Theme 1: FLN & ECCE

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.