

Parhai On Call

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Program Overview/Description

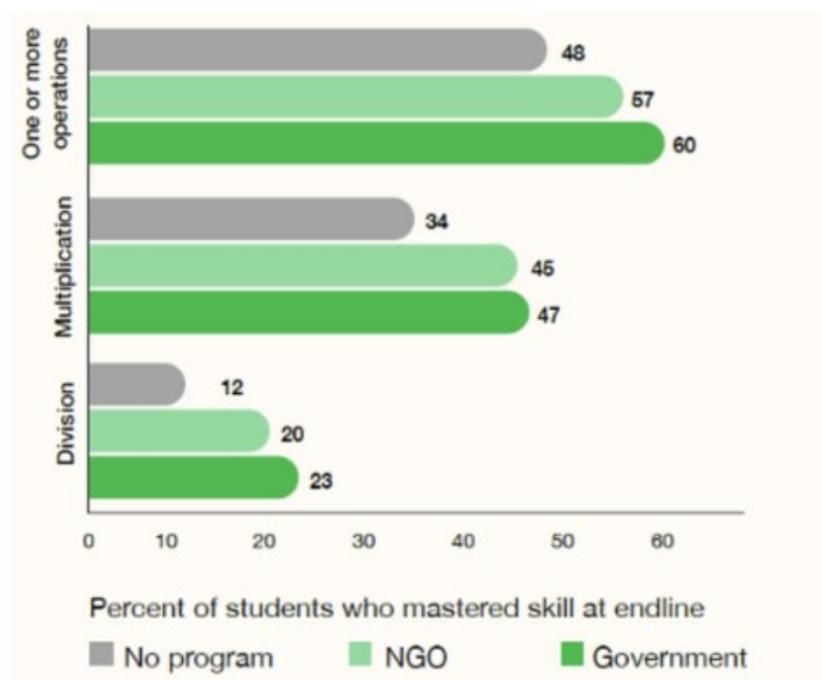
Pakistan is going through a major learning crisis. With over 26 million children not going to school, massive drop-out rates, and poor learning outcomes of students enrolled in schools, we are facing an emergency situation. Earlier this year, the Prime Minister of Pakistan declared an education emergency in the country to address this major challenge.

The National Institute of Excellence in Teacher Education (NIETE) is a flagship project of Taleemabad, an ed-tech organisation that aims to end this learning crisis in Pakistan and beyond. We have collaborated with the Federal Ministry of Education to launch teacher training programs in 342 schools across the rural and urban areas of Islamabad. The program aims to train and empower 4000 teachers and serve 90,000 students. As part of our offering, teachers have access to scripted lesson plans, digital teacher training, and assessment tools through their mobile phones.

NIETE also regularly conducts impact evaluations to assess program effectiveness. While we have seen great progress in English and Urdu foundational literacy, students seem to lag behind in numeracy. To address that, we adapted an international program that provides targeted instruction to students in foundational numeracy.

In June 2024, during the summer vacations in ICT schools, we started the targeted instruction program with around 1500 students based on ConnectEd research. The research reports impressive impact gains up to 0.89 SD through phone tutoring. Here are the results of the original study. The graph is taken from the ConnectEd website.

NGO and government phone tutors similarly improved mathematics learning substantially (average of Nepal and Philippines)



The program targets Grades 3, 4, and 5 and focuses on the four operations in numeracy: addition, subtraction, multiplication, and division. The graph shows impressive results with 60% of students mastering at least one or more operations by the end of the program.

Pre-Program

Program Design/Subgroups of Participating Students

14,000 students from 75 schools from all six sectors of Islamabad, equally divided between urban and rural, were randomly selected for the program. Coaches at NIETE were selected as tutors for this program. The tutors contacted the parents of all these students to check their willingness to the program. Due to incomplete/ unverified data, we could speak to 43% of the parents. Out of these 6101 parents, about 68% of the parents showed willingness to participate in the program. The major reasons behind not participating in the program included the student being out of station, unavailability of the parent during official hours, and ongoing tuition support.

As the parents indicated a willingness to participate in the program, they were inquired about the most suitable time and day of the week to teach their kids. Each student across the program was contacted at the designated time and slot every week. Contrary to popular perception, it was also discovered that among the parents willing to participate in the program from all urban and rural sectors, 78% had access to the Internet.

The participating students were taught through three different strategies.

1. Gamified learning over WhatsApp only
2. Over-the-phone tutoring only
3. Gamified learning over WhatsApp combined with over-the-phone tutoring

For the students taught over the phone, the tutor called them at the designated time and slot for 20 minutes each week. Based on each child's learning level according to the diagnostic assessment, the tutor used to deliver a lesson as the student, on their end, practised simultaneously. At the end of each lesson, a small assessment was conducted to assess the learning in that call. If the child was able to pass the assessment, they were promoted to the next arithmetic level for the upcoming week.

For the students who were taught through gamified learning, they were sent a WhatsApp message with the relevant link, according to their learning level as indicated by the diagnostic assessment. The students learned through a gamified video about that arithmetic operation, followed by a quiz embedded in the same platform. At the end of the week, the tutor assessed the results of the assessment and based on the child's learning level, the strategy for the upcoming week was devised.

Sampling and Selection

Across the participating schools, a total of 1710 students were assigned at random to either treatment or control groups. Treatment groups received several versions of the intervention for analytical purposes, we consider only the differences between treatment and control.

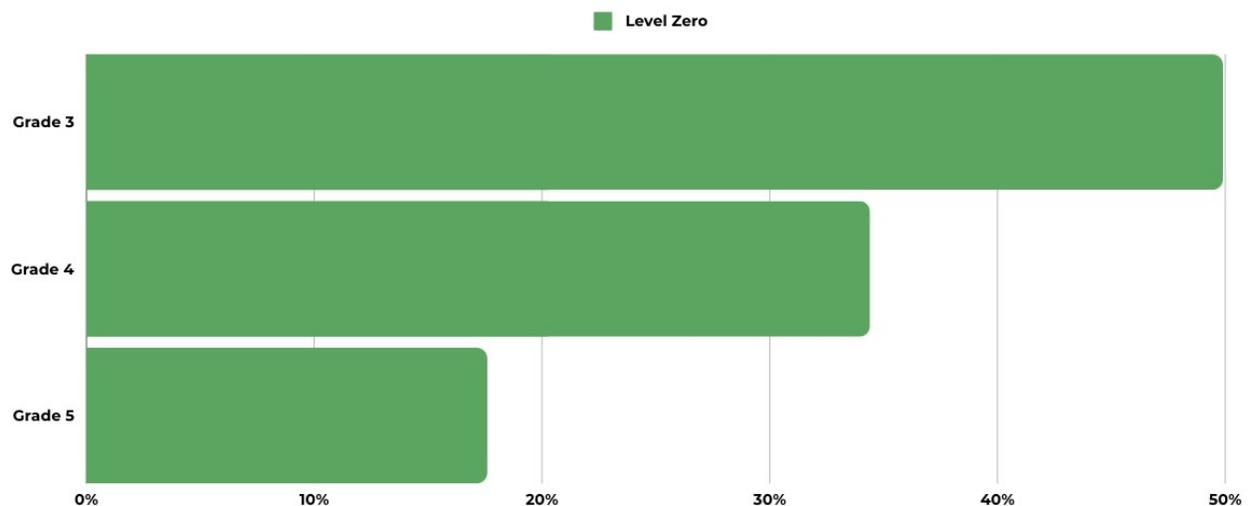
Balance

At baseline, the intervention and treatment groups were balanced with regards to their learning level considering two metrics of learning levels: 1) total correct answers to arithmetic operations (control mean = 2.36, treatment mean = 2.25), and 2) highest operation level (division in both arms).

Diagnostic Results

%age of children at the highest level at baseline.

The following graph represents the diagnostic results of around 1200 students. On average, almost 50% of Grade 3 students cannot do any arithmetic operation. Some students didn't even understand the concept of place values. The number decreases as you move up the grade. 34% of students in Grade 4 and 18% of students in Grade 5 couldn't do a single operation.



During-Program

Insights/learnings from talking to Parents/Students

- At the first step of the program, we were not able to connect to 57% of the students due to incomplete/ incorrect data. It is critical for the schools to have updated and verified data to have a similar intervention. NIETE has already collected data of 90,000 students from the schools which is in the process of

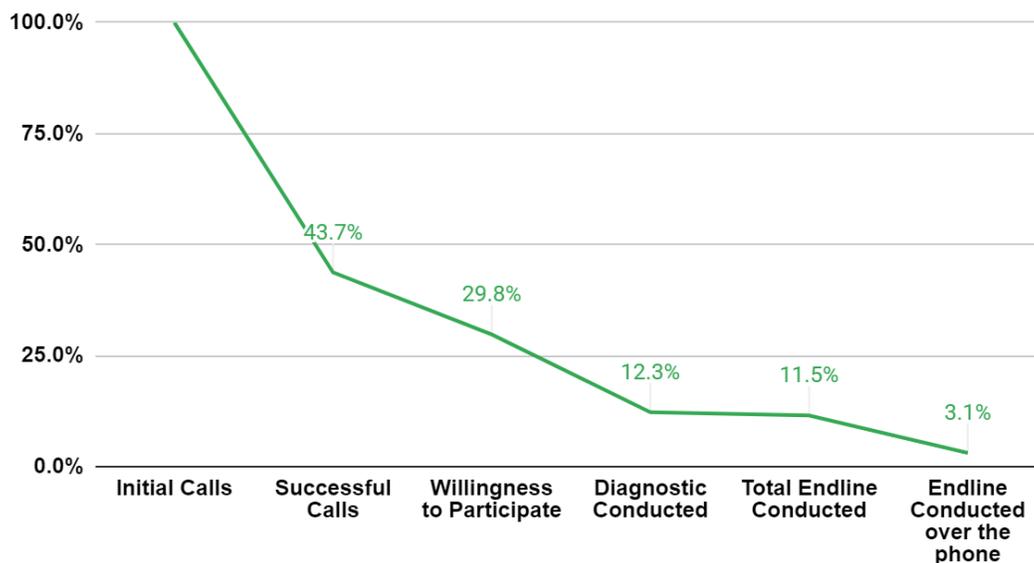
being verified through teachers and a call centre team. It will pave the way for future initiatives.

- 68% of the parents who were contacted, signed up for the initiative which demonstrates an urge among the parents to improve their child's learning outcomes. However, it is also critical to figure out a collaborative instead of a directive way to engage them in their child's education. The tutors shared their intent, strategy, and developed a partnership with each parent for the program which resulted in a surge in interest and participation of the parents. Therefore, sensitization, respect, consistent and clear communication of intent and strategy are crucial to build parents' ownership in any initiative.
- Students and parents highly regard the input of the teachers. If an initiative is led by the school or communicated by the teacher, it has a much higher likelihood of being adopted. We need to put teachers at the heart of any intervention, not just in terms of implementation but also at the planning level. It is something our program was not fully able to do but it is an important learning for us.
- Parents have differing schedules due to a range of employment domains they are involved in. It is important to keep this in mind while planning any intervention which requires their time and attention either in-person or remotely.
- A large number of students in Islamabad Capital Territory travel to their hometowns in the summer break which also posed a challenge in higher retention rate as the father, who is usually the only member to possess a mobile phone, stayed back and the family travelled to its hometown.
- Students do not largely understand the concept of place value which is foundational to building their concepts in Mathematics. This should be a keen focus of teaching in Mathematics' classes in schools which should be reiterated as the arithmetic operations are taught instead of being a one-off lecture.
- It is crucial to build a consistent line of communication with the parents. As Ashura break approached in our program, we were not able to clearly communicate this to the parents and students waited for the tutoring that week. It eventually led to a low retention rate in the week afterward. Parents and students have found to be keen in participating in these initiatives. However,

their retention is contingent on consistent and clear communication throughout the program, among other factors.

- We conducted the over-the-phone endline assessment after the school reopened due to time constraints. It was assessed that over-the-phone tutoring during official hours was not a viable strategy as the father, whose phone was usually used for tutoring, was busy with his work during the day. On top of that, the students also used to get busy with other things such as tuitions and quran classes. Therefore, there was a steep drop in the student engagement for phone assessment as soon as the schools reopened.
- As we took the principals on board and stepped into the schools to conduct the remaining endline assessments, we were able to cover 92% of the students which again demonstrates the impact of principal and teachers' involvement in any initiative.

Parhai On Call - Retention Graph



Call recordings that we found interesting.

Post-Program

Methodology

At the endline, we assess two outcomes: 1) improvement in the total number of correct responses to mathematical operations, and 2) improvement in the complexity of mathematical operations performed compared to baseline. Both of these are binary variables.

For (2), addition is considered the least complex operation followed by subtraction, multiplication, and division in increasing levels of complexity.

We estimate the effect of treatment on the treated (ToT) as opposed to the intent to treat (ITT) estimate. This is because while many students were assigned to treatment, it was not possible to reach them by phone and therefore they are considered as control students in our analysis.

Results

A total of 1597 students were assessed during the endline, which represents a 6.6% dropout rate. There is no evidence of differential attrition between the control and treatment groups.

Outcome 1: improvement in the total number of correct responses

At the endline, the proportion of learners in the control group showing an improvement in total number of correct responses was 27% compared to 33% in treatment, a 6% difference that is also statistically significant.

Expressed in standard deviations, this difference is equivalent to 0.14.

Outcome 2: improvement in learning level

At the endline, the proportion of learners in the control group having shown an improvement in the complexity of mathematical operation conducted compared to baseline was 24% compared to 28% in treatment, a 4% difference that is also statistically significant.

Expressed in standard deviations, this difference is equivalent to 0.09.

Path Forward

How do we make programs of this sort better and larger/more scalable? Lessons from ConnectEd and how they scaled it.

The phone tutoring program with on-call targeted instruction has demonstrated the effectiveness of low-cost interventions in significantly improving student learning outcomes within just three to four weeks. This approach shows immense potential for scalability, especially by leveraging multiple platforms, including AI. For instance, we could develop AI-driven chatbots to deliver targeted instruction via phone calls and SMS, ensuring personalized support for students at a fraction of traditional costs.

We are already piloting this innovative approach and expect concrete results by next year. To further enhance impact, we can collaborate with government bodies for widespread implementation. Additionally, training tuition teachers to apply similar strategies can extend our reach and help students boost their learning outcomes in various settings. The key to long-term success lies in forging broader partnerships with diverse stakeholders, which will be essential in scaling these initiatives for broader educational improvements.

Impact

Impact Report on Week-on-Week Skill Level Improvement

Overview:

Grade	3		4		5	
%age at all correct	C	I	C	I	C	I
Baseline	4.3%	4.7%	9.7%	6.7%	11%	13.1%
Endline	3%	7%	8%	13%	14%	16%
Percentage Improvement	-30.23%	48.94%	-17.53%	94.03%	27.27%	22.14%

Grade	3		4		5	
%age of Level 1 - Addition	C	I	C	I	C	I
Baseline	5.16%	15.07%	11.41%	13.14%	10.60%	6.64%
Endline	8.74%	7.16%	14.56%	5.63%	3.88%	2.56%

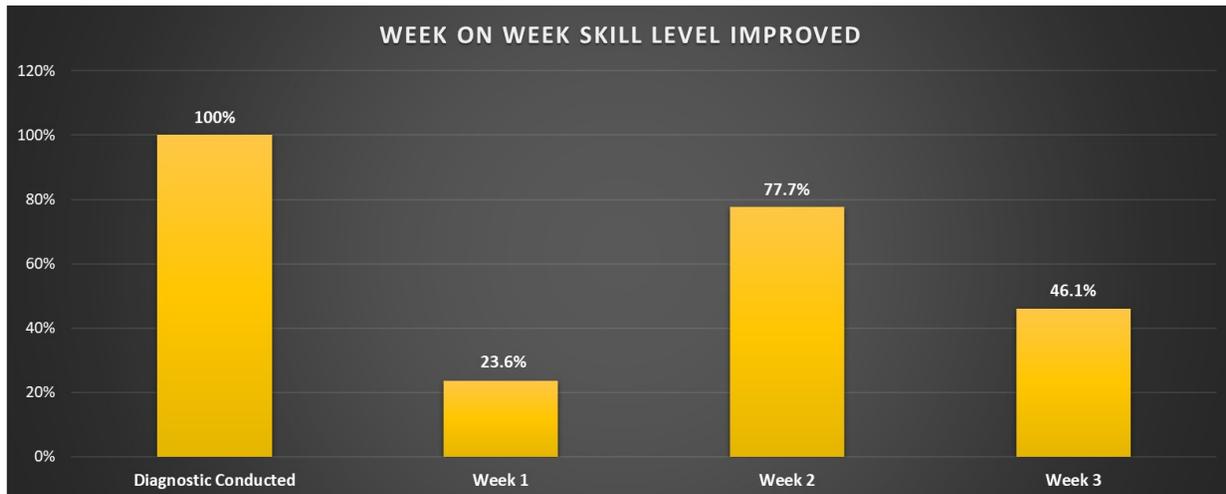
Parhai On Call is a tutoring through phone program in which a tutor calls each child once a week for 20 minutes to teach numeracy according to their level. At the start of the program, diagnostic assessments were conducted to measure each child's arithmetic skill level. Based on this assessment, each child is given personalized instruction over the next few weeks.

In our Parhai On Call program, we have included about 3808 students i.e. 2208 treatment students and 1600 control group students from all six sectors in Islamabad of grades 3, 4, and 5. We were able to conduct the Diagnostic on 1339 students. The below table highlights the count of students against each numeracy level in Diagnostic conducted on phone call.

Initial Diagnostic Stats						
Numeracy Level	Addition	Subtraction	Multiplication	Division	All Correct	Total
Total	467	156	103	285	328	1339
Percentage	34.87%	11.65%	7.69%	21.28%	24.49%	100%

The "Parhai On Call" program was successfully executed over a three-week period, during which student engagement was maximized, and their skill levels were meticulously tracked at weekly checkpoints. The accompanying graph illustrates the progression of skill improvement over these three weeks, benchmarked against the initial diagnostic assessment.

Week-on-Week Skill Level Improved:



Key Observations:

- 1. Initial Diagnostics** refers to the initial level of students on which we conducted the diagnostic. We took them as a population of analysis to see the level of improvement.
- 2. Week 1:**
 - **23.6% Improvement:** A moderate improvement was observed after the first week. This suggests initial resistance or challenges faced by participants in adapting to the learning process. This improvement is measured against the Initial Diagnostic Level.
- 3. Week 2:**
 - **77.7% Improvement:** In the second week, there was a significant increase in level improvement, with students showing a strong ability to learn and apply new skills. Some students showed improvement by more than one level. This improvement is measured against both Week 1 and the initial diagnostic level.
- 4. Week 3:**
 - **46.1% Improvement:** In the third week we saw more than 46% students who improved their level from the initial diagnostics level. Some students showed improvement by more than one level. This improvement is measured against Week 2, Week 1 and the initial diagnostic level.

Overall Summary:

The "Parhai On Call" program demonstrated a steady and impactful progression in skill improvement over the three-week period. In Week 1, a 23.6% improvement was observed, indicating a moderate increase in skills as participants began adapting to the learning process, though some faced initial challenges. The program's effectiveness became more evident in Week 2, where a significant 77.7% improvement was recorded.

During this week, students exhibited a strong ability to learn and apply new skills, with many advancing by more than one level. In Week 3, there was a 46.1% improvement, reflecting continued progress. The overall trajectory of the program was positive, with consistent gains in skill levels across all weeks when measured against the previous week and initial diagnostic level.

One potential improvement to enhance our control measures could be to provide parents with structured lessons that they can teach their children at home. This would allow us to compare the effectiveness of parent-led at-home learning with the learning outcomes achieved through our call-based instruction.