

Early Childhood Years: Research and Evaluation

Pratham Education Foundation

Early childhood education has garnered significant attention in the international community in recent years. Even within Pratham, there is a renewed focus on early years (ages 3-8) as a crucial stage for a child's development. Building the right foundations in the early years can lead to a substantial improvement in the life chances of an individual and enable a more productive journey ahead.

Based on this belief, Pratham has significantly expanded its early years programming and continues to rigorously research and evaluate its own programs and practices. This is done through internal metrics and measurements and also with external partners. Internally, Pratham has developed measurement tools for evaluating the impact of its early years interventions; these data are discussed internally for improving design and functioning of programs. Independent of Pratham's work on the ground, ASER Centre (the autonomous research and assessment arm of Pratham) has also consistently reported on early years schooling and learning levels through its annual publication, the Annual Status of Education Report (ASER). ASER Centre also carries out research studies and quantitative and qualitative investigations to understand how children progress as they grow. All of these efforts demonstrate Pratham's recognition of early years as foundational to the child's development, and Pratham's long run commitment to evidence-based interventions.



The table below summarizes Pratham's major research and evaluation work relating to early years, including both Program Evaluations and Independent Research Studies.

Program Evaluations	Location	Pratham's Partners	Status
Balwadi Deworming 2001-2002 <i>Randomized controlled trial</i>	Delhi	J-PAL, Berkeley Center for Health Research, ICICI Bank, World Bank	Completed
Impact of Mother Literacy and Participation Programs on Child Learning 2010-2012 <i>Randomized controlled trial</i>	Bihar, Rajasthan	J-PAL, International Initiative for Impact Evaluation	Completed
Pre-Math Games 2013-2017 <i>Randomized controlled trial</i>	Delhi	J-PAL, Laboratory for Developmental Studies (Harvard University), New York University, MIT's Department of Economics	Ongoing
Talking Stickers 2017-2019 <i>Randomized controlled trial</i>	Delhi	Global TIES for Children (New York University), Atollo SE	Completed
Early Childhood Development and Nutrition 2015-2020 <i>Randomized controlled trial</i>	Odisha	The Institute for Fiscal Studies, Centre for Early Childhood Education and Development (Ambedkar University), J-PAL, Morsel	Ongoing
Mothers involvement in improving learning (Community involvement in TaRL) 2018-2020 <i>Randomized controlled trial</i>	Assam	Stockholm School of Economics, J-PAL	Ongoing
Impact of early years interventions on school readiness, math and language abilities of children 2018-2019 <i>Scoping Study/Survey</i>	Delhi	UBS Optimus Foundation, J-PAL	Ongoing
Community-based intervention for the early years 2019-2022 <i>Randomized controlled trial</i>	Gujarat	King Philanthropies, J-PAL	To be started
Independent Research Studies	Location	Partners	Status
India Early Childhood Education Impact Study 2011-2016 <i>Mixed methods longitudinal research study</i>	Assam, Rajasthan, Telangana	Centre for Early Childhood Education and Development (Ambedkar University), UNICEF	Completed
Annual Status of Education Report 2005-2014, 2016, 2018	Rural India (All districts)	Local partners in every rural district in India	Completed so far

Program Evaluations

Balwadi Deworming in India | Delhi

Type of Study: Randomized Controlled Trial

Location: Delhi

Pratham's Role: Implementation partner

Evaluator: The Abdul Latif Jameel Poverty Action Lab (J-PAL)

Partners: Berkeley Center for Health Research, ICICI Bank, World Bank

Sample: 200 preschools with 2,392 children (ages 2-6)

Target Group: Pre-primary schools, students

Outcome of Interest: Anemia, enrollment, and attendance

Intervention Type: Deworming

Timeline: 2001-2002 **Status:** Completed

This study evaluated the impact of a preschool nutrition and health project on child health and attendance in the slums of Delhi where J-PAL served as the evaluator and Pratham, the implementing partner. Prior to the study, over 69 percent of the sample in urban Delhi was anemic and 30 percent had intestinal worms, contributing to the high prevalence of malnutrition. The program delivered iron and Vitamin A supplements as well as deworming drugs to 2-6 year old children in Pratham preschools.

Each of the 200 preschools was randomly assigned into either one of three treatment groups or the control group, which were gradually phased into the program over a span of two years. In each treatment group, the iron supplementation and deworming drugs were administered by preschool teachers in "health camps" on site three times a year. All children (in both treatment and control groups) received Vitamin A supplements as well. As one measurement tool, a household survey was administered to a random 30 percent of the children from each preschool at the baseline and again before the final treatment group was phased in. Hemoglobin and parasitological tests were conducted during this survey, and children's height and weight were measured during each health camp. Additionally, participation data was collected during unannounced monthly visits to each preschool.

Results of the evaluation show that the program positively impacted weight gain and school attendance, especially for groups with high baseline rates of anemia. Large gains (roughly 0.5 kg on average) were seen in child weight in treatment schools compared to control schools after five months of intervention, although there were no gains in average child height. Average preschool attendance rates increased by 5.8 percent for children in treatment schools, equating to a one-fifth reduction in absenteeism. These findings contribute to the understanding of how health impairments can hinder a child's full participation in early childhood education.

A more thorough report on the evaluation and findings can be accessed [here](#)¹.

¹https://www.povertyactionlab.org/sites/default/files/publications/23_69%20Balwadi%20Deworming%20Working%20Paper%20Feb%202006.pdf

Impact of Mother Literacy and Participation Programs on Child Learning in India | Bihar and Rajasthan

Type of Study: Randomized Controlled Trial

Location: Bihar and Rajasthan

Pratham's Role: Program design and implementation partner

ASER Centre's Role: Assessment partner

Evaluator: The Abdul Latif Jameel Poverty Action Lab (J-PAL)

Partners: International Initiative for Impact Evaluation

Sample: Mothers of children in Grades 1 and 2 across 8,888 households in 480 villages

Target Group: Children, students, women and girls

Outcome of Interest: Employment, student learning

Intervention Type: Early childhood development, tracking and remedial education

Timeline: 2010-2012

Status: Completed

This evaluation contributes to evidence suggesting that parental involvement can impact children's academic performance. Researchers conducted an RCT in 480 villages in Bihar and Rajasthan to evaluate the effectiveness of adult literacy and parental involvement interventions in improving children's learning. The target population was mothers of first- and second-grade children who were enrolled in another Pratham program.

Each of the 480 villages was randomly assigned into either the control group (no intervention) or one of three treatment arms. Households in villages in the treatment groups received either (1) adult literacy (language and math) classes for mothers, (2) training for mothers on how to enhance their children's learning at home, or (3) a combination of the two programs. Mothers and their children were tested at the start of the intervention and again one year later. This data was complemented by a detailed household survey that focused on mothers' outcomes, children's outcomes, and mother-child interactions.

The three interventions increased women's empowerment, mothers' participation in child learning, and the presence of education assets on the home. Additionally, all three interventions improved mothers' scores on a combined language and math test by 0.11, 0.06, and 0.15 standard deviations, respectively, when compared to the control group. The interventions had a modest impact on children's math scores as well (0.04, 0.05, and 0.07 standard deviations), but only the combined intervention had a significant impact on children's language outcomes. None of the treatment groups led to a significant increase in the time mothers spent directly helping children with homework. Evidence from the evaluation supports the hypothesis that the home learning environment can be improved through these programs, but questions remain about the cost-effectiveness of the programs and whether they may have affected children directly.

A report on the mother's literacy intervention and subsequent RCT can be found [here](#)².

² https://www.povertyactionlab.org/sites/default/files/publications/458_Impact-of-Maternal-Literacy-and-Participation-Programs_banerji-berry-shotland_february2017.pdf

Pre-Math Games | Delhi

Type of Study: Randomized Controlled Trial

Location: Delhi

Pratham's Role: Program partner (Phases 1 and 2)

Evaluator: The Abdul Latif Jameel Poverty Action Lab (J-PAL)

Partners: Laboratory for Developmental Studies (Harvard University), New York University, MIT's Department of Economics

Sample: Phase 1 - 214 preschools with 1,540 children; Phase 2 - 256 preschools with 2,000 children (mostly ages 3-7)

Target Group: Children under 5, teachers

Outcome of Interest: Student learning

Intervention Type: Early childhood development

Timeline: Phase 1 - 2013-2017; Phase 2 - 2015-2017; Phase 3 - 2018-TBD

Status: Ongoing

This study evaluates a game-based preschool curriculum intended to develop children's emergent math skills. The curriculum was designed to exercise the informal numerical and spatial skills that children begin to develop in their early years, with the goal of preparing them for success in mathematics upon entering primary school.

Phase 1

The first phase of the intervention lasted for four months and was implemented in 214 Pratham-supported preschools in Delhi, reaching 1,540 children.

Each preschool was randomly assigned to one of three conditions. In the math condition, children played math games for three 1-hour sessions each week in place of the regular preschool curriculum. In the no-treatment control condition, children received no change in the Pratham preschool curriculum. In the active control condition, children played social games of similar difficulty as the math games. This condition was used to distinguish general effects of game play from results attributable to the mathematical content specific to the math condition.

Game play sessions (both the math and social type) were run by intervention teachers hired by Pratham. These teachers were trained by the research team on how to conduct the activities with children and evaluate their performance.

Baseline and three endline assessments were conducted. Compared with children who played social games, the children who played math games showed better performance on both non-symbolic and symbolic math assessments at the first endline. By the third endline, however, only improvements in non-symbolic measures remained. Thus, the preschool intervention showed no impact on subsequent learning of mathematics once children entered primary school.

To read more about Phase 1 of the pre-math games evaluation, see [here](#)³.

Phase 2

The results from Phase 1 suggest that the math games caused lasting gains in children's non-symbolic math skills, but did not enhance children's readiness for the symbolic content that central to the primary school curriculum. The researchers hypothesized that the failure of transference was due to a lack of stimulation connecting the games' content to the formal concepts children were expected to learn.

As a result, Phase 2 of the intervention sought to make these connections more explicit in two ways: (1) by creating a new set of games using mathematical symbols, and (2) by introducing both the original non-symbolic games and the new symbolic games together. Thus, Phase 2 included three interventions: non-symbolic math games, symbolic math games, and a "transition" set of games which linked the two.

The sample included 256 Pratham-supported preschools, reaching 2,000 children across Delhi. The researchers expected that the transition intervention would show the largest gains in math ability with regard to formal concepts, which was true immediately following the program (first endline). However, at the second endline, only the children in the non-symbolic intervention group showed lasting gains, outperforming the other two intervention groups even on symbolic tasks. Preliminary results from the third endline assessment (over a year after completion of the intervention) suggest that the transition condition exhibits the largest lasting gains.

Phase 2 findings demonstrate that exposure to games involving both symbolic and non-symbolic math content can lead to lasting gains in the symbolic skills essential to primary school. The transition condition appears to achieve similar gains as the non-symbolic condition in half the time, and has a larger impact on symbolic skill acquisition. Given that few interventions in preschool have led to durable gains, a curriculum that combines intuitive and formal mathematics could have a lasting impact on mathematics abilities as children transition to primary school.

The research team has now progressed into Phase 3 of the intervention, for which Pratham is no longer involved.

³ science.sciencemag.org/content/357/6346/47

Talking Stickers | Delhi

Type of Study: Randomized Controlled Trial

Location: Delhi

Pratham's Role: Implementing partner

Evaluator: Global TIES for Children (New York University)

Partners: Attollo SE, Grand Challenges Canada

Sample: 1,000 children from 45 MCD nurseries, ages 4-5

Target Group: Pre-school children (4+ years)

Outcome of Interest: Early language development

Intervention Type: App-based

Timeline: April 2017-March 2019

Status: Completed

This evaluation investigated the efficacy of Talking Stickers as a scalable and play-based early learning tool aimed at language and literacy development.

Talking Stickers is an app-based tool that can be used on smartphones or tablets, both in preschools and in homes or communities. A dry-run was conducted to test and modify content and implementation models prior to rollout in September 2018. This intervention was conducted in 45 Pratham-supported MCD nurseries in the Rohini region of Delhi.

Each of the 45 MCD nurseries were randomly assigned to treatment (23 schools) or control (22 schools), where only the treatment group received the Talking Stickers intervention. In each treatment preschool, 8 tabs were introduced. These tabs were implemented both in the classroom and in the community, where mothers facilitated their use. An orientation was conducted to show mothers how to use the tabs and related materials. Nursery instructors and some additional staff visited the community groups to provide support and ensure usage of the technology.

Baseline and endline assessments conducted by NYU were used to measure changes in the target outcome (early language development) as a result of the intervention. Additionally, a survey of participating children's primary caregivers was conducted to collect supplemental data, as well as focus group discussion and semi-structured interviews. Results of this study are expected by June 2019.

Early Childhood Development and Nutrition | Odisha

Type of Study: Randomized Controlled Trial

Location: Three rural districts in Odisha - Cuttack, Balasore and Balangir

ASER Centre's Role: Implementing partner

Evaluator: The Institute for Fiscal Studies (IFS)

Partners: Centre for Early Childhood Education and Development (Ambedkar University), J-PAL (Phase 1 data collection), Morsel (Phase 2 data collection), Yale University, Jacobs Foundation

Sample: Phase 1 - 192 villages with 1,427 children (ages 6 months-16 months) and their mothers/caregivers; Phase 2 - 192 villages with 737 target children (3-6 years) continuing from Phase 1

Target Group: Children, mothers/caregivers

Outcome of Interest: Nutrition

Intervention Type: Group or individual sessions in community, group sessions in anganwadi centres

Timeline: Phase 1 - 2015-2018 (piloted 2013-2015); Phase 2 - 2018-2020

Status of Current intervention: Ongoing

The Early Childhood Development and Nutrition Intervention program was implemented in three districts in Odisha (Cuttack, Balasore and Balangir), covering 1,427 children and their mothers/caregivers. The goal of the intervention was to develop and test scalable interventions that promote child development and thus improve adult outcomes.

Each of the 192 communities was randomly assigned to one of three treatment arms or the control group (no intervention). Two of the treatment arms combine nutrition communication with: (1) stimulation by home visiting; or (2) stimulation by group intervention. The third treatment arm includes only nutritional communication. Phase 1 of the intervention lasted for two years, and baseline, midline and endline data was collected using the Bayley Scales of Infant and Toddler Development, Ages and Stages Questionnaires and the Mother and Child Diet Tool (developed by ASER).

Baseline data and more details on the evaluation design for Phase 1 can be accessed [here](#)⁴.

The current phase of the intervention (Phase 2) aims to track the cohort from Phase 1 in the anganwadi centres and determine the best window to start an intervention so as to allow children to reach their full potential. This phase focuses on preschool education to improve the child's abilities in terms of cognitive, socio-emotional, language and pre-math development. The existing ICDS Odisha ECE curriculum has been enhanced to allow room for more material and effective usage of time and efforts of the anganwadi workers and helpers. Unlike the last phase where individual and group sessions were held in households and communities, the group sessions in the current phase occur in anganwadi centres and focus on the child's holistic development. The mother engagement component remains an integral component of the program with the idea that a mother's involvement supports and furthers the child's development.

⁴ <http://img.asercentre.org/docs/Capacity%20building/Other%20Social%20Sectors/baselinereportecdimpactingatscale.pdf>

Mothers' Involvement in Improving Learning (Community Involvement in TaRL) | Assam

Type of Study: Randomized Controlled Trial

Location: Rural villages in Nagaon District of Assam (3 Blocks)

Pratham's Role: Program design and implementation partner

Evaluator: The Abdul Latif Jameel Poverty Action Lab (J-PAL)

Partners: J-PAL, University of Stockholm, Carl Bennet AB

Sample: 200 schools/villages with 6,400 children, Grades 1-4

Target Group: Children, mothers

Outcome of Interest: Student academic performance

Intervention Type: Learning camps, library activity groups

Timeline: 2018-2020

Status: Ongoing

This project explores the effectiveness of two approaches at improving learning outcomes for primary school children in rural India: out-of-school community-based study groups and a previously evaluated level-based intervention conducted in schools. Using an RCT with a cross-cutting design, the researchers evaluate the impact on children's test scores of each approach separately as well as in combination.

The primary goal of this study is to evaluate the community-based groups, termed Library Activity Groups. Library Activity Groups aim to raise learning outcomes by giving children the opportunity to learn outside of the school setting via the support of mothers and other community members. Pratham will help set up groups of about seven children, after which the ownership will transfer to local resources (mothers who are expected to coordinate meetups for the children).

The second intervention is the proven Learning Camps approach, based on Pratham's Teaching at the Right Level methodology. The present study, however, tests the replicability of Learning Camps in a new setting (Assam) and measures its impact on younger children by including children in Grades 1 and 2 for the first time (previous evaluations looked at Grades 3-5). Finally, this project looks into potential synergies between the in-school and out-of-school interventions that may enhance their individual effectiveness.

Each of the 200 villages was randomly assigned into either the control group (no intervention) or one of three treatment groups. One treatment group received the Library Activity Groups intervention, one received the Learning Camp intervention, and the third received both. Data is collected at the baseline and endline (after 18 months of intervention) via three tools: a school survey, a primary caretaker survey, and a child-wise survey. The primary outcomes of interest will be test scores (according to the ASER tool) in mathematics, language, and figure recognition of students enrolled in the selected primary public schools.

Impact of early years interventions on school readiness, math and language abilities of children | Delhi

Type of Study: Scoping Study/Survey

Location: Urban households and government schools in Delhi

Pratham's Role: Program design and implementation partner

Evaluator: The Abdul Latif Jameel Poverty Action Lab (J-PAL)

Partners: J-PAL, UBS Optimus Foundation

Sample: ~ 2,000 children

Target Group: Children

Outcome of Interest: Student academic performance

Intervention Type: Anganwadi centered work and in-school intervention

Timeline: 2018-19

Status: Ongoing

The objective of this evaluation is to get an idea of the impact of Pratham's various Early Years interventions on school readiness abilities of children. The main question that the evaluation seeks to answer is: Do children who have received a Pratham Early Years intervention perform better than similarly-aged children who have not? There are four cohorts that are being assessed through the evaluation:

Cohort	Pratham Intervention (2017-2018)	Age Group	Location of Assessment
Cohort 1	Focus anganwadi	3-4	Community
Cohort 2	Balwadi	3-4	Community
Cohort 3	Nursery in MCD schools	4-5	Grade 1 in MCD Schools
Cohort 4	Grade 1 in MCD schools	5-7	Grade 2 in MCD Schools

While children of Cohorts 3 and Cohort 4 are being assessed in government schools itself, children of Cohorts 1 and 2 are being assessed in their households. Across all four cohorts, the treatment group has been sampled from children who received Pratham intervention in the 2017-2018 year but did not receive any Pratham intervention in the current year (2018-2019). The control group has been sampled from children who received no Pratham intervention in either year.

The evaluation forms a part of Pratham's effort to "Look Back" on its early years' interventions over the past one year to assess their impact on their developmental and basic literacy and numeracy abilities. Pratham is also simultaneously planning a "Looking Forward" exercise, by consolidating the various early years' interventions in one area, to allow for cohort tracking over time. This will include a longitudinal evaluation, aimed at tracking performance in subsequent grades as children move through different academic settings between preschool and school.

Community-Based Intervention for the Early Years | Gujarat

Type of Study: Randomized Controlled Trial

Location: Rural villages in Banaskantha District, Gujarat

Pratham's Role: Program design and implementation partner

Evaluator: The Abdul Latif Jameel Poverty Action Lab (J-PAL)

Partners: J-PAL, King Philanthropies

Sample: ~ 300 villages

Target Group: Children, mothers

Outcome of Interest: Student academic performance

Intervention Type: Anganwadi centered work and mother engagement

Timeline: 2019-2022

Status: To be started

Pratham is exploring the potential of engaging local community actors to drive change in children's learning outcomes over time through the Hamara Gaon (or *Our Village*) program. Under this intervention, Pratham seeks to consolidate interventions for different age groups in one village or community. Alongside the work on fundamental skills in government schools and centres, Pratham's teams will engage with children and other targeted groups, especially mothers, in the community through a number of community-based activities.

The main objective for the early years intervention under Hamara Gaon is that children become "ready for school" and parents develop the ability to support the children in their learning. The program model will involve three main elements: Instruction in Anganwadis and schools, Engagement with mothers and Community Events.

A key element of this program evaluation will be to understand the impact of multiple years of focused intervention with children in the early years age group (children aged 3 to 8) on their ability to cope with grade-level expectations.

Independent Research Studies

India Early Childhood Education Impact Study | Assam, Rajasthan, and Telangana

Type of Study: Mixed methods longitudinal research study

Location: Rural areas of Assam, Rajasthan, and Telangana

ASER Centre's Role: Research partner

Partners: Centre for Early Childhood Education and Development (Ambedkar University), UNICEF

Sample: 14,000 children (ages 4-8)

Target Group: Preschool and primary school children and their caregivers

Outcome of Interest: School readiness, early grade outcomes

Timeline: 2011-2016

Status: Completed

Using a longitudinal, mixed methods design, the IECEI Study documented the trajectories of 4-year-old children over a span of five years. The study sought to understand the impact of early learning, socialization, and school readiness experiences in preschool settings on a child's educational and behavioral outcomes upon entering primary school. The research design included observing children's participation in institutions, assessing school readiness levels and subsequent early grade learning outcomes, observing classrooms, and collecting information from preschools/schools and home visits in the community. The study also conducted an assessment of the quality of preschool programs and identified specific program characteristics that were associated with children's positive developmental outcomes.

While the IECEI Study found that 7 out of 10 sampled 4-year-olds were already attending preschool, results also suggested that many young children do not follow the linear trajectories expected of the education system. Participation in high quality preschools was found to lead to higher school readiness levels and better early grade outcomes, yet most children's levels were far below expectations by the time they entered primary school at age 5. Results also suggested that in both multi-tasked anganwadi centres and demand-driven private preschools, the quality of preschool education is not developmentally appropriate for the children who attend.

The IECEI Study produced a series of key policy recommendations to address the main findings from the report, including a developmentally appropriate play-based curriculum, community engagement, and inclusion of pre-primary education in the Right to Education Act (2009). The IECEI Study proposes an emerging model of good practice for ECE to promote school readiness. This model emphasizes the importance of an adequately trained teacher and an age and developmentally appropriate curriculum to foster children's social and cognitive school readiness prior to entering primary school.

For more information on the IECEI Study, see [here](#)⁵.

⁵ https://www.povertyactionlab.org/sites/default/files/publications/458_Impact-of-Maternal-Literacy-and-Participation-Programs_banerji-berry-shotland_february2017.pdf

Annual Status of Education Report | Rural India – All districts

Type of Study: Survey

Location: All rural districts of India

ASER Centre's Role: Design and Coordination

Sample: 700,000 children

Target Group: Children aged 3 to 16 years

Outcome of Interest: Learning Outcomes

Timeline: 2005-2014, 2016, 2018

Status: Completed so far

ASER stands for Annual Status of Education Report. This is an annual survey that aims to provide reliable estimates of children's enrolment and basic learning levels for each district and state in India. ASER has been conducted every year since 2005 in all rural districts of India. It is the largest citizen-led survey in India. It is also the only annual source of information on children's learning outcomes available in India today.

ASER is a household-based survey. This design enables all children to be included – those who have never been to school or have dropped out, as well as those who are in government schools, private schools, religious schools or anywhere else. In each rural district, 30 villages are sampled. In each village, 20 randomly selected households are surveyed. This process generates a total of 600 households per district, or about 300,000 households for the country as a whole. Approximately 700,000 children in the age group 3-16 who are residents in these households are surveyed. Information on schooling status is collected for all children living in sampled households who are in the age group 3-16. Children in the age group 5-16 are tested in basic reading and basic arithmetic. The same test is administered to all children.

Every year, some additional tests are also administered. These vary from year to year. In 2007, 2009, and 2012, for example, children were tested on basic English. In 2018, children aged 14 to 16 years were tested on additional higher-level competencies in reading and arithmetic based on the ASER 2017 "Beyond Basics" Survey⁶. In addition, basic household information is collected every year. In recent years, this has included household size, parental education, and some information on household assets.

ASER tools and procedures are designed by ASER Centre, the research and assessment arm of Pratham. The survey itself is coordinated by ASER Centre and facilitated by the Pratham network. It is conducted by close to 30,000 volunteers from partner organisations in each district such as colleges, universities, NGOs, youth groups, women's organisations, self-help groups and others.

The ASER model has been adapted for use in several countries around the world: Kenya, Uganda, Tanzania, Pakistan, Mali and Senegal. ASER reports since 2005 can be downloaded from the [website](#)⁷.

⁶ In 2017 the survey was conducted in its first alternate-year design known as ASER 'Beyond Basics', focusing on youth in the 14 to 18 age group in 28 districts across India

⁷ <http://www.asercentre.org/Keywords/p/346.html>