Applying Behavioral Insights to Improve Teacher Adoption of Effective Practices in Uttar Pradesh

Designed by ideas42

Summary

This study evaluated behavioral interventions to enhance the adoption of effective teaching practices in Uttar Pradesh's foundational literacy and numeracy (FLN) program. Key barriers included resistance to change, cognitive overload, and limited usability of instructional materials. A randomized controlled trial tested a WhatsApp-based lesson-planning chatbot and instructional micro-practice videos, yielding limited overall effects but some subgroup-specific improvements in teacher motivation and perceived value of teaching resources. Findings highlight the need for deeper integration with government systems, stronger teacher engagement, and peer recognition strategies to enhance intervention effectiveness.

The challenge

India, like many countries, has struggled in recent years with a persistent "learning crisis," in which increasing access to education has not yielded equivalent gains in learning. As of 2022, nearly all eligible children were enrolled in school, yet many failed to meet the standard for their grades. In rural parts of the country, only 21 per cent of third-grade learners were able to read at a second-grade level, and only one in four could perform basic subtraction.

To address this gap in learning, the state of Uttar Pradesh launched a state-wide foundational literacy and numeracy (FLN) program under India's National Initiative for Proficiency in Reading with Understanding and Numeracy (NIPUN Bharat) in 2021. It included new initiatives to strengthen communication and governance within the educational system, as well as for building capacity and providing revised teaching and learning materials. Yet, despite the promise of new, high-quality pedagogy tools and structured lesson plans, ***teachers' adoption of effective teaching practices and program materials remained low.***

The Central Square Foundation (CSF) and the Centre for Social and Behaviour Change (CSBC) at Ashoka University supported the state-wide initiative by conducting research activities to identify the mindsets, attitudes, and behaviors preventing teachers from adopting effective instructional materials and practices. They then designed and tested behavioral interventions to overcome those barriers and increase teachers' use of proven instructional materials and practices.

Behavioral insights and solutions

The CSF and CSBC teams conducted three months of qualitative research in the Sitapur, Hardoi, and Barabanki districts of Uttar Pradesh to understand the barriers keeping teachers from adopting materials and practices. The first phase of research drew on interviews, focus group discussions, and opportunities to observe and shadow teachers and Academic Resource Persons (ARPs, or coaches) to understand the experiences, beliefs and perspectives driving their behavior. A second phase of research sought a deeper understanding of classroom practices and user experiences with FLN tools and materials through additional classroom observations, a user perception survey, as well as interviews and consultations with a broader array of stakeholders including school leaders, block officers, and civil society organizations.

This research uncovered a number of behavioral barriers to adopting materials and best practices, including:

1. **Status quo bias:** Teachers experience a preference for existing practices, and resist change.

2. **Cognitive overload:** Teachers are overwhelmed by their non-teaching and administrative responsibilities and have limited attention to dedicate to learning new practices.

3. **Limited usability of teacher guides:** teacher guides provided to teachers to support lesson planning were reported to be bulky, text-heavy, and difficult to use.

4. **Low sense of agency:** teachers, told so often what to do and how, reported feeling unable to affect change. Instead, they tended to shift blame for poor outcomes to others in the educational system, such as learners' parents, who, in the words of one teacher, "…[F]avor traditional methods of teaching like giving written work to students" over classroom activities.

5. **Lack of belief in preparation:** Teachers believed that their own preparation for class was unimportant. Instead, they assumed that as long as students attended class regularly, they would learn naturally, regardless of the teaching methods used.

To encourage teachers to use prescribed pedagogical practices, two behaviorally informed solution packages were designed to complement the state FLN program by addressing these barriers. The first solution package centered on a chatbot to simplify access to daily lesson plans in the state-provided teacher guides.

▸ **Lesson-plan chatbot:** A WhatsApp-based chatbot was developed to make it easy for teachers to access lesson plans. The Chabot offered short, bulleted text summaries and two-to-three-minute audio recordings of daily lesson plans to those teachers who opted-in to consult it.

▸ **Reminder messages:** To encourage engagement, users also received daily reminders asking, "What would you like to teach?" to prompt teachers to think about using lesson plans.

▸ **Feedback stickers:** weekly streak stickers were sent to remind teachers of their weekly usage. The stickers further incentivized consistent use by acknowledging the unbroken usage streaks of regular chatbot users and encouraged inconsistent chatbot users to repair their streaks.

▸ **Monthly report cards:** A monthly report card was shared, comparing user's usage statistics to those of their peers to encourage engagement through social comparison.

The second solution package centered on a series of instructional videos helping teachers understand how to implement different practices.

▶ **_Micro-practice videos with social proof messages:_** Teachers participating in WhatsApp groups received a series of short video recordings, each showing a teacher conducting an effective teaching practice in a contextual classroom setting. The videos highlighted key steps for implementing the practice. This was followed by a video from key messengers, such as teacher coaches, who re-emphasized the importance of the practice shown in the demonstration video. Each video was followed by a poll of the WhatsApp group to gauge comprehension. To encourage engagement with the videos, teachers on the WhatsApp groups also received reminder messages leveraging social proof by highlighting how many of the participants' peers had already watched the video.

▶ **_Summary infographics:_** Teachers also received infographics summarizing key steps for implementing each practice.

▶ **_Leader banner and reward certificates:_** To acknowledge those teachers who did engage with the videos, the program issued a leader banner to recognize teachers who had engaged with the videos in the previous two weeks, and issued a bimonthly certificate to acknowledge teachers demonstrating knowledge of micro-practices through an online assessment form.

Results

The behavioral solutions were evaluated in a randomized controlled trial (RCT) between September 2023 and April 2024 in two districts of Uttar Pradesh—Sitapur and Hardoi. Teachers were randomly assigned to one of three groups: a treatment group with access to the chatbot, another treatment group with access to micro-practice videos, and a control group that did not receive any additional training or materials. Baseline survey data was collected in-person at the start of the study in September 2023, after which teachers in treatment groups attended a short, 30-minute orientation in which they were introduced to their assigned solutions. Phone surveys collected midline data with a sub-sample of participants in February 2024, and endline survey data was collected at the study's conclusion in April 2024.

Ultimately, while the study did not find the solutions to have had a significant impact on knowledge, adoption, or the valuation of effective teaching practices, some effects were observed in secondary outcomes. Across the participant sample, exposure to the chatbot was only successful in leading to a small positive effect on teachers' belief that parents are accepting of new teaching methods. However, in the micro-practice video group, teachers were less likely to improve their self-assessed ability to contribute to FLN goals and their intention to use teacher guides. Subgroup analysis also yielded some evidence (p<0.10) of differing effects on Assistant Teachers, who have permanent posts and higher salaries, and Shiksha Mitras, who are employed on contractual bases with much lower salaries. It also yielded some heterogeneous effects by region.

Chatbot led to small gains in valuation of teaching resources, teacher-reported learners' reaching FLN goals, teacher motivation, and some beliefs

When examining sub-groups among those who had access to the chatbot:

▸ Assistant Teachers (permanent teachers) experienced small positive effects on reported student outcomes. They were **34% more likely** than those in the control group to report a greater proportion of students achieving higher learning outcomes than in their previous class.

▸ Shiksha Mitra (contractual teachers) were **52% more likely** to increase their motivation. They were **73% more likely** to believe that new pedagogical practices can improve student outcomes. However, they were also 33% less likely to improve their rating of their own ability to contribute to FLN goals.

▸ Sitapur teachers increased their valuation of the teacher guide by Rs.18.3 and valuation of training on effective teaching practices by Rs. 55.20.

▸ Hardoi teachers were 43.5% less likely to improve rating of their ability to contribute to FLN goals and 43.3% less likely to improve intention to use teacher guides.

## Micro-Practice Videos led to small increases in teachers' motivation and their valuation of teacher guides

Sub-group analysis suggests that among those who had access to micro-practice videos:

▸ Assistant Teachers were likely to experience **small increases in their valuation of teaching guides** (Rs. 15.7), and a **reduction in confidence bias**, i.e., their overestimation of their own ability (-0.03 points). However, they also became 39% less likely to believe in their own ability to contribute to FLN goals, and 32% less likely to report an intention to use teacher guides.

▸ Shiksha Mitras experienced a **small positive effect on their motivation** (68%). However, they too experienced negative effects on their self-reported ability to contribute to FLN goals (-39%), and on their intention to use teacher guides (-48%) and adopt new practices (-40%). Hardoi teachers experienced small negative effects on knowledge score (-0.036 points), self-reported ability to contribute to FLN goals (-59.8%) and on their intention to use teacher guides (50.7%) and adopt new practices (- 43.3%).

Engagement with both solution packages was high among a small-set of dedicated users, while engagement with micro-practice videos declined over time

While most participating teachers tried the chatbot—almost 90% *started* a chatbot flow at least once, and over two-thirds *completed* a flow at least once—most teachers did not sustain engagement with the chatbot over time. Only half of all participants accessed the chatbot on seven or more days. However, among the 20% of teachers who engaged with the chatbot most regularly, the median number of days was much higher, at 51 days.

Number of days flow was started by users in 40-60th percentile across the intervention period
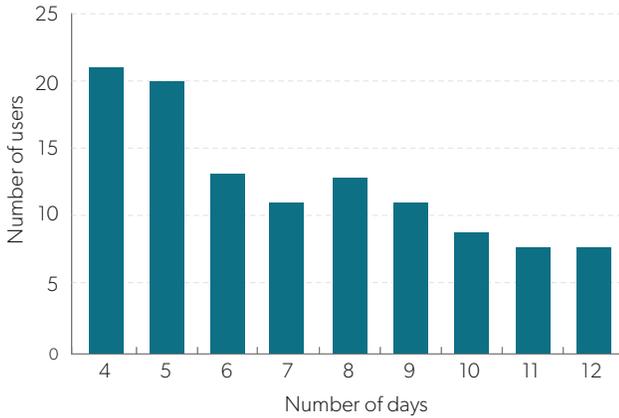
Number of days the bot flow was started by top 20th percentile users across the intervention period
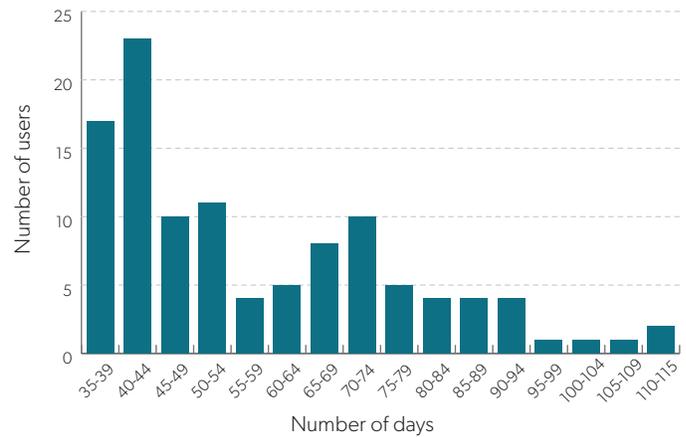
Using responses to WhatsApp polls as a proxy for engagement with the micro-practice videos suggests that on average, 17% of teachers engaged with the videos across the program cycle. Engagement was highest with the first video, and subsequently trended lower. Surging engagement at poll 6 may have resulted from the sharing of a testimonial video from a top teacher, while the small surge after poll 8 may be linked to nudges from government officials.

Whatsapp Polls Participation Rates Trend

Engagement in Sitapur was consistently higher than in Hardoi

Additionally, both solution packages were likely to yield more positive impacts in Sitapur than in Hardoi, which saw small negative effects on knowledge among participants with access to micro-practice videos and a decrease in valuation of teacher guides and practices among participants with access to either solution. In contrast, Sitapur experienced a slight increase in valuation of teacher guides and practices among participants with access to the chatbot, while the negative effects observed in Hardoi (or any other samples) were completely absent, suggesting the possibility of Hardoi-driven negative effects.

Ultimately, the study did not suggest any effects on metrics for knowledge or behavior, indicating that while some teachers value teacher guides and practices and exhibit improved attitudes, there remains significant room for improvement. Qualitative research findings suggest some explanations for these trends. First, teachers may have experienced some structural barriers to use. In Sitapur, higher adoption rates were likely facilitated by better connectivity, while lower engagement in Hardoi may have been due to infrastructure gaps, issues with digital literacy, and resistance from teacher unions over privacy concerns. Some teachers also reported feeling overwhelmed by the digital solutions, perceiving them as additional burdens rather than supportive aids. Teacher engagement was also subject-specific. Adoption was higher for lessons in literacy than numeracy, where structured pedagogical models were inconsistently applied. Finally, schools with greater community and parental involvement saw better outcomes; however, economic and cultural barriers in underserved areas limited parental engagement, reinforcing disparities in educational support.

Recommendations

Given the small and dispersed positive effects from the experimental findings—significant only at the 10% level, limited to certain sub-groups, and observed in just a few outcome variables—the study team does not recommend scaling up the interventions as they are. However, considering the recommendations below may make behavioral solutions like the chatbot and micro-practice videos more valuable to programs:

▶ *Balance user acceptability with accountability:* The solutions were intended to be small additions to an already intensive program that would provide easy access to an existing teacher guide and lesson plans without alienating teachers. They suffered low overall engagement likely stemming from suboptimal buy-in and structural challenges rather than deficiencies with the solutions' content. A higher-touch approach with more in-person elements and accountability might have increased the interventions' effectiveness.

▶ *Securing buy-in may require substantial support:* The 30-minute orientation that participants were initially provided to introduce the solutions was too brief, and likely failed to show them how the interventions could integrate with existing practices. Clearer communication that called more attention to the opportunities for teachers to ease their workload, for the simplification of existing resources, and made teachers feel appreciated by more consistently recognizing their efforts, could all have helped to secure greater buy-in.

▶ ***Use peer recognition and social proof to encourage engagement:*** Our engagement data from monitoring indicated that recognizing teachers for their efforts and highlighting that others are also participating are effective motivators for increasing teacher engagement. Those teachers who engaged more actively did seem to appreciate the solutions, finding them easy to use and reporting positive impacts, such as improvements in classroom instruction, assistance with classroom preparation, and learning new things.

▶ ***Streamline solutions by integrating them into existing government systems:*** To effectively integrate pedagogical practices and structured lesson plans requires a multicomponent intervention addressing both behavioral and systemic issues. This should be embedded within the government system, with clear communication, accountability, and targeted efforts across different levels, including teachers, coaches and mentors, and officials.

In spite of the need to continue to revise the solutions and their implementation, applying behavioral science methods and adopting a careful program of monitoring and testing the solutions proved to be a rewarding and insight-filled process. The learnings from this attempt to identify and address barriers to the adoption of teaching resources and practices will ensure that future attempts are more impactful.