a shift from Passive learning–oriented training to reflective, practice-based teacher training. NCERT's teacher professional development (TPD) guidelines further conceptualise professional development as a continuous, career-long process that may include formal courses, school-based learning, mentoring, peer collaboration, and reflective practice.

Despite this policy vision, teacher professional development in many Indian states continues to be implemented through large-scale cascade models that emphasise information dissemination over instructional improvement. An examination of TPD structures and practices in the district revealed several limitations. These limitations are outlined below.

First, RPs are seen as 'need-based' trainers. Whenever a complex meeting or any other state-wide training has to be conducted, the RPs are given the duty. However, this approach has its demerits. RPs have limited opportunities to develop depth in the training content, as pre-designed decks typically combine multiple topics into a single-day training. They are given information only on 'what' the content is and not on 'how to deliver' the content to teachers. Their inability to effectively facilitate learning for teachers becomes a major roadblock. Moreover, RPs often experience hesitation in leading training spaces, as teachers are their peers, and underlying power dynamics make it difficult to manage large groups of experienced teachers.

Second, Complex Meetings are state-mandated monthly spaces that must be conducted for all teachers by the Resource Persons. However, these trainings are largely done in a lecture method, meetings become a space to overload teachers with more information or operational details about new interventions, lacking brainstorming and peer learning opportunities.

Third, post-training classroom implementation is seldom monitored, making TPD compliance-based.

To address these, a district-embedded, practice-based TPD model was designed. The approach focused on:

A. Strengthening instructional leadership by creating a full-time DRP cadre,

B. Redesigning TPD spaces to be immersive and practice-oriented, and

C. Establishing structured post-training school visits and class observations to ensure implementation quality.

A key structural change was the introduction of preparatory meetings before each complex meeting. These preparatory spaces are conducted in two stages:

A. Our team members work with DRPs on both content and facilitation, and

B. DRPs subsequently conduct preparatory sessions with MRPs.

These sessions focus on deep engagement with content, anticipation of challenges in classroom implementation, contextual adaptation, and facilitation skills such as questioning, managing resistance, and supporting peer learning. The preparatory spaces also gave opportunities to the RPs to practice the given Literacy and Numeracy strategies themselves, to build their confidence and conviction before delivering it to the teachers.

2. Research Questions

The study attempts to examine the model of TPD that improves teacher practices at scale through the following specific research questions:

What features of district-level TPD spaces (specifically, monthly complex meetings) enable observable improvements in classroom teaching-learning practices?

What forms of professional and structural support enable District and Mandal Resource Persons (DRPs and MRPs) to function as effective instructional leaders rather than ad-hoc knowledge-delivering trainers?

How does strengthening feedback loops between TPD spaces and classroom practice influence the quality and consistency of implementation across schools?

3. Methodology & Data Sources

The study adopts a mixed-method approach, examining the District-Embedded Practice-Based TPD model over the last 18 months across primary schools in Peddapalli district. The intervention involved working closely with 6 District Resource Persons (DRPs) and 88 Mandal Resource Persons (MRPs), with 7 complex meetings conducted annually across 36 school complexes.

Multiple quantitative and qualitative data sources were used to study the impact of the program such as observations of preparatory meetings and complex meetings, focusing on facilitation quality, teacher engagement, and nature of learning activities, classroom observations during monthly school visits, teacher feedback forms and reflective discussions, documenting teacher perceptions of usefulness, confidence, and applicability and RPs feedback form after each capacity-building session and preparatory space.

4. Key Findings / Results

The findings indicate that the components of the program, such as preparatory spaces before the teacher training, development of content mastery through practice in classrooms, structured facilitation tools, and feedback mechanisms, have strengthened the leaders' ability to design interactive, practice-oriented teacher professional development. Moreover, it has enhanced their facilitation skills, making the teacher learning spaces participatory and relevant. The RPs mentioned significant improvement in their confidence while facilitating teacher training spaces. They reported growth in their facilitation skills, including maintaining eye contact with participants, clarity in communication and instructional delivery, managing disruptions, using checks for understanding (CFUs), and engaging participants through diverse learning activities.

Second, experiential and practice-based learning within complex meetings enhanced teacher engagement and belief in new pedagogical strategies. Teachers participated in demo lessons, peer practice, and real-time classroom teaching with students. When teachers practiced strategies with students in real-time during the complex meeting, their questions became more nuanced and grounded in classroom realities, moving away from hypothetical or assumption-based concerns. On average, for 4 complex meetings conducted so far in 2025-26, teachers have rated the usefulness at 3.37 out of 4. They reported that these complex meetings provided them with useful strategies to support students who are struggling the most.

Third, post-training classroom observation has helped DRPs to check the implementation quality, identify misconceptions in teacher practices, and their challenges in strategy

implementation. They are also able to incorporate these observations in the subsequent complex meetings. For instance, during multiple school visits, the teachers asked for strategies to teach word problems to students. The RPs addressed this in the next complex meeting. Subsequently, in the next complex meeting, misconceptions in strategy implementation were brought to notice and opened up space for teachers to brainstorm solutions. This has also improved the accountability for teachers to implement the learnings from the complex meetings. In the interviews conducted with DRPs, they stated that through their school visits, they can identify good practices, understand implementation of strategies, give grounded suggestions based on their learnings from other schools, and also identify challenges faced by students and teachers, which can further be addressed in the upcoming complex meeting spaces. They are also able to build interpersonal skills and cordial relationships with teachers through these visits.

Additionally, a full-time DRP cadre can bring cohesiveness and continuity to practices across the district, which has also resulted in substantial FLN growth in students from baseline to midline outcomes.

5. Policy Implications & Relevance to NEP 2020

The findings of this study offer several implications for the design and implementation of teacher professional development aligned with NEP 2020. The study demonstrates that strengthening instructional leadership at the district level is critical for translating policy intent into classroom practice. This can be operationalised by redefining the role of Resource Persons and reimaging the design of monthly Complex Meetings.

The study indicates that such a district-embedded, practice-based TPD model is feasible at scale within existing administrative structures. The cascade model can be strengthened through targeted role clarity, preparatory support, and systematic follow-up, offering a practical pathway for improving TPD.

2. **Evaluation of Educate Girls' Primary Learning Program** By Ashwini Maslekar and Shovik Chatterjee (Educate Girls)

Extended Abstract:

1. Context & Policy Linkage (NEP, 2020)

Although primary enrolment rates have improved, India continues to encounter persistent challenges in girls' education, especially in rural and socio-economically marginalised areas. These challenges extend beyond initial access to include retention through secondary education, where dropout rates increase significantly during adolescence (Muralidharan & Prakash, 2017). Evidence from Rajasthan, which has one of the lowest female literacy rates nationally, demonstrates that entrenched gender norms related to early marriage, domestic labour, and mobility restrictions create multiple barriers that undermine girls' educational trajectories.

The National Education Policy 2020 explicitly prioritises addressing these structural barriers. The policy emphasises equitable access for underrepresented groups, particularly girls from Socially and Economically Disadvantaged Groups (SEDGs). It recognises that achieving gender parity requires interventions extending beyond enrolment to address retention, transition to secondary Education, and the development of girls' agency (Ministry of Education, 2020). Critically, NEP 2020 underscores the role of community participation in educational outcomes and calls for holistic approaches that address socio-cultural determinants of educational exclusion.

The Vidya Program by Educate Girls addresses both policy priorities and practical implementation. Operating in multiple states with high gender gaps, the program utilises community-based volunteers (Team Balika) to identify out-of-school girls, mobilise households for enrolment, and promote normative change regarding girls' education. Previous experimental evaluations reported significant learning gains during implementation (IDinsight, 2018). However, there is limited evidence regarding the durability of outcomes, post-program sustainability, and normative change. This gap is particularly relevant for the NEP 2020 reform agenda, which relies on understanding whether community-level interventions can produce lasting change.

2. Research Questions

This study assessed the sustainability of outcomes from the Educate Girls' Vidya Program

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in regions where the organisation had exited at least three years earlier. The primary research questions were as follows:

1) To what extent have key changes in community behaviour been maintained post-program, particularly regarding: (a) sustained enrolment and retention of girls in school, and (b) girls' agency in financial and social decision-making?

2) What pathways of change—including parental norms, community ownership, and volunteer networks—appear to have persisted after program exit, and which have attenuated?

3) How do sustainability outcomes vary across districts and socio-demographic contexts, and what does this heterogeneity imply for scalability?

These questions address a critical gap. While impact evaluations increasingly demonstrate effectiveness under controlled conditions, policymakers implementing NEP 2020 reforms require evidence on the sustainability of interventions, particularly those targeting deeply embedded social norms.

3. Methodology & Data Sources

The study utilised Contribution Analysis (CA), a theory-based evaluation method designed to assess whether an intervention made a credible and significant contribution to observed outcomes in contexts where experimental designs are not feasible (Mayne, 2012). This methodological approach addresses several common constraints in real-world program evaluation: the program concluded three or more years earlier, making prospective experimental design impossible; no comparable control group was available due to geographic targeting and phased implementation; outcomes such as normative change, sustained agency, and community ownership are not easily measured by standardised metrics; and ethical considerations prevented withholding intervention from identified out-of-school girls.

Contribution Analysis provides a rigorous alternative by systematically examining the program's Theory of Change against empirical evidence, testing underlying assumptions, identifying rival explanations, and assessing whether observed outcomes align with predicted causal pathways (Mayne, 2001). Instead of estimating counterfactual impact, Contribution Analysis evaluates whether it is plausible that the intervention made a significant contribution based on observed outcomes.

Data Sources: Mixed-methods data were collected across four districts in Rajasthan (Bhilwara, Jhalawar, Pali, and Sirohi), selected through purposive sampling based on enrolment figures and retention rates (Robinson, 2014). Quantitative data were obtained from structured surveys administered to 422 girls aged 7 to 23 years. Qualitative data included 54 semi-structured interviews with parents, Team Balika volunteers, ASHA workers, principals, government officials, and program staff.

Analytical Approach: For each sustainability outcome, the analysis systematically examined the causal chain from intervention to outcome, verified underlying assumptions, assessed risks to sustainability, identified unintended consequences, and considered rival explanations such as government schemes, economic factors, and school-level initiatives.

Limitations: Potential recall bias in retrospective self-reports, inherent limitations of causal attribution in non-experimental designs, and the use of purposive sampling constrain the statistical generalisability of the findings.

4. Key Findings/Results

Sustained Enrolment with Shifting Parental Attitudes: Across all districts, 91.7% of surveyed girls were currently enrolled and attending school—a notably high rate given the program had exited these geographies over three years prior. Qualitative evidence revealed substantial shifts in parental attitudes: Education is increasingly framed as a pathway to self-reliance and delayed marriage rather than mere marriage preparation. Fathers emerged as key supporters of enrollment across districts, with 62.3% of girls citing fathers as primary enrollers. Persistent Adolescent Dropout: Despite high overall enrolment, dropout rates increase significantly from age 15, with 38% of 15-year-olds and 54% of 18-year-olds out of school. Child marriage (accounting for 25% of dropouts), household labour demands, and schooling costs remain primary barriers. These findings suggest that although enrolment norms have shifted, structural constraints during adolescence continue to persist.

Uneven Sustainability Across Districts: Outcomes varied substantially by context. Sirohi demonstrated near-universal enrolment (98.8%) and strong community mobilisation, whereas Jhalawar exhibited higher dropout rates (83.5% enrolled) and weaker continuity of Team Balika volunteers. Where volunteers remained active, normative shifts and school engagement persisted. In contrast, disengagement of volunteers corresponded with diminished community-level change.

Financial Access Without Autonomy: Although 74.5% of girls aged 13 and above possessed

bank accounts, only 39% used them independently, with fathers typically operating the accounts on their behalf. This finding highlights a gap between access to financial infrastructure and the development of meaningful financial agency.

Emerging Social Agency with Limited Public Participation: Girls are increasingly described as confident and vocal within their households, and more than half of enrolled girls encourage their peers to attend school. However, participation in community-level activities remains minimal (12.8%), indicating that gains in agency have not yet extended to public spheres.

5. Policy Implications & Relevance to NEP 2020

Rethinking Evidence for System Reform: The study demonstrates that credible causal narratives can be constructed without experimental designs when rigorous methods are applied. For outcomes central to NEP 2020, such as norm change, sustained agency, and post-program sustainability, experimental evidence alone is insufficient. Contribution Analysis provides a complementary approach for assessing the long-term, system-level changes required by policy reform.

Implications for NEP 2020 Implementation: The findings have specific implications for the equity agenda of NEP 2020. First, post-primary retention strategies should address the increase in adolescent dropout by targeting marriage norms, household labour expectations, and access to secondary education, rather than focusing solely on primary enrolment. Second, community-anchored interventions show potential for sustainability but require mechanisms to maintain volunteer engagement after program completion. Third, financial inclusion initiatives for girls should extend beyond account opening to include financial literacy and address household norms that limit girls' economic agency.

Implications for Evaluation Practice: As NEP 2020 implementation advances, evaluation frameworks should expand beyond RCT-derived impact estimates to address the complexity of educational reform. Mixed-methods approaches that integrate quantitative outcome measurement with theory-based causal assessment can generate actionable evidence for policymakers engaged in adaptive, long-term reform."

LFe LEADERSHIP FOR EQUITY

3. **Peer Teaching for Foundational Literacy and Numeracy: A Scalable and Equitable Pedagogical Model in Government Schools** By Anna Daniel and Atmaja Acharya (Involve Learning Solutions Foundation)

Extended Abstract:

Introduction

India's education system today is at a critical juncture. Despite reaching over a million schools and serving the world's largest youth population, foundational learning remains alarmingly low. ASER 2024 reports that 70% of Grade 5 children cannot solve a simple division problem, and two-thirds of Grade 3 students struggle with basic subtraction. The crisis is particularly visible in states such as Bihar, where multi-grade classrooms, teacher shortages, and top-down pedagogy limit opportunities for personalised learning.

Involve Learning Solutions Foundation challenges this paradigm by placing agency at the heart of pedagogy not as an abstract ideal, but as a practical response to India's learning crisis. As a nonprofit committed to ensuring that all children develop age-appropriate agency to thrive, Involve has worked across six states over the last seven years, reaching more than one million students through government & ecosystem partnerships. The organization's core intervention, Peer Teaching (PT), reframes learners not simply as beneficiaries of reform but as co-creators of it.

Reimagining Pedagogy Through Peer Teaching

Peer Teaching transforms the classroom from a site of instruction to that of co-creation. Student Champions selected for their conceptual clarity support 4 -5 peers through structured learning circles embedded within regular school hours. Within these circles, children explain basic mathematical concepts, engage in multimodal learning through locally sourced materials and self-created teaching–learning materials.

Research Questions:

1. What is the impact of Peer Teaching on foundational learning outcomes in Indian government primary classrooms?

2. How does Peer Teaching reshape classroom dynamics, particularly peer interactions, emotional safety, and inclusion?

Methodology:

This study uses a cluster randomised controlled trial (RCT) to examine the effects of same-grade Peer Teaching within government primary school classrooms. The research was conducted in 177 public schools in Bhagalpur district, Bihar, focusing on students in Grades 3–5. Schools were randomly assigned to a treatment group (81 schools) or a control group (96 schools). Data were collected through baseline and endline assessments covering approximately 14,000 students. In addition to student assessment, semi-structured interviews (25-30 minutes each) with 35 teachers were conducted to understand teachers' experience and perspectives on Peer Teaching. These interviews were conducted in Hindi and audio-recorded. Recordings were transcribed and translated into English using manual and AI-assisted tools for accuracy.

In addition to the RCT, a six-month qualitative study was conducted across five government schools to closely examine classroom processes and inclusion under Peer Teaching. Data were collected through classroom observations across 15 peer groups, focusing on participation patterns, peer interaction, and indicators of emotional safety.

Theoretical Framework

The theoretical grounding of this work draws from Paulo Freire's concept of conscientization and Lev Vygotsky's theory of social learning. Freire critiques what he calls the "banking model" of education, where students are treated as empty vessels to be filled with information (Freire, 1970). He argues that learners must be recognised as active participants who construct knowledge through reflection and dialogue. Peer Teaching aligns closely with this vision by positioning students as co-creators of knowledge.

Vygotsky similarly situates learning within social interaction, proposing that understanding develops through collaboration with others, particularly within the Zone of Proximal Development; the space where learners can achieve more with support than they can independently (Vygotsky, 1978). Peer Teaching leverages this social dimension by enabling students to explain concepts to one another using shared experiences, and relevant examples. This results in a pedagogy that is grounded in everyday classroom interactions, shaped by students' voices, experiences, and collaborative problem-solving.

Key Findings & Results

The students who attended Peer Teaching sessions showed a mathematical score improvement of 0.15 - 0.16 standard deviations relative to control schools, with statistically significant gains. Learning improvements are observed across multiple assessed domains

including arithmetic operations, division, and word problems, indicating effects beyond basic skills. Significantly, the gains extended to both high-performing tutors and lower-performing learners, indicating that Peer Teaching strengthens conceptual clarity. Students in treatment schools also report improved classroom experiences, including greater ease of studying and lower anxiety. The RCT study documented a 0.10 SD reduction in learning-related anxiety among students attending Peer Teaching sessions.

Using directed classroom social network measures based on in-degree and out-degree of study-group, help-seeking, and friendship ties, we find that peer tutoring produces smaller, more effective academic networks and connects low-performing learners to high-performing peers, with the average academic quality of their learning networks increasing by about 0.16 - 0.20 standard deviations.

The six-month qualitative study captured rich shifts as well: migrant students who initially hesitated to speak evolved into group leaders; children switched languages, learned more expressive interactions to include all peers; conflicts decreased as shared responsibility grew; and students began designing curriculum elements themselves. In addition to this, indicators of emotional safety, reflected through joy markers such as smiling, requesting turns, and initiating dialogue, were observed in over 80% of sessions.

As student agency and peer leadership increased, teachers reported a parallel shift in their role, with reduced day-to-day instructional load and improved classroom management. When students began to take greater ownership of learning and step into leadership roles, teachers experienced a noticeable reduction in day-to-day instructional burden. At the same time, learning within peer groups accelerated: students progressed more quickly as they learned together and moved through the curriculum at a faster pace through shared understanding. Teachers noted reduced behavioural issues, improved student engagement, and greater collaboration among the students. These transformations highlight that agency-based pedagogy benefits not only students but also educators who have long been constrained by systemic pressures and limited autonomy.

Policy Implication & Relevance to NEP

The National Education Policy (NEP) 2020 identifies foundational learning as an "urgent and necessary prerequisite" for systemic improvement in school education. Evidence from a large-scale cluster randomized controlled trial indicates that structured peer tutoring (PT),

when embedded within regular classroom practice, improves mathematics learning outcomes by approximately 0.15–0.16 standard deviations, demonstrating its potential as a scalable approach to addressing foundational learning gaps. The PT model supports NEP's emphasis on competency-based education by enabling continuous, low-stakes formative assessment through student leaders, facilitating early identification and remediation of learning deficits among lower-performing students. In addition to academic gains, the intervention advances NEP's focus on 21st-century skills by strengthening communication, collaboration, problem-solving, and leadership through structured peer interactions. The small-group design operationalizes NEP-recommended pedagogical shifts toward collaborative and discussion-based learning without requiring additional classroom resources. While PT is not a standalone teacher training or capacity-building intervention, it contributes to NEP's system-strengthening agenda by reducing learning heterogeneity within classrooms, creating additional in-class learning facilitators, and enabling teachers to focus on effective grade-level instruction. Collectively, these findings suggest that achieving quality at scale may not require uniform delivery alone; rather, enabling structured classroom-level agency can be a critical lever for sustainable, cost-effective, and system-wide implementation of NEP reforms.

Conclusion

Involve's work offers a reimagined vision of pedagogy grounded in agency, reciprocity, and indigenous ways of knowing. Peer Teaching demonstrates that learning can flourish when classrooms shift from hierarchical spaces of instruction to collaborative spaces of shared authorship.

By weaving together evidence, insights, and frameworks, this work argues that Peer Teaching is not merely a strategy but a transformative pedagogy. It restores the student as a central actor in the learning process and positions teachers as facilitators of agency and offers a pathway for governments and educators to build classrooms where every child learns in relations rooted in community, strengthened by collaboration, and empowered by agency.

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4. **Do Digital Add-ons improve Phone-based Education? Evidence from four field Experiments in India** By Neaketa Chawla and Dr. Ambrish Dongre (IIM-A)

Extended Abstract:

Context and Policy Linkage

A significant share of young children in developing countries fail to attain basic literacy and numeracy, even after completing the early grades of primary schooling (Grades I–III). This challenge, often referred to as the learning crisis, has drawn considerable attention. Recognising the urgency of this issue, the National Education Policy (2020) identifies the achievement of universal FLN in primary schooling as the highest priority of the education system. Given the scale of the problem, it also underscores exploring all viable methods in order to achieve the same. Most interventions to address it have focused on schools and teachers, while the role of parents has received relatively little attention (Cardim et al., 2023; Duflo et al., 2024). This paper examines a series of interventions conducted in partnership with a non-profit organization in India that sought to increase parental involvement through mobile devices in children's education and thereby improve their learning outcomes.

Background

The partner organisation works with children enrolled in government primary schools in Delhi. Most of these children come from households where parents have low levels of literacy. In a typical household, the mother's education extends up to Grade V (primary level), while the father has completed Grade VIII. Most participating households earn between INR 10,000 and 20,000 per month.

The partner organization has a distinctive intervention to strengthen foundational literacy and numeracy among children in primary grades. Field workers approach parents of children enrolled in government schools, either through partnerships with schools or door-to-door outreach in specific neighbourhoods. With parental consent, families are enrolled on a platform through which they receive monthly phone calls for assessing the child's progress and level appropriate learning material on a WhatsApp chatbot managed by the organisation.

Once the parent is enlisted, they receive a call to complete the telephonic assessment of their child in Mathematics and Hindi. The assessment is administered by a trained caller using a context-specific and widely recognized assessment tool. The caller communicates

the results to the parent and shares them over WhatsApp. Subsequently instructional material tailored to the child's learning level is also shared on WhatsApp. Parents are expected to show this material to their child and facilitate their learning at home. After a month, the same caller reassesses the child, and the process continues until the child achieves foundational literacy and numeracy.

Research Questions

One of the central challenges identified by the organisation was that households dropped out before children attained Foundational Literacy and Numeracy (FLN). The primary difficulty lay in scheduling: both parent and child needed to be available at the same time for the child to access the phone. In practice, this was often not possible. Calls had to be rescheduled repeatedly, and completing even one assessment required multiple attempts by the organization's callers. In cases of repeated non-availability, households were eventually dropped from the programme.

As a result, fewer children reached the expected levels of literacy and numeracy. To address this, we designed a series of experiments aimed at increasing the proportion of children who completed the required assessments. The experiments evaluated four interventions implemented as slight modification or addition to the base programme - (i) a WhatsApp-based commitment contract to schedule assessments; (ii) digital rewards to motivate parents to complete assessments; (iii) information on class-level assessment completion rates; and (iv) an option to join a WhatsApp group to connect with other participating parents. These experiments in all help us to answer the following research questions.

1. To what extent can additional digital features in a phone-based educational programme improve programme effectiveness?

2. What are the limits of delivering digital programmes in resource-constrained settings?

Methodology and Data Sources.

The four experiments were conducted between 2023 and 2025 as part of an ongoing collaboration with the organisation to evaluate interventions aimed at reducing costs and improving programme effectiveness. Most of the interventions had a duration of approximately one month, corresponding to the typical interval between two assessment calls. The digital rewards intervention was the sole exception which lasted for approximately

three months- typical time period required to deliver three assessments.

All participating households were already enrolled in the programme. Most had completed multiple rounds of assessment calls at the start of the experiment, however, their children had not yet achieved FLN. Households were randomly assigned to either a control group receiving the base intervention or a treatment group receiving a modified version of the base intervention. Balance checks were conducted on selected baseline characteristics, including the child's grade level and their Hindi and Math learning levels. The samples were balanced across all three variables.

We estimate the intent-to-treat (ITT) effects of these interventions using the following empirical specification: $Y_i = \alpha + \beta_1 T_i + \gamma X_i + \varepsilon_i$

where Y_i denotes the outcome variables: (i) whether the subsequent assessment was completed; (ii) whether the subsequent assessment was completed in one call; and (iii) whether the subsequent assessment was completed in one or two calls. T_i is an indicator equal to 1 if household i is assigned to the treatment group and 0 otherwise. X_i is a vector of baseline covariates.

Key Findings and Results

Overall, only one intervention, the WhatsApp-based commitment contract, generated significant efficiency gains. Parents were more likely to complete the assessment on the first call attempt. This reduced the time and effort required by agents to schedule assessments.

The remaining interventions did not produce statistically significant effects on parental engagement. They neither increased completion of the subsequent assessment call nor reduced the number of calls required per completed assessment. These findings highlight the limitations of purely digital interventions, particularly in resource-constrained settings. Organisations often assume that incremental additions, such as WhatsApp groups or digital nudges, will enhance engagement. However, systematic testing yielded limited benefits.

Policy Implications and Relevance to NEP (2020)

These results suggest that underlying barriers are more fundamental. Many parents face low digital literacy and limited time and cognitive capacity to process information delivered through messaging platforms. Providing multiple simultaneous prompts may increase the

likelihood that messages are ignored or overlooked. Anecdotal evidence from the experiments indicates that parents value one-to-one phone interactions more than digital communication. Programmes may therefore benefit from finding ways to deliver personalised human engagement at lower cost over additional digital features.

The study also highlights the operational challenges of conducting A/B experiments within non-governmental organisations that face resource constraints and lack advanced technological infrastructure. Technical limitations can compromise the fidelity of digital programme delivery. For example, WhatsApp messages frequently failed to reach a substantial proportion of parents due to changes in Meta's platform policies. In addition, organisations often lack the technical capacity to systematically track engagement-mediating metrics, such as click-through rates on content shared via WhatsApp. Together, these results highlight the limitations of digital interventions when programmes are delivered remotely or through phones.

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5. Strengthening Validity and Reliability of Outcomes Measures in Large Scale Assessments By Anuradha Ganesan (Independent Consultant)

Extended Abstract:

1. Context and Policy-relevance

The National Education Policy 2020 marks a significant shift in India's education reform agenda, foregrounding efforts towards evidence-based decision-making especially in evaluating system accountability (NEP 2020, Para 4.41, Para 8.7 – 8.10). Central to this vision is the use of large-scale assessments (LSAs), administrative datasets, and psychometric tools to evaluate progress across Foundational Literacy and Numeracy (FLN), school quality, and teacher effectiveness. As per NEP 2020, instruments such as the National Achievement Survey (NAS), state-level FLN assessments, and other program-linked evaluations are to increasingly inform resource allocation and instructional reform, through evidence-backed policies.

NEPs reliance on data-driven governance implicitly assumes that outcome measures used in causal evaluations are reliable, valid, and contextually appropriate. However, evidence suggests that this assumption is frequently violated. Weakly validated assessment tools, inadequate pre-testing and piloting undermine the fidelity of causal inference, leading to distorted estimates of program impact and, in turn, flawed policy learning in large scale evaluations. This risk is evident in the Foundational Learning Study (FLS) 2022 conducted under the NIPUN Bharat Mission, where cross-language comparability in early literacy outcomes is implicitly assumed without explicitly evidencing how test items function across languages. Languages included in the study differ substantially in script, orthographic depth, and morphological structure. These factors are known to influence early reading acquisition and perceived item difficulty. In this case, observed differences in minimum proficiency may reflect linguistic or script-based effects rather than variation in learners' reading ability. With such comparisons there is a risk of scores being misinterpreted as indicators of system performance or instructional effectiveness, potentially leading to misplaced policy attention and inequitable resource allocation. This study aims to highlight the importance of rigorous pretesting and piloting in surfacing potential risks to quality of the assessment and of the importance of triangulation in ensuring construct validity and defensible causal inference.

2. Research Questions:

1. What constitutes a comprehensive and methodologically sound piloting process for

language and literacy assessments such that item functioning is reliable and construct-validity is ensured?

2. How can findings from pilot studies be triangulated across quantitative item analyses, qualitative response evidence, and instructional context data to refine assessment items and strengthen construct validity?

3. Methodology & Data Sources

This qualitative research study launches a design-based inquiry into how piloting classroom-level summative assessments can generate evidence related to item validity, cognitive demand, and testing conditions prior to operational use. Two summative assessment instruments were developed and deployed in a middle-school classroom of 22 students at a private school in Bangalore to be validated. Design rationales were tied to an assessment framework developed at the beginning of the process. One assessed prose comprehension and the other poetry interpretation. Each instrument included a combination of multiple-choice and constructed-response items, designed to elicit varying levels of cognitive processing aligned with curricular expectations. The pilot was conducted under typical classroom testing conditions to reflect authentic administration contexts.

Multiple qualitative data sources were used to examine assessment quality through triangulation.

A. Design and deployment of one prose-based test instrument and one poetry-based test-instrument.

B. In- classroom observations were conducted during test administration to assess the adequacy of time allocation, particularly for higher-order interpretive tasks.

C. Student responses were used as artefacts and analysed to identify patterns in interpretation, reasoning strategies, and sources of confusion.

D. Structured post-assessment FGDs were held to elicit learner perspectives on item clarity, language accessibility, response formats, and perceived difficulty. Emergent insights were captured on teacher-researchers' reflective notes.

A qualitative research method was deliberately employed as a quality assurance tool, enabling fine-grained examination of how items functioned in practice and informing iterative refinement. This approach demonstrates how classroom-level piloting can produce robust

validity evidence relevant to both summative assessment design and large-scale evaluation contexts.

4. Key Findings:

With respect to cognitive process validity, findings from the poetry question paper were especially instructive. The paper comprised two multiple-choice questions and one constructed-response item, with an allotted time of 15 minutes. However, the cognitive demands of the poetry text requiring interpretation of implicit meaning, and the unfamiliarity of the constructed-response task [Figure 1] for the test-takers resulted in longer response times than anticipated. This misalignment highlighted a gap between the intended cognitive processes and the practical time constraints imposed, thereby necessitating reconsideration of both task design and timing.

Piloting also revealed issues related to item clarity and formatting. In one multiple-choice item in the prose question paper, students reported significant confusion. Upon review, this was traced to the use of a sequencing-based numbering format that was uncommon in language assessments. This insight underscored how seemingly minor design choices, such as item formatting conventions, can substantially shape test-taking experiences, influence comprehension, and potentially increase learner anxiety. Student feedback further contributed to improving item quality and distractor effectiveness. During post-pilot discussions, students suggested the inclusion of an additional distractor in an assertion–reasoning item and pointed out instances where distractor wording closely mirrored the contextual language of the passage, leading to unintended selection by a notable proportion of test-takers. The precision with which students articulated these concerns prompted reflection on the potential role of learners as active contributors in various stages of criterion-referenced assessment design and review. Student responses further helped us triangulate our understanding of instructional complexity of test items and allowed us to design scoring rubrics accounting for a larger range of responses.

5. Policy Implications & Relevance to NEP 2020:

The Standards for Educational and Psychological (2014) treat validity and reliability as key pillars of test quality assurance, especially when scores are used for accountability. also suggest that validity as an argument, must be planned in advance and cannot be retrofitted after scores come into existence. Ensuring validity and reliability in LSAs is a complex proposition and conducting effective pretrials and pilots play a role beyond being good practices in test development. They provide opportunity for analyses of test items for

evaluating test quality and appropriateness prior to large-scale use.

These findings underscore the importance of the cumulative outcome of deliberate design, empirical checking, and iterative refinement to ensure assessment quality. In the context of NEP 2020's emphasis on evidence based governance, strengthening the validity and reliability of outcome measures must be treated as a foundational design requirement rather than a technical afterthought. Without such deliberate attention, large scale evaluations risk producing precise but misleading estimates, undermining both policy learning and public trust in educational reform.

NEP 2020: From Policy to Praxis

Consolidated Extended Abstracts

1. **From Policy Vision to Classroom Reality: Stakeholder Perspectives on the Implementation Challenges of Contemporary Educational Reforms** By Chandrang Pathak, Jumishree S. Pathak and Prerana Shelat (Indian Institute of Teacher Education)

Extended   Abstract:

Context and Policy Linkage

Educational reforms worldwide increasingly emphasize flexibility, a learner-centric approach, and institutional accountability to respond to rapidly changing socio-economic and technological contexts. In India, the National Education Policy (NEP) 2020 represents a landmark shift aimed at transforming the education system through multidisciplinary learning, flexible curricular structures, competency-based education, and strengthened institutional governance (NEP, 2020). While the policy articulates an ambitious and progressive vision, its success ultimately depends on effective implementation at the institutional level.

A growing body of scholarship highlights that large-scale policy reforms often encounter significant challenges during execution due to administrative capacity constraints, lack of clarity in guidelines, uneven resource distribution, and resistance to change among stakeholders (Fullan, 2006; OECD, 2020). Understanding how educational institutions interpret, negotiate, and operationalize reform mandates is therefore critical for assessing the real impact of policy interventions. This study situates itself within this policy-practice continuum, examining how educational leaders experience and perceive the implementation of contemporary educational reforms inspired by NEP 2020, how they are implementing the policy, and the challenges they are facing during its implementation of NEP 2020. By foregrounding stakeholder voices from higher education institutions (HEIs), the study contributes empirical evidence on the institutional realities shaping reform implementation.

Research Questions

The study was guided by the following research questions:

1. How do institutional stakeholders perceive the objectives and envisioned outcomes of contemporary educational reforms?
2. What key challenges do educational institutions face during the implementation of these reforms?
3. How do administrative, infrastructural, and human resource factors influence policy

implementation at the institutional level?

4. What insights do stakeholders offer for strengthening the alignment between policy design and classroom-level practice?

Methodology and Data Sources

This study adopted a qualitative research approach to capture in-depth perspectives on educational reform implementation, challenges and solution. This study is embedded in the descriptive survey research design. The population of the study comprised 261 educational institutions across the state of Gujarat, representing a diverse range of universities (Central, State and Institute of National Importance) and higher education institutions.

A multistage sampling technique was employed to ensure regional representation and contextual diversity. In the first stage, the state of Gujarat was geographically divided into five regions: East, West, North, South, and Central Gujarat. In the second stage, ten institutions were selected from each region, resulting in a total sample of fifty higher education institutions. This is approximately 20 percent of the total population.

Data were collected from key institutional authorities:

Directors of Internal Quality Assurance Cells (IQAC), Registrars, and Vice-Chancellors of the respective universities.

These respondents were selected due to their strategic roles in policy interpretation, institutional governance, and reform implementation.

Primary data were gathered through semi-structured interviews, allowing respondents to articulate experiences, challenges, and perceptions in their own words. The data were analyzed using thematic analysis, following an inductive approach where themes emerged directly from the data rather than being pre-imposed. This method is particularly suited for exploring complex social phenomena and identifying patterned meanings across qualitative datasets (Braun & Clarke, 2006). The analytical process involved familiarization with the data, generation of initial codes, categorization of similar codes, and synthesis into overarching themes that reflected shared institutional experiences.

Key Findings / Results

The thematic analysis revealed several interrelated challenges that shape the implementation of contemporary educational reforms.

Policy and Structural Ambiguity emerged as a dominant theme. While stakeholders acknowledged the progressive intent of reforms, many reported a lack of clarity in operational guidelines, timelines, and implementation pathways. This ambiguity led to inconsistent interpretation across institutions and uncertainty in execution.

A second major theme concerned administrative and institutional capacity constraints. Respondents highlighted shortages of trained academic and administrative staff, high dependence on temporary faculty appointments, and limited institutional readiness to manage complex reforms such as flexible curricula, credit systems, integrated teacher education programme and multidisciplinary offerings. These constraints often resulted in increased workload and procedural delays.

Curricular and pedagogical transition challenges were also prominently reported. Institutions struggled to move from traditional programme-based structures to credit-based, learner-centric models. Stakeholders expressed concerns about inadequate faculty preparedness for interdisciplinary teaching, research-oriented undergraduate education, and competency-based assessment practices.

The theme of digital and infrastructural limitations underscored disparities in technological readiness across institutions. While digitalization was recognized as essential for reform implementation, inconsistent access to digital infrastructure and limited digital literacy among staff and students hindered effective adoption.

Finally, mindset and change resistance emerged as a critical human factor. Participants noted that successful reform implementation requires not only structural changes but also a cultural shift among educators and administrators. Resistance to new systems, coupled with insufficient training and orientation, slowed institutional transformation.

Suggestions From the Respondent

Several themes emerged from the data in which respondents emphasised the need for clear and context-specific implementation guidelines to reduce ambiguity in executing educational reforms like multiple entry-multiple exit, registration on the academic bank of credit portal etc. They strongly recommended decentralization of decision-making, providing greater academic and administrative autonomy to institutions so reforms can be adapted to local needs. Strengthening human resource capacity through permanent recruitment of qualified teaching and non-teaching staff was highlighted as critical for sustaining reform initiatives. Participants also stressed the importance of continuous professional development and

structured training programmes (specified to a particular task) to improve faculty readiness and promote a positive reform-oriented mindset. Investment in digital and physical infrastructure, including learning management systems and research facilities, was viewed as essential for effective implementation. Additionally, respondents advocated for stronger academic-industry linkages to enhance employability and research relevance. Finally, regular awareness programs and stakeholder consultations were suggested to bridge the gap between policy intent and classroom-level practice.

Policy Implications and Relevance

The findings underscore the importance of addressing the implementation gap between policy vision and institutional reality. First, there is a pressing need for clearer operational guidelines, phased implementation strategies, and contextual flexibility to support diverse institutional capacities. Second, capacity building must be prioritized through sustained investment in faculty recruitment, professional development, and administrative training aligned with reform objectives. Strengthening institutional autonomy and decentralized decision-making can further enhance responsiveness to local contexts. Third, digital infrastructure and technological support systems require strategic expansion to ensure equitable reform implementation across regions. Finally, fostering a culture of reform through continuous stakeholder engagement, training, and communication is essential for long-term sustainability.

By documenting stakeholder perspectives, this study provides actionable insights for policymakers, regulators, and institutional leaders seeking to strengthen the effectiveness of educational reforms. The findings contribute to evidence-based policy learning and align closely with NEP 2020's goals of quality, equity, and systemic transformation.

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2. **NEP 2020 in Practice: Design and Systems Led Learnings from School and Teacher System Interventions in the Kosi Region of Bihar** By Kshitiz Anand and Vatsala (Happy Horizons)

Extended Abstract:

India's National Education Policy (NEP) 2020 represents one of the most ambitious education reforms undertaken globally in recent decades. It articulates a vision of systemic transformation centred on foundational literacy and numeracy (FLN), holistic and experiential learning, teacher professional development, institutional autonomy, and equity-driven outcomes (Ministry of Education, 2020). While the policy provides conceptual coherence and a unifying national framework, there remains a critical gap in empirically grounded research that documents how NEP 2020 is interpreted, operationalised, and experienced in historically under-resourced regions. This paper addresses that gap by examining the translation of NEP 2020 from policy intent to on-ground practice in the Kosi region of Bihar—one of India's most economically marginalised and administratively constrained geographies.

The paper draws on over a decade of practice-based engagement across public, nonprofit, and low-cost private education systems in Bihar, anchored in the work of Happy Horizons Trust and The Happy Kids. These initiatives span three interconnected domains that directly map onto NEP 2020 priorities: (1) foundational literacy and numeracy interventions in government schools, (2) teacher professional development initiatives in collaboration with District Institute of Education and Training (DIETs), and (3) the design, establishment, and operation of a chain of affordable private schools serving first-generation learners. Rather than presenting a single programme evaluation, the paper synthesises a collection of trials, iterations, and learnings accumulated across multiple years and institutional contexts, offering a longitudinal and system-aware perspective on NEP implementation in a low-capacity setting.

Conceptual Framing: Design Thinking and Systems Thinking

The analysis is framed through two complementary lenses: Design Thinking and Systems Thinking. Design Thinking informs the micro-level approach to intervention design, emphasising human-centred problem framing, contextual empathy, iterative prototyping, rapid feedback loops, and learning from failure (Brown, 2009). This lens is particularly

relevant in settings where policy prescriptions must be continuously adapted to local realities such as teacher availability, student migration, linguistic diversity, and socio-economic precarity.

Systems Thinking provides the macro-level analytical framework, positioning education not as a linear delivery mechanism but as a complex adaptive system shaped by interdependencies between policy design, institutional capacity, governance structures, incentives, and socio-cultural norms (Meadows, 2008). Drawing on systems approaches to public sector reform (OECD, 2017), the paper treats NEP 2020 as an enabling architecture whose outcomes emerge through dynamic interactions rather than deterministic implementation. Together, these lenses allow the study to move beyond binary success–failure narratives and instead examine why certain reforms take root, adapt, or stall in marginalised contexts.

Methodological Approach and Positionality

Methodologically, the paper adopts a qualitative-dominant, practice-embedded mixed-methods approach. Data sources include programme documentation, learning outcome trends, teacher training curricula and artefacts, institutional design records, field notes, and reflective practitioner analysis accumulated through sustained engagement in the field. The author's positionality as a designer–educator–institution builder embedded within implementation contexts is a deliberate methodological choice. This insider–practitioner stance enables access to tacit knowledge, informal workarounds, and system behaviours that are often invisible in external evaluations, while also necessitating reflexivity to critically interrogate assumptions and limitations.

The study prioritises analytical generalisation over statistical generalisation, aiming to surface transferable insights into the conditions, constraints, and mechanisms that shape NEP implementation rather than isolate causal effects.

Section 1: Foundational Literacy and Numeracy in Government Schools

The first section examines FLN interventions implemented in government schools in the Kosi region. NEP 2020 positions FLN as the foundational building block for all subsequent learning, with an explicit focus on early grades (Ministry of Education, 2020). Field evidence from Bihar suggests that while curriculum frameworks and structured learning goals are necessary, they are insufficient in isolation. Learning outcomes were found to be strongly mediated by systemic enablers such as teacher continuity, classroom stability, school

leadership, academic mentoring, and community trust.

Design-led interventions focused on simplifying instructional routines, developing contextually relevant learning materials, and establishing structured feedback loops with teachers demonstrated early gains in literacy and numeracy where enabling conditions were present. However, systems-level analysis revealed persistent constraints—including frequent teacher transfers, administrative overload, multigrade classrooms, and weak accountability mechanisms—that diluted or reversed gains over time. These findings highlight a key tension within NEP 2020: the policy's curricular clarity often outpaces the system's absorptive capacity in marginalised regions.

Section 2: Teacher Professional Development and DIET Engagement

The second section analyses teacher professional development initiatives undertaken in collaboration with DIETs, which NEP 2020 identifies as critical nodes for continuous teacher learning. The policy assumes that DIETs possess the institutional capacity to design and deliver high-quality, practice-oriented professional development. Evidence from the Kosi region, however, reveals structural limitations including faculty shortages, limited exposure to contemporary pedagogy, and reliance on cascade-based training models that prioritise compliance over learning.

Using Design Thinking principles, the interventions co-created modular, practice-oriented training formats, incorporated classroom-based mentoring, and emphasised reflective practice. These approaches resulted in higher engagement and short-term pedagogical adoption. However, Systems Thinking analysis revealed that such innovations struggled to sustain or scale without complementary changes in incentives, governance structures, and institutional accountability. These findings align with broader public sector reform literature, which cautions against expecting local innovation to compensate for systemic misalignment (Meadows, 2008; OECD, 2017).

Section 3: Affordable Private Schools as System Experiments

The third section explores the establishment of affordable private schools as experimental system interventions. While NEP 2020 prioritises strengthening public education, parental demand in regions such as the Kosi Region reflects pragmatic concerns around reliability, continuity, and aspiration. These schools were intentionally designed as learning organisations, embedding teacher development, community engagement, and iterative curriculum adaptation. From a systems perspective, these schools functioned as tightly

coupled micro-systems that enabled rapid design iteration, clearer accountability, and stronger feedback loops. At the same time, they surfaced ethical and policy tensions around equity, access, regulation, and long-term sustainability. Rather than positioning private schools as substitutes for public education, the paper treats them as diagnostic sites that illuminate both the possibilities of design coherence and the structural constraints of large public systems.

Interrogating NEP 2020 Assumptions

Across these domains, the paper interrogates three core assumptions embedded in NEP 2020: (1) that policy coherence ensures implementation fidelity; (2) that institutional capacity exists uniformly across regions; and (3) that transformation can be primarily driven through top-down reform. Evidence from Bihar suggests instead that NEP outcomes are contingent on local sense-making, non-state actors acting as system integrators, and continuous design iteration informed by ground-level feedback.

Conclusion and Policy Learning Implications

The paper concludes by reframing NEP 2020 implementation as a design and systems challenge rather than a compliance exercise. It argues for policy learning architectures that legitimise practice-based evidence, support adaptive capacity at district and institutional levels, and explicitly recognise regional asymmetries in readiness. By grounding national policy discourse in the lived realities of one of India's most marginalised regions, this study contributes empirically grounded insights into how NEP 2020 can evolve through evidence-informed, context-sensitive, and system-aware innovation.

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3. A study on Academic Need and Perceptions of Teachers as Researcher across 10 Indian States By Dr. N.Ramkumar and Ms. H.D. Malathi (Prayoga Institute of Education Research)

Extended Abstract:

Context & Policy Linkage (to NEP 2020)

The National Education Policy emphasizes the need for teachers to be effective and to have regular opportunities for self-improvement, making Continuous Professional Development (CPD) essential. The real challenge lies in creating professional opportunities for teachers at scale on a continuous basis, so that both individual and systemic capacities are strengthened to realize the policy's vision for 21st-century education.

The policy emphasizes the need for critical thinking, inquiry-driven pedagogy, and the holistic development of teachers. This emphasis must be embedded in teachers' everyday practice, where professional development is integrated into their daily routines and pedagogies, ultimately enhancing student learning outcomes. Such an approach requires a fundamental shift from viewing teachers as mere consumers of knowledge to recognizing them as creators of knowledge. One possible way to achieve this is by envisioning teachers as researchers, thereby affirming their primary role as creators of Teacher Professional Knowledge (TPK). Elliot J. (2024) defines TPK as 'the specialized, context-dependent knowledge teachers build through experience, reflection, and engagement with students, curriculum, pedagogy, and stakeholders.

The Prayoga Institute of Education Research is proposing a Teacher Fellowship Programme (TFP), a rigorous, nine-month, evidence-based model designed to transform science teachers (Grades 6–9) into reflective practitioners who value and enrich their own Teacher Professional Knowledge (TPK). By aligning with the NEP's goal of revitalizing public institutions such as SCERTs and DIETs, the TFP adopts a deputation model to build institutional capacity while empowering individual teachers as creators of knowledge. This programme bridges the gap between Stenhouse's legacy of teacher research and the practical realities of Indian classrooms.

As a prelude to the TFP, a needs assessment study of government and private school teachers is being planned to explore the following questions." The study is driven by the need to understand the ground-level realities of implementing the ""teacher as researcher"" model within the diverse Indian context.

Statement of the Problem: A study on Academic Need and Perceptions of Teachers as Researcher across 10 Indian States.

Research Question(s)

- What are the academic needs, perceptions, challenges and institutional support requirements of teachers/administrators across diverse contexts in relation to their role as Teachers as a Researcher?

Objectives

1. To identify the academic needs of teachers and administrators regarding their role as researchers.
2. To understand the perceptions of how teachers and administrators across diverse contexts view the concept of teacher as a Researcher
3. To provide a detailed account of the challenges and barriers that prevent teacher administrators from engaging in research practices.
4. To offer evidence-based suggestions on the type of academic and institutional support necessary to strengthen teacher lead research programmes in schools.

Methodology and Data Sources

Theoretical Grounding: The methodology is informed by the theories of Fullan (2016) regarding learning systems, Guskey (2002) on the model of teacher change, and Cochran-Smith & Lytle (2009) on ""Inquiry as Stance"" The study adopts a qualitative research approach to capture rich, contextual insights through dialogue and interaction.

Sampling Strategy: A stratified purposive sampling method was employed to select ten states, with two states representing each of the five major regions: North, South, East, West, and North-East.

Participants: The data pool includes 308 participants, comprising 115 Government teachers, 104 Private school teachers, 52 Government Headmasters (HMs), and 37 Private HMs.

Data Collection Tool: The primary tool used is Focus Group Discussions (FGDs) conducted online. These sessions are recorded and documented to preserve the ""emic"" (insider) perspective of the practitioners.

Data Analysis (Four-Stage Process):

Preparation: Transcription and organization of online interviews into individual state-wise reports.

Categorization: Organizing data by school type (Private vs. Government) and thematic areas such as Challenges, academic needs, perceptions, and institutional support.

Content Coding: Using a conceptual framework to code data based on Beliefs, Assumptions, Actions, and Practices

Synthesis and Interpretation: Utilizing MAXQDA software to combine state-level codes and identify cross-state patterns, similarities, and variations.

Key Findings/Results

The interim findings from the 10-state study highlight a significant "latent desire" for research among teachers, coupled with substantial structural obstacles.

The "Desire-Action" Gap: While 179 out of 308 teachers consider their innovative work as a form of research, only 16 had actually completed a formal action research project at their school. This indicates a massive untapped potential for inquiry that lacks conceptual validation and structure.

Perceptions of Research: Teachers view research as a professional obligation ("a must") for self-improvement. Administrators, conversely, view it as a systematic mechanism for continuous school improvement and quality control.

Critical Barriers: The primary challenge identified is time constraint resulting from heavy workloads and non-teaching duties. Administrators noted that a lack of substitute teachers makes maintaining classes during research activities "difficult".

Sustainable change in teaching practices (the final goal of CPD) only occurs when teachers see positive student results from new actions, which then reshapes their underlying beliefs and assumptions.

Impact of Mentoring: Feedback from stakeholders, including the Prayoga Ethics Committee, emphasized that mentoring and teacher Network are essential for sustaining reflective dialogue and preventing the isolation of inquiry-oriented teachers.

Role of Teacher Practitioner Knowledge (TPK): The study highlights the legitimacy of TPK—professional ways of knowing that are unique to the classroom context—as a vital theory of

knowledge that should underpin teacher education. (essential from the point of designing teacher education programmes.

Institutional Influence: The findings suggest that school culture and leadership are decisive factors. Administrators often view research through the lens of institutional support rather than as a driver for classroom-level pedagogical innovation.

Policy Implications & Relevance to NEP 2020

The results of this need assessment study have profound implications for the implementation of NEP 2020 and the broader goal of systems transformation.

Revitalizing Support Institutions: For NEP 2020's vision to succeed, SCERTs and DIETs must move beyond traditional training and lead a ""change management process"". They should be developed into hubs that support the Inquiry as Stance model, where research is embedded in the teacher's professional identity.

Redesigning CPD: Professional development must move away from ""one-size-fits-all"" workshops toward models like the Teacher Fellowship Programme. Effective CPD must be content-focused, collaborative, and of sufficient duration to allow teachers to see the student results necessary to shift their beliefs.

Establishing Professional Standards: The development of National Professional Standards for Teachers (NPST) by 2022 should incorporate "research and inquiry" as a core competency for all stages of teaching (Foundational to Secondary).

Governance and Autonomy: To foster a research culture, governance must move toward the, granting teachers the autonomy to experiment and innovate without the burden of excessive administrative tasks.

Scaling Innovation with Equity: By identifying regional variations in teacher needs, policymakers can create Action Research Centre (ARC) in DIETs where research-informed practices are tailored to the local linguistic and cultural context, ensuring that the benefits of teacher-led inquiry reach the most disadvantaged students.

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4. Understanding Implementation Challenges in an FLN-Focused School Leadership RCT Program in India By Airodi Tejas and Gautam Anand (Global School Leaders)

Extended Abstract:

Context and policy linkage

National Education Policy (NEP) 2020 accords "highest priority" for Foundational Literacy and Numeracy (FLN), which it sees as "an urgent and necessary prerequisite for learning" to address the high-levels of learning poverty in the country. In addition to some key measures such as teacher training, developing age-appropriate curricular resources, systematic tracking of student achievement, NEP 2020 also recommends Continuous Professional Development (CPD) of school principals, and build their leadership and management skills, content and pedagogical practices in order to support teaching and learning in their schools.

The government has also issued the National Initiative for Proficiency in Reading with Understanding and Numeracy (NIPUN) Bharat guidelines 2021 to support the implementation of NEP 2020. The guidelines outline the role of school leaders as "pedagogical leaders" in addition to their role as administrative head of schools, and their role in mentoring their teachers on FLN-related teaching and learning practices . These guidelines also call for partnerships with Civil Society Organizations and Non-Governmental Organizations to aid in the capacity building efforts of school leaders, in addition through the existing National Initiative for School Heads' and Teachers' Holistic Advancement (NISHTA) training programme organized by the government.

Emerging research has consistently highlighted the importance of leadership in driving student success (Leaver et al., 2019; Adelman & Lemos, 2021). Effective school leadership can be pivotal in enhancing student outcomes, primarily by shaping teaching practices, fostering teamwork among teachers, and boosting teacher satisfaction. Yet limited evidence exists on how to strengthen the effectiveness of school leaders in improving student outcomes, especially in low- and middle-income contexts like India.

Research design, methodology, and data sources

This paper discusses a research study, which evaluated a large-scale school leadership training program in public residential schools targeting students from marginalized

communities in Telangana, India, between 2021-2024. The program focused on foundational literacy and numeracy (FLN), as well as active learning strategies, school culture, and student safety. As part of the program, principals and vice-principals participated in a mix of in-person and virtual workshops, while a smaller group of them also received one-to-one in-person and virtual coaching sessions.

A randomized controlled trial (RCT) design was utilized with two treatment groups for the impact evaluation. A total of 384 residential schools under the Telangana Social Welfare Residential Educational Institutions Society (Social Welfare) and Telangana Tribal Welfare Residential Educational Institutions Society (Tribal Welfare) participated in the program. Treatment 1 schools (150) received training workshops, Treatment 2 schools (99) received coaching in addition to training workshops, while 135 schools were assigned to the Control group.

This research aimed to understand the effectiveness of a school leadership training program in improving school management & student learning outcomes, and the added impact of personalized coaching.

As part of research activities, all sample school principals, teachers and students were surveyed at baseline and after two years of implementation, and student assessments were also administered in all the schools during these time points. The evidence we use in this chapter is mainly drawn from the 2 rounds of qualitative interviews that were conducted with - 12 school leaders and 4 Regional Coordination Officers (RCOs) in the first round from Control, Treatment 1, Treatment 2 groups, and 4 school leaders from Treatment 2 and 2 department officials in the second round, as well as the process monitoring data that was collected during the program.

Key findings

The program was designed to be implemented for three years (2022-2025). However, large-scale transfers and major changes in government structure, leadership, and priorities disrupted much of the third year implementation. We touch upon the mechanisms through which school leaders influence program implementation, including classroom observation, teacher mentoring, logistical facilitation, and follow-up support, briefly. The report then mainly focuses its discussion on systemic and contextual barriers that affect implementation fidelity of experimental research like RCTs.

The key findings that will be discussed in detail will include:

- Competing administrative responsibilities affect school leaders' uptake of instructional leadership programs.
- Frequent turnover of school leaders curtails effective implementation of instructional leadership programs.
- Hands-on support through coaching, frequent monitoring, and ready-to-use resources are critical levers for better uptake of instructional leadership practices among school leaders.
- Meaningful integration of technology is useful for higher uptake of instructional practices among school leaders.

Policy implications and recommendations

In conclusion, we argue that professional development of school leaders offers a compelling route for addressing student learning poverty. But leadership interventions must recognise the realities of low-resource settings: heavy administrative demands, resource constraints, frequent transfers and competing reform agendas. Without addressing these, even well-designed leadership programmes may struggle to take root.

For researchers, the paper underscores the need for further work on leadership in low-resource contexts: longitudinal studies tracking how leadership practices evolve over time; experimental or quasi-experimental designs evaluating leadership professional development; deeper qualitative inquiry into how leaders negotiate systemic constraints and existing socio-cultural norms; and exploration of technology's role in enhancing instructional leadership in challenging contexts.

For practitioners, policymakers and donors seeking to strengthen education systems, we recommend that: invest not only in teacher training and remedial programmes but also in school leadership professional development. We should create opportunities for school leaders and middle-leaders to support their teachers, monitor student practice, make data-driven decisions, and adapt to the contextual needs and challenges.

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NEP 2020: From Policy to Praxis

Consolidated Extended Abstracts

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1. Career Guidance for Equitable Transitions: Evidence from the Transition Tracking Survey By Priyanka Sanghai, Tanushree Das, Priya Agarwal, Swati Mohan and Pallavi R (Antarang Foundation)

Extended   **Abstract:**

Context and Policy Linkage

Career guidance is increasingly recognised as a pivotal mechanism that facilitates smooth transitions from school to higher education and employment, particularly for adolescents navigating crucial decision points in Grades 10 and 12. Evidence suggests that structured and sustained career counselling not only improves long-term decision-making but also enhances students' self-efficacy, career goal orientation, and ability to align career aspirations with real-world opportunities (Niles & Harris-Bowlsbey, 2018; NITI Aayog, 2022a, 2022b; OECD, 2023; UNESCO, 2023). Studies on school-based career guidance interventions indicate beneficial effects on students' career decision-making abilities, future time orientation, and attitudes towards careers, which are essential components for effective transitions Sharapova et al. (2023). These findings are particularly significant for students from low-income backgrounds, as immediate and contextualised guidance can enhance access to opportunities and diminish reliance on constrained informal networks for career choices.

In alignment with this, the National Education Policy (NEP) 2020 emphasises career guidance and counselling as integral components of education reform. It encourages community and alumni mentors to provide career guidance, suggests clear systems to support informed choices, and emphasises the importance of counselling, especially for students from disadvantaged backgrounds. NEP 2020 also values interactive questionnaires and data-driven tools to help students find their strengths, interests, and areas of focus, thereby enabling more informed career choices (Ministry of Human Resource Development [MHRD], 2020).

This paper explores the impact of a 4-year Career Education Model integrated into government schools from Grades 9-12, to enable marginalised youth to make informed, aspirational transitions into EEET(Education, Employment, Entrepreneurship or Technical Training) in line with NEP 2020. The model is delivered by trained Career Facilitators and builds 21st century skills such as self-awareness, decision-making, communication, adaptation and collaboration via career education. The key components of the program are

- Grade 9-10: exploring interests, aptitudes and over 50 career options while building personalized career plans through classroom sessions and 1:1 counselling.
- Grade 11- 12: developing employability skills and experiential learning through exposure visits, short-term projects, mock interviews, and industry talks.

By linking career readiness competencies with transition percentages, the study provides evidence of NEP-aligned, scalable career education guidance models and assessment tools.

Research Questions

1. The Transition Tracking Survey explores several critical questions, including:
2. What percentage of students successfully transition to higher education, vocational training, or employment (EEET) post career education intervention?
3. Are these transitions informed by meaningful career choices, or are they driven by external factors such as economic constraints or societal pressures?

Methodology and Data Sources

The Transition Tracking Survey 2025 aimed to capture educational pathways, career aspirations, and challenges faced by students transitioning from secondary to higher secondary education, vocational training, or employment. Conducted by a Mumbai based organisation, the study followed students from Grades 10 and 12 who participated in its career education programs during the 2024–25 academic year across five states-Maharashtra, Rajasthan, Nagaland and, Goa, and Haryana. Using a mixed-methods approach, the research combined quantitative and qualitative data to assess both the scale and quality of student transitions. The survey was conducted in 2025 after six months of the academic year.

The quantitative survey adopted a cross-sectional design with random sampling, covering 1,256 Grade 10 and 956 Grade 12 students across five geographies. Telephonic interviews were conducted and data captured via Kobo Toolbox, ensuring real-time data capture, supervision, and quality checks. The survey assessed transition outcomes, alignment with aspirations, and the influence of the career guidance program on informed decision-making. The verbal consent and assent were obtained from all participants (and from parents or guardians where applicable) prior to the start of each interview. Interviewers clearly explained the study's purpose, voluntary nature, and the right to withdraw at any time without consequence.

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Complementing this, six Focus Group Discussions (FGDs) with 33 participants explored deeper contextual insights into students' experiences, barriers, and motivations. Qualitative data were analyzed thematically to interpret patterns emerging from the survey. Together, the findings offer valuable evidence on the effectiveness of structured career guidance models in improving youth transitions supporting the goals of NEP 2020 toward equitable, data-driven education-to-work pathways. Written informed consent was collected from all participants. Participants were assured that their responses would remain anonymous and used solely for research purposes.

Key Findings/Results

Transition outcomes for grade 10 and grade 12 for 2024-'25

For the Grade 10 transition it was found that 81.05% of the total students transitioned into higher education, 4.14% to vocational training, and 1.75% did early entry to the work force. At the same time 6.85% did not transition immediately and 6.21% were preparing for a reattempt examination which means a delayed transition not stagnant one.The higher education transition rate (81.05%) is higher than the national average of 75.1% (UDISE+ 2024 to 2025).

For the Grade 12 majority of the students transitioned into higher education (75.0%), 7.9% into vocational training, and 3.9% into work. 10.7% did not transition immediately and 2.6% were preparing for a reattempt examination.

Informed Career choices by the students post grade 10 and grade 12

In the Transition Tracking Survey, career clarity is conceptualized as a two-step process observed across key transition points. Step 1 assesses whether students' career choices align with their interests and aptitudes, reflecting the degree of informed decision-making. Step 2 examines students' immediate post-school plans, capturing the concreteness of their next steps such as pursuing higher education, vocational training, or employment thereby linking aspiration to action.

For Grade 10, 61.8% of students reported an informed career choice where at least one interest or aptitude matched their current aspiration (61.16% females and 62.25% males). Among the grade 12 students, 53.25% reported an informed career choice, where at least one interest or aptitude matched their current aspiration (49.38% females and 56.59%males).

Policy Implications and Relevance to NEP 2020

The findings of this study reaffirm the National Education Policy (NEP) 2020 vision of embedding structured career guidance and counselling within school education as a strategy to enhance student retention, informed decision-making, and smoother post-school transitions after Grade 10 and Grade 12 (MHRD,2020). Hooley (2014) highlights that lifelong guidance can support social inclusion by widening awareness of opportunities, strengthening decision making skills, and helping individuals navigate key transition points more effectively. This aligns with NEP 2020's emphasis on providing equitable support to students particularly those from socio-economically disadvantaged backgrounds through structured, systemic approaches that reduce dependence on informal guidance networks.

While NEP 2020 emphasises career guidance and counseling, it provides limited direction on how schools should systematically monitor transition outcomes. Transition tracking survey addresses this gap by offering a scalable framework to assess both transition rates and the quality of post school choices. By combining school-based career education with a structured monitoring system, the Career Education Model demonstrates how NEP 2020's career guidance vision can be operationalised and tracked through measurable transition and career clarity outcomes.

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2. Realising the Educational Potential of Citizen Science under NEP 2020: A Framework for Design, Implementation, and Evaluation in Schools By Anjali Bharati and Dr. VV Binoy (NIAS)

Extended Abstract:

Context and Policy Linkage (NEP 2020)

The National Education Policy (NEP) 2020 envisions a fundamental shift in Indian school education toward experiential, inquiry-oriented, and competency-based learning. Beyond foundational literacy and numeracy, the policy emphasises the development of scientific temper, critical thinking, problem-solving, and contextual understanding through active engagement with real-world phenomena. To support this shift, NEP 2020 encourages pedagogical approaches that move learning beyond rote instruction and textbook-centred delivery.

Citizen Science (CS) initiatives in schools are increasingly positioned as promising vehicles for advancing these goals. By involving students in scientific processes such as guided observation, structured data collection, and engagement with locally relevant scientific questions, school-based CS appears to align closely with NEP 2020's emphasis on experiential learning and authentic engagement with knowledge. Research on CS in formal K–12 contexts suggests that such initiatives can support student engagement and participation in scientific practices, but that learning opportunities vary substantially depending on pedagogical design and teacher mediation (Tsivitanidou & Ioannou, 2020; Carrier, 2024; Smith, 2025). However, despite the relevance of CS to the current educational reform efforts, discussions on integrating this pedagogy into formal school contexts have not yet gained significant momentum in India.

Translating this potential into meaningful learning outcomes within formal school systems requires careful attention to how programmes are designed, supported, and integrated into everyday teaching and learning. This creates a need for systematic ways of analysing how CS initiatives align with, operationalise, or fall short of NEP 2020's experiential and competency-based learning goals.

This abstract presents a conceptual and methodological contribution aimed at strengthening evidence-informed implementation of experiential learning under NEP 2020. Rather than

evaluating outcomes, it proposes a structured framework to examine how school-based CS initiatives translate policy aspirations into classroom practice, and under what conditions their educational potential can be realised.

Research Questions

1. This work is guided by the following research questions:
2. How can school-based CS initiatives be systematically analysed in relation to NEP 2020's goals for experiential and competency-based learning?
3. What design, implementation, and evaluation assumptions shape how CS is enacted in schools, and how can a structured framework support policy-relevant learning at early stages of implementation?

Methodology and Data Sources

Methodologically, the study is designed to support the development and application of a framework that makes the alignment between CS initiatives and NEP 2020's pedagogical goals analytically visible.

This contribution is grounded in the development of a conceptual framework informed by policy analysis, prior research, and programme design experience. The framework draws on a close reading of NEP 2020, particularly its sections on experiential learning, scientific temper, and competency-based education, alongside the prior research highlighting the importance of intentional design, teacher roles, and institutional conditions in shaping how CS is enacted in school classrooms (Shirk et al., 2012; Smith, 2025; Carrier, 2024). The framework also builds on the insights from the experiences of developing and implementing CS based initiatives to monitor water resources, explore the impact of climate change on the coastal ecosystem and society. This study presents an integrated framework for the development of content and pedagogy, implementation, and evaluation of school-based CS initiatives suited to Indian school contexts.

Key Findings/Results (Analytical Insights)

The framework development process and design experience have yielded several analytical insights that directly inform the research questions. This paper introduces a conceptual framework for examining school-based CS initiatives across three connected stages relevant to policy and practice: design, implementation, and evaluation. These stages reflect patterns identified in prior studies of school-based CS, which document variation in participation

structures, pedagogical integration, and the extent to which evaluation practices are embedded in programme design (Tsivitanidou & Ioannou, 2020; Zydney et al., 2021; Smith, 2025). Rather than treating CS as a uniform intervention, the framework foregrounds how educational intent is shaped and constrained at each stage.

First, content and pedagogical design focus on how scientific content is selected and how participation is structured. This includes the depth of student involvement, ranging from structured data collection to more inquiry-oriented engagement, and the pedagogical strategies used to support observation, questioning, and sensemaking within school settings. This variation has important implications for the kinds of competencies such programmes are likely to support.

Second, pedagogical integration and implementation emerge as critical but often under-specified dimensions. The role of teachers as mediators of learning, alignment with curriculum and assessment practices, and availability of pedagogical support strongly shape how experiential learning is enacted in classrooms. Implementation and equity conditions, including time constraints, teacher capacity, language, and digital access, play a decisive role in determining who can participate meaningfully and how learning opportunities are distributed. These conditions are frequently treated as peripheral rather than central to programme design.

Third, evaluation and evidence-building address how learning processes and programme functioning can be examined at early and mid-stages of implementation. Many initiatives lack clear, feasible tools for early-stage evaluation that align with NEP 2020's competency-oriented goals. Rather than focusing on impact alone, this dimension emphasises appropriate tools for formative evaluation, including process documentation, participation structures, teacher reflections, student artefacts (e.g., observation records or reflective outputs), and alignment with curricular competencies articulated under NEP 2020. This enables more realistic and context-sensitive assessment of whether programmes are progressing toward NEP 2020's pedagogical goals.

Together, these dimensions provide a structured way to move from policy aspiration to grounded analysis, making visible the mechanisms through which experiential learning initiatives under NEP 2020 generate, limit, or unevenly distribute educational opportunities.

Policy Implications and Relevance to NEP 2020

Existing research on school-based CS has largely focused on individual projects or

classroom-level implementations, documenting variation in teacher approaches, student participation, and learning opportunities (Carrier, 2024; Smith, 2025; Tsivitanidou & Ioannou, 2020). While these works provide valuable insights, it offers limited guidance for policymakers seeking to assess alignment with system-level reforms such as NEP 2020. The framework presented here builds on these studies by organising their insights into a coherent design–implementation–evaluation structure that is legible to policy actors. In doing so, it translates dispersed research findings into an analytical tool that can support evidence-informed decision-making, early-stage evaluation, and responsible scaling of experiential learning initiatives within Indian school systems. The framework offers a practical tool for policymakers, SCERTs, DIETs, NGOs, and programme designers seeking to strengthen experiential learning initiatives under NEP 2020. By explicitly linking content and pedagogy development, implementation conditions, and evaluation, it supports more realistic and context-sensitive decision-making.

It enables a more nuanced understanding of how experiential learning approaches can be adapted to different schooling realities, helping to identify pathways for strengthening implementation rather than simply evaluating outcomes. Rather than asking whether CS "works," the framework helps policy actors ask how initiatives can be better designed, supported, and evaluated to align with NEP 2020's equity, quality, and systems-transformation goals. It also provides a foundation for developing policy briefs, implementation checklists, and diagnostic tools that can guide scaling while remaining attentive to institutional capacity and local context. By addressing both how CS initiatives can be analysed in relation to NEP 2020 and how underlying design and implementation assumptions shape practice, the framework supports more grounded and responsible policy decision-making.

In doing so, this work contributes to the symposium's emphasis on moving from policy aspiration to grounded praxis, offering a pathway for generating evidence that is both analytically rigorous and policy relevant.

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3. CS and AI Education as Foundations for 21st-Century Competencies: Insights from the State of CS & AI Education Study in US By Saiprasad Sale and Prabhjot Kaur (Code.org)

Extended Abstract:

Context & Policy Linkage (to NEP 2020)

As societies increasingly rely on digital and algorithmic systems, education systems are re-examining the role of computer science (CS) and artificial intelligence (AI) in developing learners' capacities for problem-solving, logical reasoning, creativity, and adaptability. NEP 2020 reflects this global shift by emphasising computational thinking, experiential learning, and flexible curricular pathways that prepare learners for an evolving future.

Within Theme 4: Moving Beyond Foundational Skills, CS and AI education are increasingly viewed not merely as technical subjects, but as vehicles for cultivating higher-order competencies central to 21st-century learning. The State of CS & AI Education report published by the Code.org Advocacy Coalition provides a comprehensive overview of how CS and AI education are being positioned within education systems, highlighting trends related to curriculum, teacher preparation, participation, and equity.

This paper presents a high-level synthesis of insights from the report, connecting them to NEP 2020's emphasis on competency-based and future-oriented education. The intent is not to evaluate or replicate the report's findings, but to interpret its key messages for broader policy conversations on advancing learning beyond foundational skills.

2. Research Question(s)

This paper addresses the following synthesis-oriented questions:

1. How does the State of CS & AI Education report frame CS and AI education as contributors to 21st-century competencies?
2. What system-level conditions are highlighted as influencing access to and quality of CS and AI learning?
3. What implications do these insights hold for education systems seeking to align CS and AI education with the goals articulated in NEP 2020?

Methodology & Data Sources

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The paper uses a descriptive and analytical review methodology, drawing exclusively on secondary data from the State of CS & AI Education report and related policy documentation.

The analytical process involved:

- **Extraction of Key Indicators:**
  - Relevant sections of the report were reviewed to identify indicators related to curriculum standards, participation trends, teacher preparation, and equity considerations in CS and AI education.
- **Thematic Categorisation:**
  - Extracted information was categorised under themes aligned with Theme 4, including competency development, pedagogy, teacher capacity, and access.
- **Policy Interpretation:**
  - These themes were interpreted in relation to NEP 2020's priorities, focusing on conceptual relevance rather than direct applicability or outcome measurement.
  - The methodology is intentionally transparent and interpretive, aimed at presenting the report's insights in a policy-relevant manner.

Key Findings/Results

The synthesis highlights several consistent patterns. In particular, the findings on access, teacher preparation, and participation gaps offer important lessons for states attempting to move beyond pilot initiatives toward systemwide adoption.

- A. **CS and AI as Core Learning Domains:**
  - The report positions CS and AI education as central to developing computational thinking and structured problem-solving, rather than as optional or peripheral subjects.
- B. **Importance of Curriculum Clarity:**
  - Clear learning expectations and standards support more consistent implementation and help situate CS and AI within broader learning goals.
- C. **Teacher Preparation as a Critical Enabler:**
  - Teacher professional learning emerges as a key factor influencing classroom practice and learner outcomes in CS and AI education.
- D. **Equity as an Ongoing Challenge:**
  - Participation gaps persist across contexts, highlighting the need for

intentional design when scaling advanced competencies.

Policy Implications & Relevance to NEP 2020

The insights from the State of CS & AI Education report reinforce NEP 2020's call for education systems that cultivate higher-order competencies through coherent curriculum design, teacher capacity building, and equitable access. The synthesis underscores that CS and AI education are most effective when framed as contributors to broader learning goals rather than isolated technical pathways.

By situating these insights within Theme 4, the paper contributes to policy discussions on how education systems can move beyond foundational skills toward deeper, future-focused learning aligned with NEP 2020's vision.

4. Beyond Platforms and Access: Teacher Capability, Institutional Capacity, and AI Readiness under India's National Education Policy 2020 By Tushar Kaushik (University College London)

Extended Abstract:

Context and Policy Linkage

NEP 2020 highlights teacher education and institutional strength as key drivers of systemic reform. The policy emphasises continued professional development (CPD), the revamp of public teacher training bodies like SCERT and DIET in the form of platforms like DIKSHA, and the strategic deployment of digital tools to improve quality, equity, and reach. In this framework, teachers are viewed not just as the reform implementers but as active professional agents responsible for pedagogical innovation within a transformed governance and training landscape.

At the same time, NEP 2020 advances an ambitious digital agenda, in which emerging technologies are increasingly positioned as enablers of personalised learning, improved assessment, and instructional efficiency. However, while the policy articulates a normative commitment to technology-enabled transformation, it provides very limited specification of the professional capabilities and ethical safeguards required for teachers to engage with technology (including AI) in pedagogically sound and socially responsible ways.

This ambiguity seems to reflect an implicit policy logic within NEP 2020. That teacher's capability in emerging technologies will evolve organically through scale, access to digital platforms, and exposure to innovation. With this logic, competency development appears to be assumed to follow from participation in digitally mediated programmes, rather than from clearly articulated professional standards supported by sustained institutional capacity. This assumption is consequential in a system of uneven administrative capacity, variable infrastructure, and historically fragmented approaches to teacher development.

Global frameworks such as UNESCO's Artificial Intelligence Competency Framework for Teachers (AICFT) have defined the knowledge, skills, and ethical orientations teachers require to work with AI. Yet there is limited empirical evidence on how such global frameworks align with India's policy ecosystem and teachers' lived professional realities.

This study reframes AI-related teacher preparedness not as a question of technological adoption, but as an implementation and institutional capacity challenge embedded within

NEP 2020's teacher education reforms. The study analyses policy texts and teacher perceptions to locate where AI-related professional expectations exceed existing institutional capacity.

Research Questions

1. Adapted from a broader post-grad inquiry and reframed for the purposes of policy analysis under NEP 2020, this study addresses the following research questions:
2. How do national education policy and programme documents in India conceptualise teacher preparedness for technology-enabled teaching and learning?
3. What individual, institutional, and systemic factors shape teachers' perceived readiness to engage with artificial intelligence in pedagogically and ethically responsible ways?
4. How do teachers prioritise different dimensions of AI-related competence, and where do gaps between perceived importance and self-assessed competence become evident?
5. What implications do these patterns have for the design of teacher professional development and the strengthening of public teacher education institutions under NEP 2020?

Together, these questions position teacher competence as a systemic outcome rather than as an individual attribute or a by-product of technological exposure.

Methodology

The study adopts a mixed-methods design combining documentary policy analysis with quantitative survey data from in-service teachers in India.

First, a structured documentary analysis was conducted of key national policy and programme documents associated with NEP 2020 implementation, including documents related to teacher professional development, digital education initiatives, and technology-enabled governance. This analysis examined how AI, digital pedagogy, ethics and teacher capacity are framed, with particular attention to whether explicit teacher-facing competency expectations are articulated.

Second, a cross-sectional survey was administered to 139 in-service teachers across varied educational contexts. The survey instrument was adapted from AICFT and covered domains including Ethics of AI, AI for Professional Development, AI Pedagogy and Human-centred

AI. Respondents rated both the perceived importance of specific AI-related competencies and their self-assessed competence, enabling systematic comparison between aspiration and preparedness.

Quantitative analysis included descriptive statistics, Kaiser-Meyer-Olkin (KMO) and Bartlett's tests to assess factorability, exploratory factor analysis to identify latent structures in teachers' conceptualisation of AI competence, and gap analysis comparing perceived importance and competence across domains.

The study is subject to methodological limitations, including reliance on self-reported data and a non-random sample. However, the survey data demonstrated significant factorability (KMO > 0.80; Bartlett's test $p < 0.001$), supporting the robustness of the underlying constructs examined.

Key Findings

Four findings emerge with direct relevance for teacher education reform and institutional capacity-building under NEP 2020:

First, policy articulation of teacher competence remains broad and underspecified.

While the national policy and programme documents strongly emphasise digital innovation and technology-enabled learning, they rarely outline what teachers are expected to know or do with AI in classroom instruction, assessment, or professional decision-making. Ethical considerations such as data privacy, bias, and professional judgment are largely missing, placing a significant interpretive burden on implementing institutions and individual teachers.

Second, teachers report high perceived importance of AI-related competencies alongside minimal formal training exposure. Across all domains, respondents consistently rated AI-related competencies as important for future teaching practice, particularly in instructional support. However, most reported little or no engagement with structured professional development focused on AI. This indicates a substantial readiness-support gap.

Third, the most pronounced competence gaps relate to ethics and pedagogical integration rather than basic technical operation. Teachers expressed particular uncertainty around issues such as algorithmic bias, data protection, and appropriate pedagogical use of AI tools. This challenges policy assumptions that infrastructure provision or basic digital literacy training may be enough.

Fourth, teachers conceptualise AI readiness as a holistic professional capability. Exploratory factor analysis reveals that ethical awareness, pedagogical judgment, and assessment practices cluster together in teachers' perceptions of AI competence. This suggests that teachers do not view AI as a discrete technical skill, but as an integrated aspect of professional practice.

Collectively, these findings point to a misalignment between NEP 2020's current policy instruments (platform-based) and the integrated forms of professional capability required for responsible AI use.

Relevance to NEP 2020

The findings generate several implications for NEP 2020 implementation, particularly in relation to teacher professional development and institutional capacity-building.

First, AI-related teacher professional development should be conceptualised as sequenced capability-building rather than rapid skill acquisition. Ethical reasoning and pedagogical judgment must precede large-scale deployment of AI tools, aligning with NEP 2020's emphasis on values-based education and teacher professional autonomy.

Second, institutions like SCERTs and DIETs need to function as governance and capability anchors, not merely as delivery channels for centrally designed digital content. These institutions are uniquely positioned to contextualise ethical norms, mediate pedagogical interpretation, and sustain professional learning communities over time.

Third, NEP 2020 implementation would benefit from the development of basic governance routines around AI use in schools. These include ethical safeguards, guidance on procurement and deployment, and mechanisms for professional deliberation and reporting. Such routines can enable innovation while mitigating risks associated with unregulated or uneven adoption.

Finally, the findings underscore the need for a contextualised, implementation-oriented adaptation of global AI competency frameworks for teachers. The evidence suggests that competency expectations must evolve through policy learning grounded in India's institutional capacities and professional development systems.

Conclusion

This study contributes to evidence-based discussions on how emerging technologies can

be integrated into Indian education systems in ways that advance equity, quality, and sustainable reform. It demonstrates that AI-related teacher preparedness under NEP 2020 cannot be assumed to emerge through access, scale, or platforms alone. Instead, it requires deliberate institutional investment.

5. Piloting AI-enabled Competency-based Assessment and Public Disclosure at School Level in Jodhpur: A Case Study by Dr. Geetika Bhandari, Kavita Malik, Purvi Goyal, Ann Ria Reji, Komal Kasera (Central Square Foundation)

Extended Abstract:

Context & Policy Linkage (to NEP 2020)

School readiness, or a child's preparedness to thrive in Grade 1, depends heavily on learning and development that happens before age 6, a period during which more than 85% of brain development occurs (Gilmore, J. H., Knickmeyer, R. C., & Gao, W., 2018). India's National Education Policy (NEP) 2020 recognises this by positioning early childhood education (ECE) as the first step towards foundational literacy and numeracy, defining the foundational stage as ages 3 to 8. Building on this, the National Curriculum Framework for the Foundational Stage (NCF-FS, 2022) lays out sequenced learning outcomes across five developmental domains and positions routine assessment as a driver of improved classroom practice and policy for school readiness.

Presently, for ages 6 and below, India relies on independent or small-scale assessment evidence to understand early learning and school readiness. For example, the India Early Childhood Education Impact Study (India Early Childhood Education Impact Study [IECEI], 2017) and ASER's Early Years (ASER Centre, 2019). While influential, these studies are (i) not representative and (ii) conducted prior to universalisation of FLN in India in 2020, painting a partial picture of systemic reforms for school readiness that have followed since.

Even so, regular and large-scale ECCE evidence on how school-ready children are remains limited. School Readiness Measurement tools often require substantial adaptation to local contexts to ensure they capture child development rather than contextual differences, and they demand intensive assessor training and calibration to preserve reliability. Further, direct child assessments can be time-consuming and material-intensive, which creates practical constraints for frequent and routine administration at scale (UNESCO, UNICEF, Brookings Institution, & World Bank, 2017).

This paper examines, both practically and methodologically, what is required to measure school readiness in India in a manner that is both NEP-aligned and system-feasible. The central question is not only what to measure, but how to measure it reliably under routine constraints. The paper therefore poses the following research questions focused on

instrument adaptation, on-ground feasibility, and NEP-aligned enabling conditions.

Research Questions

1. Measurement validity for policy use: To what extent can an adapted early childhood assessment instrument meaningfully assess school readiness among 5–6-year-olds?

2. Implementation constraints and data quality: Which on-ground operational constraints most strongly affect fidelity, comparability, and scalability of readiness measurement?

3. System design for NEP alignment: What institutional mechanisms are required to integrate readiness measurement into routine foundational-stage governance under NEP 2020?

Methodology & Data Sources

I. Tool selection and adaptation approach

Stages of Tool Adaptation

1.Document/Landscape Review

2.Item Review and Modification

3.Tool Pilot

4.Tool refinement & Finalisation

A landscape review of global and Indian early-learning assessment tools was conducted to identify an instrument aligned with India's competency frameworks while retaining relevance and measurement credibility. The review considered widely used international and national measures, such as IDELA, the World Bank, ASER Early Years, and Azim Premji University's Early Learners Assessment. The review concluded that no single existing tool fully captured the competencies essential for school readiness in a manner that was also feasible for regular administration at scale. This gap motivated the development of an adaptation pathway to create a 'School Readiness Instrument' for children aged 5 to 6 that enables timely, actionable evidence for school readiness at scale.

Azim Premji University's Early Learners Assessment (ELA) was selected as the most

promising base given its evidence-based design, open-access availability, NCF alignment, prior field use in India, and customisability for state contexts.

Crucially, ELA is designed as a performance-based diagnostic and interactive assessment. The University notes that administering the assessment can take about an hour, potentially spread across two days by two assessors.

While these design features support rich diagnostic profiling within the 3–5 age band, they pose constraints for time-bounded, frequent school-readiness measurement intended to capture preparedness of ages 5-6 for the transition into Grade 1 at scale.

Accordingly, the adaptation strategy focused on :

1. Mapping and aligning items to NCF-FS
2. Streamlining operational and logistical challenges
3. Refining task design and scoring rubrics

II. Pilot design and field implementation

Two iterative pilots were undertaken to test

1. Whether the adapted tool was measuring intended constructs in the target age group for school readiness and
2. Whether it could be implemented with fidelity in real Anganwadi conditions.

Pilot 1 (Aligarh): A small-scale trial in 7 Anganwadis covering 23 children (age 5+) tested item clarity, child engagement, and early performance patterns. The pilot also served as an early check on whether tasks exhibited floor/ceiling tendencies and whether scoring rubrics captured meaningful progression within 5-6-year-olds.

Pilot 2 (Ghaziabad): This pilot tested the tool at a larger scale across 101 Anganwadis with 249 children to surface operational constraints and performance trends. Twenty-four items mapped to age-wise competencies were tested, and 21 ECE kits were prepared at a cost of up to ₹1,200 per kit. Data were collected by 21 field investigators, supported by a 3-day training and planning process to assess implementation constraints. Two data-capture modes were tested, a survey booklet and the Tangerine platform, to assess the feasibility of rapid technology-enabled data collection.

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Key Findings/Results

1. **Measurement Validity: Does the adapted tool capture the school readiness of children?**

   Findings from the Aligarh pilot indicated that the adapted tasks elicit meaningful variation in performance among the school-readiness age group (5-6 years). Across both pilots, the assessment also enabled a structured examination of how children completed tasks with varying levels of assessor support (e.g., verbal cues, repeated instructions, or physical demonstrations), particularly more difficult items.

2. **Implementation - What operational factors most strongly shape fidelity, reliability, and comparability?**

   Operational constraints strongly affected feasibility and consistency. Administration time exceeded 60 minutes per child, leading to fatigue and lower engagement. Assessors sometimes skipped or reordered activities to increase coverage, which reduced comparability across children and centres.

   A second constraint was the need for training and scoring consistency. Because administration requires structured prompting and rubric-based scoring, intensive practice and strong calibration routines are needed to reduce inter-rater variability.

   Third, material requirements constrained feasibility. The kit was relatively costly and difficult to source, and set up increased manpower needs, sometimes requiring two people per child.

3. Designing for scale - What adaptations are required to make school readiness measurement operationally viable?

   The pilots identified three sets of adaptations necessary for readiness measurement to be viable for routine implementation while remaining aligned with foundational-stage competency expectations.

   First, the instrument requires deliberate streamlining to reduce administration time. Recommended changes include removing low-yield items, bundling tasks using shared and print-friendly stimuli, and mapping tasks to fewer competencies.

Second, assessor training requires redesign toward hands-on demonstration and extensive monitoring.

Third, a leaner kit design combined with phone-based data collection, such as Tangerine, can also reduce the human resource intensity of assessment by lowering setup time, handling complexity, and the need for additional logistical support.

Policy Implications and Relevance to NEP 2020

The findings underscore that school readiness measurement is not merely a technical exercise in tool selection, but a set of design choices that determine feasibility, fidelity, and use.

First, school readiness measurement should be institutionalised as a routine component of foundational-stage monitoring rather than remaining episodic or pilot-driven.

Second, readiness measurement must be designed as a curriculum-linked and implementation-ready assessment using low-cost, print-friendly stimuli and rapid administration and capacity building protocols.

Building on these insights, Central Square Foundation (CSF) developed a streamlined, print-friendly school-readiness instrument for children aged 5–6 that can be administered in approximately 20 minutes by a single assessor and is contextualised for Uttar Pradesh. The revised tool is intended to support routine readiness measurement at the point of transition into Grade 1 and will be piloted across 70,000+ co-located Anganwadis.

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