

Iterating the Role of School Principals in Improving Foundational Numeracy through Individual and Group Targeting in India and Indonesia

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Introduction

The pandemic-induced school closures have affected more than 1.5 billion students worldwide (UNESCO, 2020). Elongated school closures often result in significant student learning loss (Cooper et al. 1996; Slade et al. 2017; Jaume and Willen 2018; Andrabi, Daniels, and Das 2020) and exacerbated learning poverty (World Bank, 2023). The Teaching at the Right Level (TaRL) principles of focusing on foundational skills, assessing students frequently, and adjusting teaching to student levels have been included as top recommendations for education systems to address learning loss among students (UNICEF, 2023; World Bank, 2023).

TaRL has been rigorously evaluated in various contexts using different approaches, ranging from dedicated time during school hours, in-school learning or holiday camps, and out-of-school community groups led by trained facilitators (Banerjee et al. 2007; Duflo et al., 2008; Duflo et al., 2011; Banerjee et al., 2016; Banerjee et al., 2017; Duflo et al. 2022). Along similar strands of TaRL, tutoring programs, which are even more targeted at individual or smaller groups of students, have led to large improvements in student learning outcomes (Nickow et al., 2020). Some studies on the group and individual targeted instructions and remedial learning implemented during and immediately after the pandemic also found positive results on student outcomes (Angrist et. al., 2023; Singh, et al., 2023).

Most group and individual targeting interventions have relied solely on training teachers or volunteers to carry those out. However, they tend to bypass or overlook the role played by school leaders – a key body of actors in school systems. This could be a significant missed opportunity. School leaders should be better supported to lead education reforms in LMICs, as investing in school leadership enhances teaching and learning, potentially in a cost-effective manner (Anand et al., 2023; Bloom et al., 2015; Crawford, 2017; Leaver et al., 2019). Meta-analyses in LMICs also underscore the importance of school leadership in driving student success (Leaver et al., 2019; Adelman and Lemos, 2021). While the evidence is mixed on which area of school leadership training improves learning outcomes in LMICs (de Barros et al., 2019; Muralidharan & Singh, 2020; Romero et al., 2021; Cilliers & Habyarimana, 2021; Beg et al., 2021), instances of school leaders supporting teachers with their teaching practices have more consistently resulted in better student outcomes (de Barros et al., 2019; Bellibaş et al., 2021; Bush et al., 2022; Cilliers et al., 2022; de Hoyos et al., 2021; Delavallade et al., 2021; Lemos et al., 2021).

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About the Research

In this paper, we bring together the demonstrated effectiveness of TaRL-inspired programs and the possibilities of strengthening and scaling them through school leaders supporting instructional practices. We synthesize findings from three qualitative studies examining different iterations of school leaders supporting teachers in implementing individual and group targeting strategies in Indian and Indonesian public schools.

These studies complemented RCTs and A/B testing on the effectiveness of remedial numeracy programs between 2021 and 2024 in India and Indonesia. They were motivated by the larger research question – in what ways do school leaders support the effective execution of targeted instruction programs?

Preliminary findings reveal two key insights. First, TaRL-inspired programs to mitigate learning losses had the most impact in schools where school leaders were also trained, clearly understood the purpose of the interventions, and demonstrated a desire to sustain such remedial interventions going forward. Second, despite no strong evidence of explicit instructional leadership, effective interventions were driven by principals who actively handled logistical and monitoring tasks related to the program.

These findings highlight the need to involve school leaders more closely with evidence-based intervention programs in schools and also emphasize the need for principals to be adept at more basic managerial and soft leadership skills as a prerequisite for instructional leadership – especially in contexts where principals have been historically positioned as mere administrators.

Study I: Telangana, India

The first study focuses on a phone-based tutoring program in numeracy, implemented by Alok in Telangana, India, as part of a multi-country Randomized Controlled Trial (Angrist et al., 2023). Alok trained 30 teachers in implementing the intervention to children in grades 3, 4, and 5. A unique feature of Alok's program was the involvement of 14 school principals in the program delivery. We conducted a qualitative study to complement the RCT to understand better a potential mechanism to strengthen the intervention by leveraging the role of school principals. We interviewed all participating school principals and a stratified sample of 12 teachers who delivered the instructions between October and November 2021. We also interviewed the local education official and the NGO representative to collect feedback from the implementation and identify potential pathways and concerns for scaling up.

Our analysis of the interviews showed three specific characteristics that distinguished school leaders where the program's impact on student learning was higher than others.

- First, these school leaders had a significantly more positive initial reaction towards the program than others who were apprehensive about the potential of phone calls for teaching. They were “very excited” about the interventions and felt that it would be of “great benefit for the marginalized students who are away from the smart technology.”

- Second, these school leaders clearly understood and aligned with the program's primary motivations. They recognized the learning losses induced by school closures during the pandemic and saw the program as a means to continue learning for children who did not have internet access or smartphones, as compared to others who executed the program because they were "asked to" or as a way of being in continuous contact with students.
- Third, these school leaders expressed a strong desire to sustain the program even after the intervention ended, seeing it as an approach to utilize during future school closures and providing additional personalized attention to students who were not proficient in foundational numeracy. Other principals were skeptical of continuing a phone-based program once schools reopened and felt in-person classes could not be substituted by anything else. Based on this analysis, we identified the kinds of mindsets and thinking among school leaders that, though not necessarily causal and the only explanation, were strongly correlated with the program's impacts on student learning.

However, the research design for the study did not allow us to understand the additional impact of including school principals in the training on improvement in student learning outcomes. We also wanted to understand the kind of behaviors or actions school leaders would be required to demonstrate for effectively implementing targeted remedial interventions in their schools. This motivated the research design for our second study in Indonesia.

Study II: Karawang, West Java, Indonesia

This study was implemented in 2022 as part of a pilot in 25 public primary schools in Karawang, West Java, Indonesia. The pilot compared four interventions. All groups trained grade 3 and 4 teachers on conducting numeracy assessments, grouping students based on their numeracy levels, targeting teaching based on the relevant mathematical operations, and reassessing students frequently to adjust their levels. In all schools, we implemented a group foundational learning based on student numeracy levels. In a randomly assigned half of the schools, in addition to the basic model, teachers delivered targeted individual tutoring every two weeks to ten students who struggled the most in foundational numeracy. In addition, we also randomly assigned half of the schools, where we trained school principals to support teachers in implementing basic or basic and tutoring models.

The pilot was implemented over eight weeks, involving 1545 students through training 50 teachers and 23 principals. We evaluated the outcomes using quantitative data on student assessments at baseline, throughout implementation, and at endline and circulated surveys to all principals and teachers at baseline and endline. We also interviewed the principal and two teachers in eight schools (two from each intervention group) and observed their check-in meetings.

After implementing four interventions, we found that all interventions significantly improved the foundational numeracy skills of students, and teachers in schools with trained principals were more punctual in implementing the interventions. The biggest implementation challenge was scheduling the sessions, while the most significant barrier to progress was teachers' belief in students' abilities. School leaders carried out several logistical and managerial tasks that helped

with more effective fidelity of the program. These included signing off permissions to schedule classes flexibly, monitoring data entry, supporting teachers with limited technical proficiency for the digital entry of data, forwarding program-related communication in a timely manner, and regularly checking in with teachers about any problems they were facing. In some cases, school leaders even substituted absent teachers and taught on their behalf; a few others brainstormed instructional strategies with teachers to support students at the lowest learning levels. In a context where principals' roles have been largely relegated to being administrative and bureaucratic, the active involvement of the school leaders with the day-to-day operations of the program was a first step towards instructional leadership. As such, we surmise that in addition to instructional leadership skills, school principals also need additional training in management and soft skills (Susanti et al., forthcoming).

Study III: Subang and Bekasi, West Java, Indonesia

The third study was a follow-up to the pilot study in Indonesia, which utilized a Randomized Control Trial (RCT) design. The RCT ran for eight months in 300 public primary schools in Bekasi and Subang districts in the West Java province of Indonesia. The schools were randomly assigned to two treatment arms and one control group of 100 schools each. We compared two interventions where teachers received three training days on differentiated learning and methods to teach basic numeracy and growth mindset. In Treatment 1, the school principals joined the first training session to get an overview of the intervention, similar to how a government training program would normally be executed. In Treatment 2, the school principals participated in the same training as teachers, and they both learned about the role of school principals in observing the classroom and providing feedback.

The qualitative study randomly selected 12 schools, 6 each from two treatment arms and the two districts. The schools were also stratified by program uptake level, i.e., 6 schools with low or very low program take-up and 6 with high or very high program take-up. We conducted semi-structured interviews with the grade 4 teacher and the school principal, in addition to 2 school supervisors and 2 government officials involved in the implementation of the program. We also observed the grade 4 math classroom when the differentiated learning session occurred. Initial findings from the first data collection identify that the additional training content on management and growth mindset has allowed school principals to become better instructional leaders. They are more likely to observe the differentiated learning sessions and guide teachers on effective teaching practices. Teachers also report that SLs having more information about the program and the differentiated learning has been helpful for them in delivering the sessions, especially grouping the students based on their numeracy levels. The data collection and analysis for this final qualitative study is still ongoing, and we will be able to share some of the preliminary findings from it at the conference.

Conclusion

Our research underscores the critical role of school leaders in enhancing the effectiveness of targeted instructional interventions, particularly in the context of addressing learning losses

exacerbated by the pandemic-induced school closures. Findings from the three research studies suggest that school leaders can be a critical lever in improving program uptake and implementation within the school. School leaders perform logistical and managerial tasks that help sustain the fidelity of the program. They need training in both management and instruction leadership to support teachers in delivering remedial learning in the schools given the complexities involved in carrying out such interventions, both administratively and pedagogically. By empowering school leaders to effectively support teachers in implementing targeted instructional strategies, education systems can better address learning deficits and promote student success, particularly in low- and middle-income countries where the need for such interventions is acute. Continuing efforts to integrate school leaders into evidence-based interventions and provide them with the necessary training, resources, and motivation will improve program effectiveness and educational outcomes.