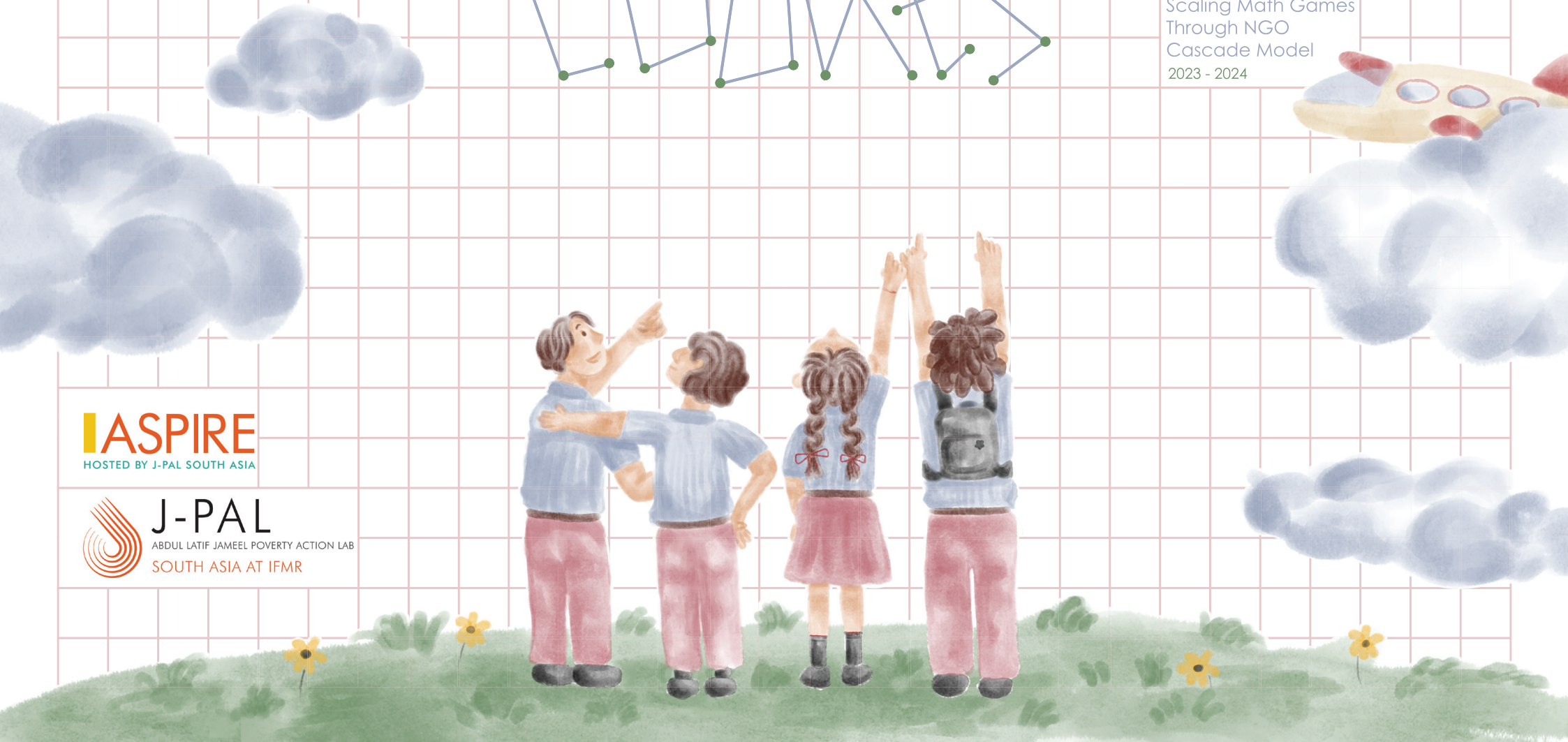
Every Child Counts

Scaling Math Games
Through NGO
Cascade Model
2023 - 2024



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Every Child Counts

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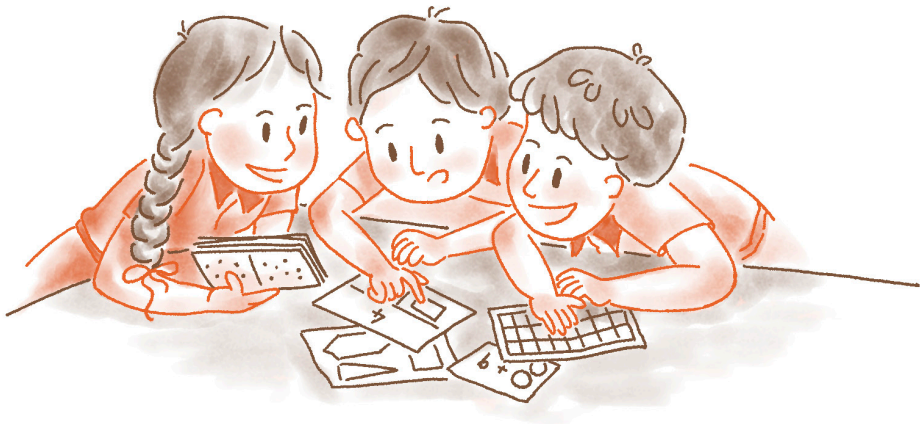

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ACKNOWLEDGMENT

The Every Child Counts team at J-PAL South Asia would like to express deepest gratitude to all those who have been with us in the implementation of the Every Child Counts program. First and foremost, we would like to express our gratitude to the Key Education Foundation, Centre for Learning Resources and TiTLi (Together in Transforming Learning in India) for their collaboration and partnership in bringing this novel initiative to fruition. Their unwavering commitment to improving the quality of education in India has been instrumental in driving positive change.

We are especially grateful to these organisations for dedicating their resources and efforts to implementing the Math Games in their respective geographies. This collaboration has significantly contributed to the learnings of Every Child Counts program and has added a lot of value in exploring different pathways to scale this program through a coalition model.

We are deeply grateful for the ongoing support and guidance from the Principal and Associate Investigators on this project - Prof. Esther Duflo, Assistant Prof. Joshua Dean, Prof. Elizabeth Spelke, Assistant Prof. Moira Dillon and Dr Harini Kannan. We are grateful to receive constant support and guidance from Professor Elizabeth Spelke at the Harvard Laboratory of Developmental Sciences, who originally developed the games based on years of their research on cognitive development and Moira Dillon (Assistant Professor of Psychology at New York University) for their inputs. A special note of thanks to Dr Harini Kannan for her crucial role in helping us envision the NGO cascade model and scale it through this innovative pathway. Their contributions have been invaluable to this project.

We are filled with gratitude for the contribution by Veddis Foundation who are the funders of this project. Their support has made a meaningful impact in improving foundational numeracy and we are thankful for their belief in our mission.

We would like to extend our sincere thanks to USAID - DIV for their invaluable support in cultivating the NGO cascade model for scale-up. Their contributions have been instrumental in fostering collaborations that align with our mission of scaling impact. DIV's early efforts in piloting math games with state governments laid a strong foundation for our current initiatives. We are building upon this work through our coalition of NGOs, further expanding the reach and effectiveness of these innovations. Their ongoing support continues to be a vital component of our strategy to drive meaningful change in education.

The success of this program and the preparation of this report would not have been possible without the collective efforts of everyone involved. We would like to thank everyone for being an essential part of this journey.

ACRONYM	FULL FORM
AP-SCERT	Andhra Pradesh State Council of Education Research and Training
ASER	Annual Status of Education Report
ASPIRE	Alliance for Scaling Policy Impact through Research and Evidence
AWC/AWWs	Anganwadi Centres/Anganwadi Workers
CLR	Centre for Learning Resources
CSF	Central Square Foundation
DIET	District Institute for Education and Training
DoE	Department of Education
ECCE	Early Childhood Care and Education
ECD	Early Childhood Development
ECE	Early Childhood Education
EPPE	Enriching Pre-Primary Education
ESP	Evaluating Social Programs
IRB	Institutional Review Board

ACRONYM	FULL FORM
J-PAL SA	Abdul Latif Jameel Poverty Action Lab South Asia
KEF	Key Education Foundation
UKG/LKG	Upper/Lower Kindergarten
NC	Number Comparison
NCF	National Curriculum Framework
NCPT	Number Comparison Pre-training
NEP	New Education Policy
NGO	Non-Governmental Organization
NIPUN	National Initiative for Proficiency in Reading with Understanding and Numeracy
RCT	Randomized Controlled Trial
RM	Reading Maps
MSCERT	Maharashtra State Council of Education Research and Training
FAQ	Frequently Asked Questions

ACRONYM	FULL FORM
FLN	Foundational Literacy and Numeracy
FM	Find and Move
FS	Find Shape
GoM	Government of Maharashtra
ICDS	Integrated Child Development Services
SALT	Supporting Andhra's Learning Transformation (SALT) project
SCERT	State Council of Education Research and Training
TiTLi	Together in Transforming Learning in India
UNICEF	United Nations International Children's Emergency Fund
USAID-DIV	United States Agency for International Development - Development Innovation Ventures
3I	Inclusion, Integration and Iteration

Executive Summary

In 2015, as the goal of universal primary education was nearly achieved, the focus shifted to the quality of learning, particularly in foundational skills. Despite increased access to education, a significant number of children in developing countries, including India, still struggle with basic competencies in math and reading. In response to this, J-PAL South Asia decided to scale the Every Child Counts program in 2020, aiming to strengthen foundational math skills in early education to address critical gaps and ensure equitable, high-quality learning outcomes for all.

Every Child Counts (Math Games) is a program that provides young children with the right stimulus to translate their innate understanding of mathematics into formal symbolic applications of mathematics in school. It consists of four mathematical games. Two of which are aimed to focus on children's geometric abilities and spatial understanding whereas the remaining two games are focused on enhancing number sense in children. The program has been implemented and rigorously evaluated via three randomized controlled trials (RCTs) in Delhi from 2013 - 2019, in partnership with the Pratham Education Foundation. It has been piloted in Anganwadi, pre-primary and Grade 1 classes in government schools in Delhi, Tamil Nadu, Maharashtra, Andhra Pradesh, Himachal Pradesh, Punjab, Karnataka, Uttar Pradesh, and Jharkhand between 2019 and 2024.

Over the years, various strategies have been deployed by J-PAL SA to catalyze evidence adoption as policy. For Every Child Counts, we have previously worked directly with the State governments and one NGO partner. This report summarizes our learnings from a new pathway to scale that was trialed in 2023 with the **aim to build an ecosystem, specifically NGO, capacity to adopt evidence-based programs and take them to scale as a part of their integrated approaches.**

Since the RCT, J-PAL SA has undertaken various pilots to scale the Every Child Counts program across multiple regions. **Tamil Nadu** pilot in 2019-20 with 50 schools was instrumental in generating interest from other states (Delhi, Himachal Pradesh, Punjab, Maharashtra, Odisha, and Andhra Pradesh), as well as informing games revisions for adaptations in new context. Following this, the pilot in **Maharashtra**, launched in 2022 with 50 schools demonstrated program fidelity but underscored the need for adaptations due to the extra time and material management challenges posed by organizing the games separately from the curriculum. These challenges were addressed by engaging teachers to map the Math curriculum with the Grade 1 state curriculum and by adapting key components such as time allocation and material management, which were essential for improving scalability and cost-effectiveness. Parallel pilots in **Andhra Pradesh** from 2022 are aiming to inform the full integration of Math Games into the Grade 1 curriculum, targeting 2000 schools across the state in 2024-25.

These expansions were facilitated either through direct partnerships with state governments or the NGO partner engaged with us during the RCT phase. **The insights gained throughout this process of scaling up emphasized the necessity for developing a coalition model to engage more effectively with the broader ecosystem and accelerate the impact to overcome the learning crisis.**

The coalition model for scaling the Every Child Counts program represents a new pathway under ASPIRE, involving the creation of a coalition of certified ecosystem partners. The team will systematically document insights and lessons learned from this approach, thereby enhancing the understanding of effective scaling practices. This will involve studying methods to expand successful interventions and analyzing factors such as context, implementation fidelity, and sustainability to identify best practices and potential pitfalls. We are hopeful that this effort will not only improve the scalability of the Every Child Counts program but also provide valuable knowledge for scaling other evidence-based initiatives under ASPIRE, contributing to the broader science of scaling. **This report shares our learnings and insights from our inaugural consortium of NGO partners,** as we aim to inform **thought leadership on evidence to scale,** and we hope you enjoy reading it.

NGO CERTIFICATION COURSE

In November 2023, J-PAL South Asia launched its inaugural NGO certification course to explore new pathways to scale aimed at fostering partnerships with NGO partners, that are aligned on the vision of scaling evidence-based curricula for improving learning outcomes, to pilot J-PAL's Every Child Counts program. This new coalition model seeks to build capacity among civil society organizations by partnering with aligned NGOs. Drawing on insights from initial partnerships with NGOs and state governments, J-PAL South Asia aims to disseminate knowledge on the program's literature, evidence, and contextual adaptation to a broader ecosystem of organizations dedicated to enhancing learning outcomes across the nation.

The first cohort of the Every Child Counts Certification course (2023-24) includes three NGOs - TiTLi, Centre for Learning Resources and Key Education Foundation.

Together in Transforming Learning in India (TiTLi)

Center of Learning Resources (CLR)

Key Education Foundation (KEY)

A five-day in-person training was held in Delhi, where practical sessions allowed organizations to develop integration plans for introducing the program into their existing curricula, and conduct a pilot while receiving regular feedback.

In 2023-24, ten schools/anganwadis[1] from each geography were selected by these organizations to pilot the Math Games. They initiated an eight-week pilot in a total of 30 classrooms, including pre-primary schools (10) and Anganwadis (20) across Karnataka, Uttar Pradesh, and Jharkhand.

This included planning and training their field teams and teachers on implementing the program and finally supporting the implementation of the pilot while continuously monitoring it. This pilot concluded in early May 2024 along with J-PAL SA's process monitoring.

1 Anganwadis are rural childcare centers in India, part of the Integrated Child Development Services (ICDS) program. They provide preschool education, nutrition, and health care for children under six and their mothers, playing a key role in addressing malnutrition and promoting early childhood development in underserved communities.

Course Deployment

Oct - Nov 2023
Course Modules on Every Child Counts program

Pilot Implementation

Dec 2023 - Jan 2024
Partners create lesson plans + train teachers

Jan - Mar 2024
Implementation pilot by partner organisation

Post Implementation

Apr 2024
Report submission on learnings and findings

May 2024,
Conclusion of cohort with knowledge sharing amongst partners

Fig 2.1: NGO certification course structure

KEY FINDINGS FROM PROCESS MONITORING

Over the academic year 2023-2024, the J-PAL SA process monitoring team made 21 visits to Anganwadis and observed Math Games sessions being implemented 21 times. The most frequently observed game was Number Comparison, while the least frequently observed game was Reading Maps.

From the observations, there is a clear interest from teachers in implementing Every Child Counts math curriculum in the classrooms and Anganwadis and the response from students is also very positive.

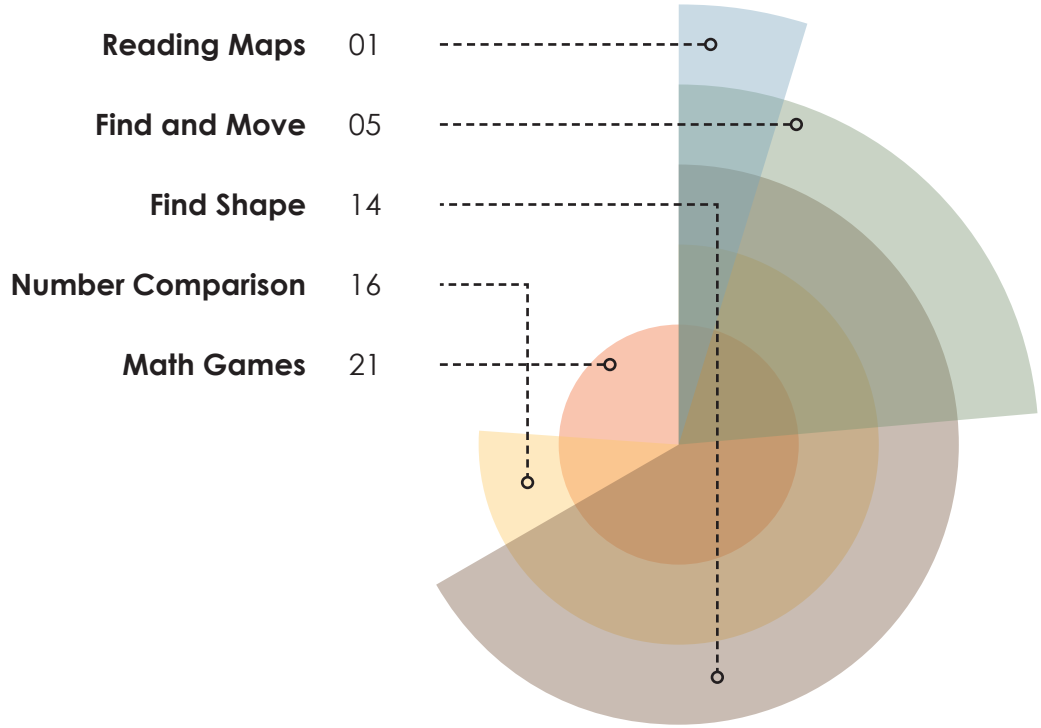


Fig 2.2: Math games observed, total visit = 21

The findings from these observations are categorized into three key areas of inquiry:

I. Effective Delivery – the teachers were able to deliver instructions of the program across the four games but were facing some challenges during the practice section for Find and Move and Find Shape.

- Number Comparison and Reading Maps are adopted well across KG and Anganwadi settings. Teachers were seen delivering clear instructions, playing the game step by step, encouraging students to discuss, engage with materials and take number names.
- Teachers faced some challenges in explaining some of the core concepts for the Find Shape game but ensured that the games were being demonstrated to the students.
- In KG settings where student behaviour management practices were followed consistently, it was easier for teachers to deliver the games whereas, in multi-grade classrooms of Anganwadis, teachers faced challenges to engage the whole class in group play.
- Additionally, very few teachers prompted students to discuss answers in groups, however, they dedicated time after the gameplay session to checking the answers of the students.
- Findings from Anganwadis suggest that the existing curriculum poses a challenge for the Anganwadi teachers due to the compromised student and teacher capacity, and the lack of a structure to implement educational programs in the classrooms.

II. Classroom Feedback - Older students showed strong engagement with some games, while younger Anganwadi students struggled with later decks and needed significant support for structured gameplay. Effective curriculum mapping is essential to ensure optimal classroom-level engagement during implementation.

- Most students actively engaged with the key steps of the games, except for the younger children in Anganwadis, who struggled to follow the structured gameplay and play independently. They required support from the teacher or the Anganwadi helper.
- Despite the lack of student engagement in calling out the math properties in each game, the level of engagement for the gameslike Number Comparison and Reading Maps was high as the students were playing the games independently without much teacher involvement.
- Subsequently, teachers shared that the later sections of the curriculum that focus on high-rigour properties like addition in Find and Move, and angles and symmetry in Find Shape were difficult for students below the age of four as they were not exposed to the concepts.

III. Material Management - the current implementation package posed challenges to teachers across geographies to manage the materials in the classroom.

- Given the volume of the materials across the four games, teachers were finding it hard to prepare the materials before the gameplay sessions and store the materials after the gameplay sessions.

CURRICULUM INSIGHTS

J-PAL South Asia has been closely monitoring the pilots across the public schools/Anganwadis in all three geographies. Overall we see unique learnings coming from each of the geographies. The KEF pilot findings suggest that the Every Child Counts program, with minor adjustments, is feasible for implementation in government kindergarten classrooms in Karnataka, particularly where student behaviour management is already established. However, further continuous pilots are required to better understand and address the general reluctance and challenges teachers face in engaging with the geometry-related games, especially for LKG. The findings from the CLR and TiTLi pilot in Anganwadis indicate that the program requires significant curriculum modifications for effective adoption in Anganwadi classrooms. As many state governments are transitioning 5+ year-olds to Balvatikas and merging pre-primary with primary schools, the Math Games program will need considerable changes for implementation in Anganwadi centers, making the pathways to scaling unclear or ambiguous.

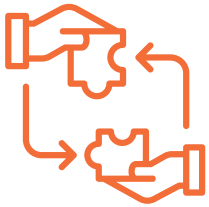
Additionally, Anganwadi teachers need streamlined responsibilities and active support to manage math games in multi-grade classrooms. With competing duties related to healthcare and nutrition, instructional time is limited, highlighting the need for more comprehensive education programs to foster a learning environment in Anganwadis. Further exploration is needed to determine whether enhanced training could improve program delivery. CLR and Titli's efforts to build capacity in Anganwadi centers show the need for sustained engagement to integrate educational programs.

PILOT LEARNINGS FROM COHORT 1

The coalition model successfully raised awareness about the program and shared insights on evidence and scale-up efforts with grassroots organizations. However, additional pilots are needed to address challenges identified during implementation. This collaboration provided valuable learnings, summarized in the 3I Framework: Inclusion, Implementation, and Iteration.

INCLUSION

Inclusion of local, grassroots organizations with deep contextual knowledge is critical for ensuring the program's relevance and sustainability. We learnt that the support of a local implementation partner can facilitate the efficient transfer of contextualized knowledge to teachers, ensure minimum delays in classroom implementation, and provide structured programmatic monitoring and feedback to teachers.



INTEGRATION

Integrating the Every Child Counts curriculum into NGOs' program designs and monitoring frameworks is vital for ensuring effective delivery and scalability. The pilot emphasized the need to align the program with NGOs' core priorities to maintain consistency and quality while also integrating it with state curricula for greater impact. From the outset, NGOs must invest time and resources in adapting and embedding key program components—such as the curriculum, materials, training, and monitoring—into existing state structures. This approach is essential to addressing the learning crisis within their specific context at scale.

ITERATION

Iterating program design and delivery based on implementation learnings is essential for enabling rapid scale-up. NGO partners must identify and address gaps in teacher delivery, student engagement, and material management, adapting the program to the specific context of public schools through continuous pilots before scaling. Tackling these critical gaps, which can impede scaling success, requires ongoing refinement to ensure the program's readiness for broader implementation. This iterative process is most effective when supported by robust monitoring systems and real-time adjustments.

NEXT STEPS

Our first cohort has been a great group of enthusiastic participants, eager to learn from the pilots and develop ways to translate research into action. Following a successful pilot implementation, the consortium of certified NGOs aim to meet on a need basis to get support from **J-PAL SA as a thought partner** for developing pathways to scale across states. In collaboration with this initial cohort, J-PAL South Asia will implement these learnings to cultivate upcoming cohorts of implementers and subsequently amplify the scale of the program.

Efforts to scale the program have already begun in Karnataka with Key Education Foundation. Together with the DoE in Karnataka, KEF and JPAL SA plan to implement the **Math Games curriculum in 104 public schools** in Karnataka in the academic year 2024-25 by building state capacity to implement the program. This pilot at scale aims to refine the scaling model by addressing the challenges faced in the initial pilot and prepare the NGO partner for broader implementation in Karnataka. In the long term, we hope to develop a scalable and context relevant version of Every Child Counts program that fits seamlessly into Karnataka's curriculum and eventually a statewide scale up of the program.

The coalition model shows promise for integrating the Math Games program into structured classrooms, yet modifications are needed for smoother implementation in other settings, such as Anganwadis. Given the large number of Anganwadis across India, adapting the program to address challenges like limited teacher capacity and diverse student needs is essential. As Anganwadis become more integrated into the formal education pipeline, they are likely to collaborate more with nearby primary schools. This could include joint planning, resource sharing, and aligning the preschool curriculum with early primary education (up to Grade 2) to create a smoother transition for children moving into formal schooling. As a result, it is imperative to **adapt Math Games for the Anganwadi curriculum.**

In future, J-PAL SA plans to **enhance the NGO Certification training** by digitizing modules for flexible, self-paced learning. Additionally, the team will also explore creating a centralized website to provide easy access to game materials, enabling partners to print, share, and track resources efficiently. These efforts will strengthen partners' capacity and provide a platform for exchanging best practices, challenges, and solutions.

This coalition model as a pathway to scale is a recent addition to J-PAL South Asia's scale-up strategy and levers of scale. The ongoing implementation of this pathway will inform the overall approach of evidence to scale deployed by J-PAL SA and we are excited to explore how the NGO cascade model can be designed for effectiveness in a low-touch framework.

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SOUTH ASIA AT IFMR

Chapter 3

ABOUT THE ORGANISATION

The Abdul Latif Jameel Poverty Action Lab (J-PAL) is a global research center working to reduce poverty by ensuring that policy is informed by scientific evidence. Anchored by a network of over 870 affiliated researchers at universities around the world, J-PAL conducts randomized impact evaluations to answer critical questions in the fight against poverty. J-PAL South Asia is hosted by the Institute for Financial Management and Research (IFMR) and has over 237 employees across its offices in Chennai, New Delhi, and 11 project offices.

J-PAL affiliated professors have been working in South Asia for over a decade with over 220 ongoing or completed evaluations in the region, across both rural and urban areas. J-PAL South Asia has built partnerships for the generation of new research and has worked on advancing evidence-informed policymaking with NGOs, foundations, and twenty Indian state and central government ministries.

J-PAL SA has been working to cultivate a consortium with organizations in the early childhood/foundational learning space in India to collaborate on scaling an innovative, game-based, and proven intervention for foundational numeracy – the Every Child Counts (or Math Games) curriculum. To enable this, J-PAL SA reached out to organizations in the education ecosystem in India to participate in a certification course.

The course is designed to equip participants with the implementation knowledge and necessary toolkits to implement and integrate the evidence-based Every Child Counts curriculum within their contexts and geographies. Following the course, the consortium aims to meet on a need basis to get support from J-PAL SA as a thought partner for developing pathways to scale across states. Promising partners have also been provided follow-on support to scale the curriculum in partnership with J-PAL SA and interested state governments.

INTRODUCTION TO
Every Child Counts

In 2015, the Millennium Development Goal 2 of Achieving Universal Primary Education was nearly met with net primary enrollment in developing countries reaching 91%.[2] Improvement in this goal paved pathways to set goals for the next decade to improve the quality of the education that students receive. This global shift was seen through the Sustainable Development Goals of 2016, which marked quality education as goal 4 out of the seventeen goals.[3] This goal aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. Its target is to ensure that all students complete free, equitable, and quality primary and secondary education leading to relevant and effective learning outcomes, and ensure that all students have access to quality early childhood development, care, and pre-primary education so that they are ready for primary education, both by 2030.

Efforts are being made globally to improve the quality of learning outcomes in developing countries. There is a diverse set of civil society organisations operating in India to improve learning outcomes among children. The combined efforts of these organizations play a crucial role in addressing educational inequities and enhancing learning outcomes for children across the country. The Annual Status of Education Report (ASER) is an annual citizen-led survey that provides reliable estimates of children's schooling and learning levels in rural India. It tracks enrollment for children aged 3-16 and assesses the basic reading and arithmetic of children aged 5-16.

In this context, J-PAL South Asia has been making efforts since 2020 to scale the Every Child Counts program - an innovative evidence backed game-based curriculum to strengthen the foundational concepts of mathematics in the early years of children's formal schooling. These efforts are being made by fostering partnerships with governmental and non-governmental bodies across the nation. To build an ecosystem capacity and facilitate innovation at scale, J-PAL SA thus started to explore pathways of taking the program nationwide from November 2023 with the inauguration of the Certification Course for Every Child Counts.

The 2022 report of ASER highlights concerning statistics[4]-

74%
Grade 3 Students

74.4%
Grade 5 Students

struggle to recognize numbers and perform basic arithmetic operations, underscoring the need for interventions in early foundational years.

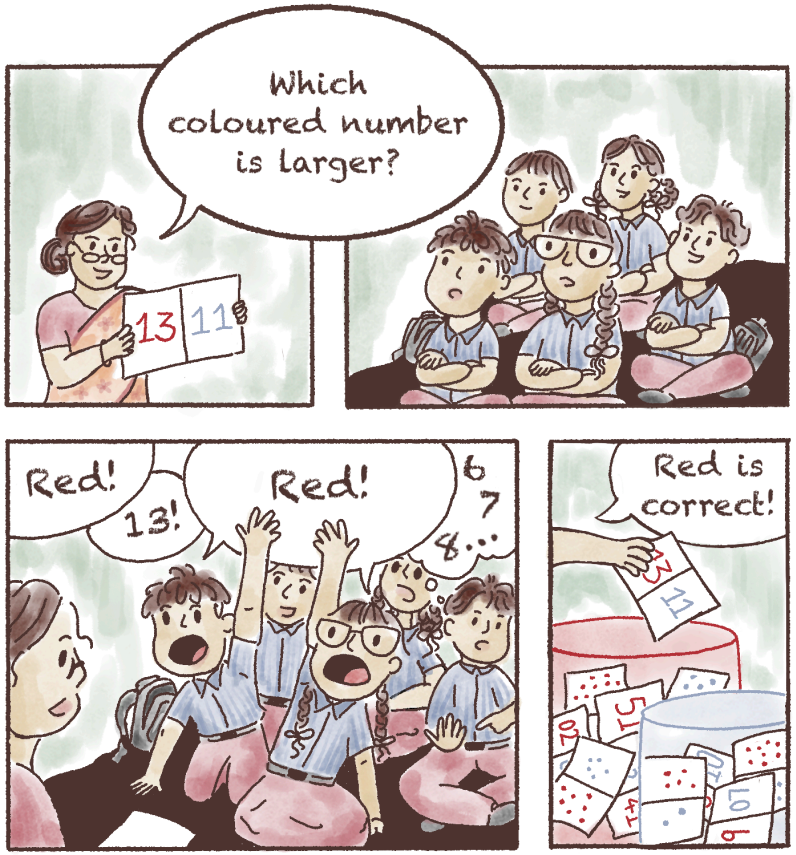
in 2018
37.2%

in 2021
28.2%

children in Grade 3 could perform simple subtraction.

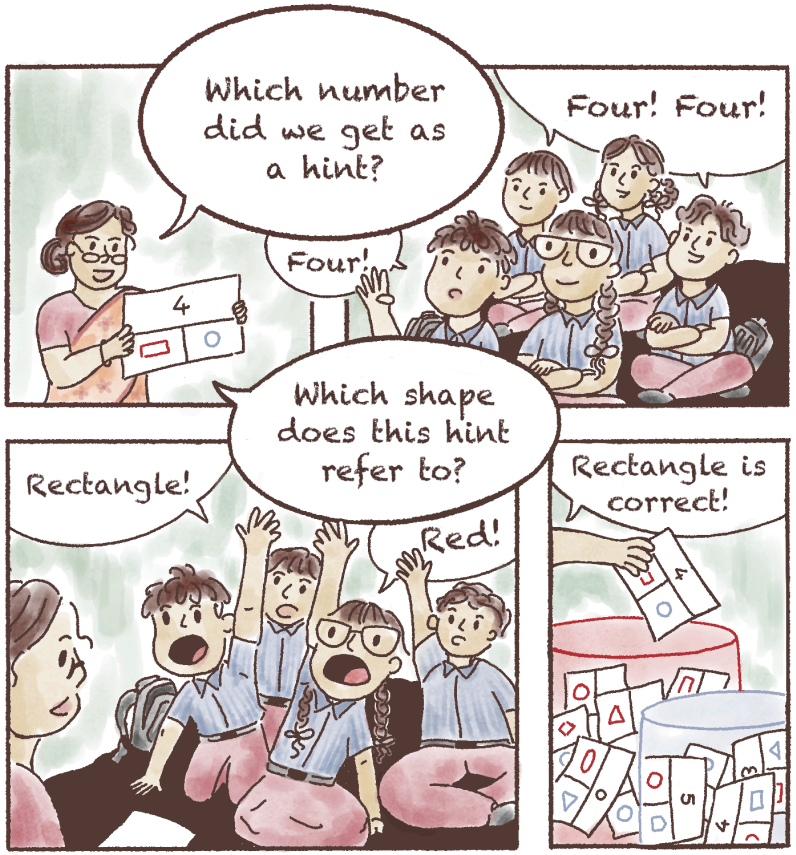
2 United Nations. (2015). The Millennium Development Goals Report 2015. United Nations. Retrieved from here.
3 United Nations. (2015). Transforming our world: the 2030 Agenda for Sustainable Development. United Nations. Retrieved from here.
4 ASER Centre. (2022). Annual Status of Education Report (Rural) 2022. Retrieved from here.

GAME ONE : NUMBER COMPARISON



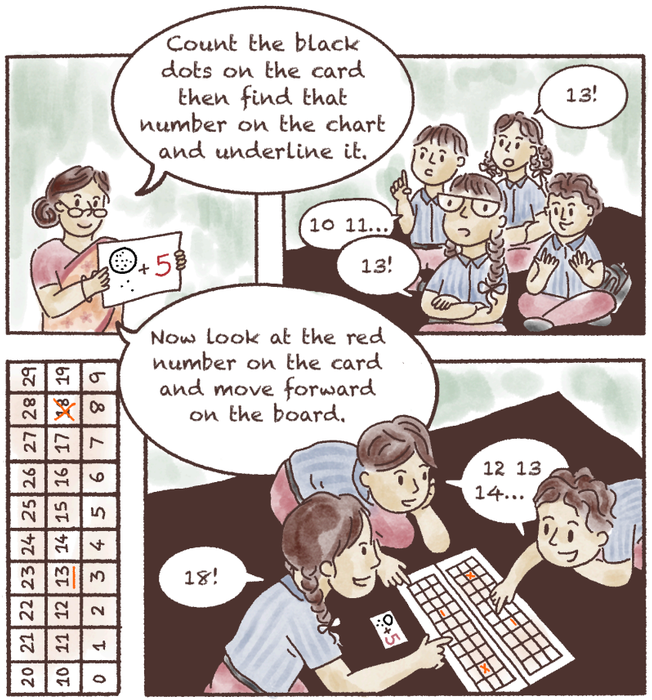
Number Comparison is designed to enhance innate number approximate skills and is a 'sorting' game. The objective of the game is to examine a card with two numbers, one in blue and another in red, and sort the card with the larger number in a matching coloured bin.

GAME TWO : FIND SHAPES



Find Shape is a sorting game designed to improve shape recognition skills. Each level focuses on a specific property, such as the number of sides, length of sides, corners, angles, and symmetry.

GAME THREE : FIND AND MOVE



Find and Move is designed to enhance one-to-one correspondence, number recognition and addition skills. The card presents an addition of two numbers, the first number in black is what the children have to 'find' on the board and the second figure in pink is the number of steps they need to 'move' ahead from the black number.

GAME FOUR : READING MAPS

Reading Maps is a board game designed to enhance spatial sensitivities through key properties – the number of sides, length of sides and corners and angles.

These math games complement the existing Math curriculum, with 45-minute sessions conducted three times during the school week according to the prescribed timetable. The entire module consists of 36 sessions for KG classes and 33 sessions for Grade 1. Each game's major concepts are introduced to students before the start of play through a short pre-training exercise using posters and cards. The short exercises familiarize the children with the particular gameplay mechanics involved in each game. The games have been developed to be played independently in small groups, therefore, children are split and seated in groups of four to five during gameplay. If the program is implemented following this design, these games can help ensure that young children have the right capabilities to thrive in foundational mathematics.

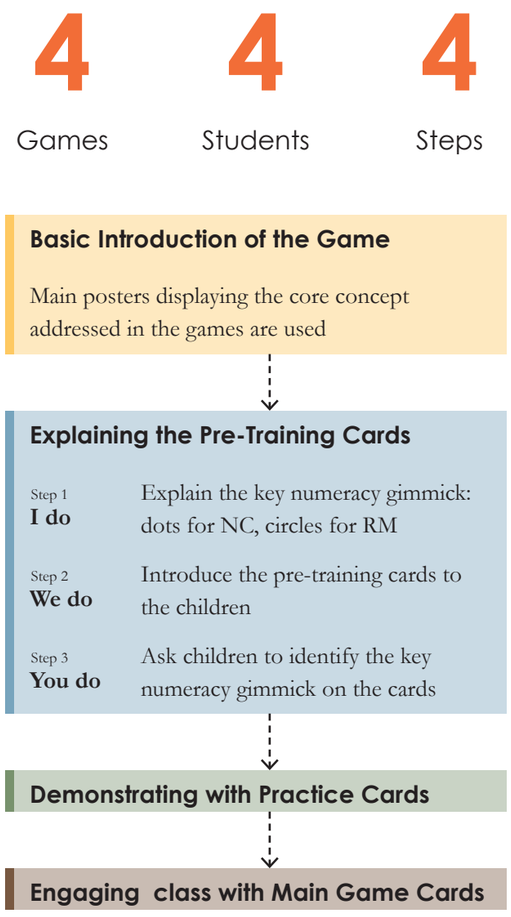


Fig 4.1: Classroom Gameplay Mechanics

RESEARCH: EVALUATIONS AND FINDINGS

Cognitive science research shows that humans have innate mathematical skills, enabling children to understand quantity and geometry . Building on this, cognitive science professors developed an innovative game-based math curriculum that leverages early cognition to teach number recognition, progression, and geometry [5]. This curriculum was evaluated through RCTs from 2013 to 2019 by J-PAL Affiliated professors including 2019 Nobel Memorial Prize in Economic Sciences winner Prof. Esther Duflo, Assistant Prof. Joshua Dean, Prof. Elizabeth Spelke, Assistant Prof. Moira Dillon and Dr Harini Kannan in partnership with the NGO Pratham.

More details on the evidence can be found in Annexure A.

5 Spelke, E. S. (2023). Précis of What Babies Know. Behavioural and Brain Sciences, 1-36.

2013-2015

Proof of concept, community pre-school, 1:5 PTR, teacher-led gameplay

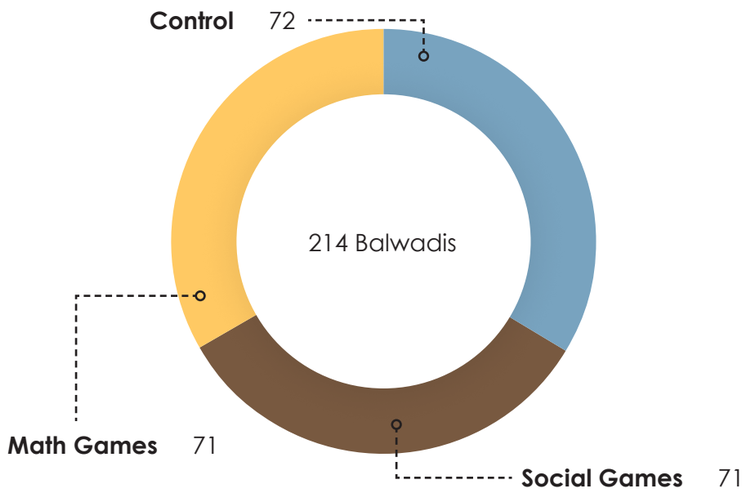


Fig 4.2: Overview of the first RCT conducted by J-PAL affiliated researchers

First evaluation: Results from the first evaluation in 2013-2014 indicated that students exposed to non-symbolic games (where there is no mention of numbers) show marked and enduring improvement in their intuitive abilities relative to the no-treatment group. The effect of the games on symbolic math abilities (math taught in schools) was seen only immediately after the intervention and disappeared over time.

2015-2017

Proof of concept, community pre-school, 1:5 PTR, teacher-led gameplay

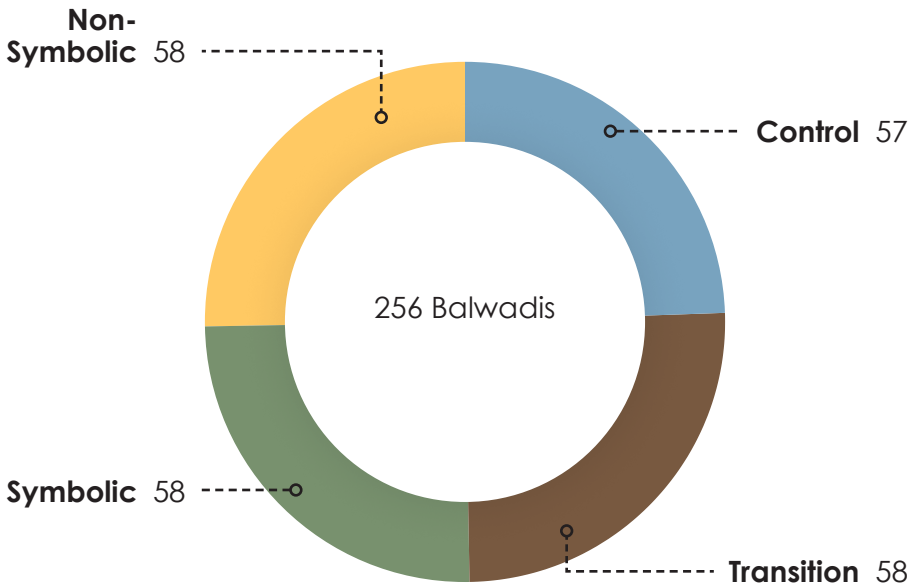


Fig 4.3: Overview of the second RCT conducted by J-PAL affiliated researchers

Second evaluation: Results from a second evaluation in 2015-2016 indicated that the transition games intervention not only showed an immediate impact on non-symbolic and symbolic math outcomes immediately after the intervention, but this effect strengthened and persisted even 1 year after the completion of the intervention. Results from this evaluation established that exposure to games involving both symbolic and non-symbolic math content leads to lasting gains in symbolic math.

2015-2017

Government school, 1:35 PTR, independent play

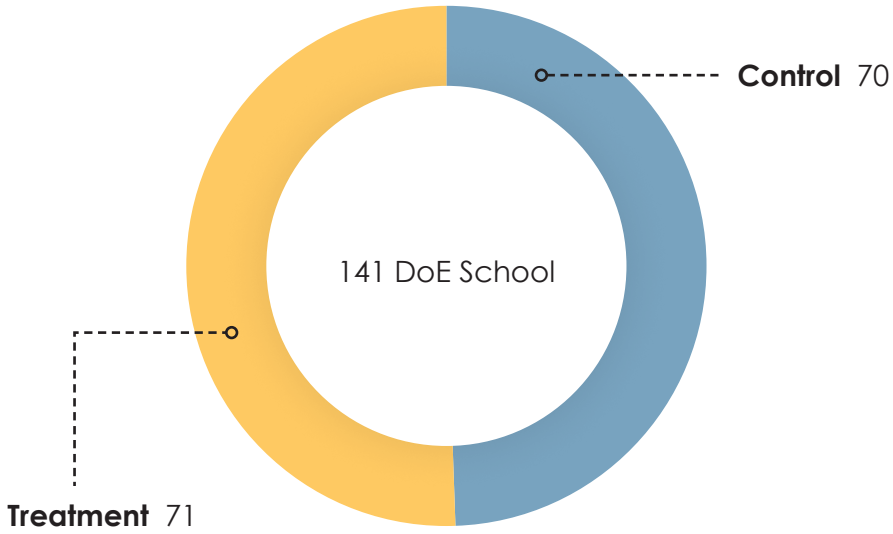


Fig 4.4: Overview of the third RCT conducted by J-PAL affiliated researchers

Third evaluation: In 2018-19, the Every Child Counts curriculum was implemented in Kindergarten and Grade 1 classes of 71 government schools reaching ~1200 children. Results from this evaluation that covered 141 government schools demonstrated the effectiveness of the curriculum when implemented in traditional government classrooms with a larger pupil-teacher ratio.

TAKING THE PROGRAM TO SCALE

As the evaluations found Math games impactful on symbolic math outcomes for preschool and Grade 1 children, their findings made a compelling case for state governments and NGOs to integrate the curriculum as an evidence-backed, robust, and scalable preschool program proven to improve the math outcomes of young children. J-PAL SA is adapting the Every Child Counts for scale by effectively integrating the intervention into the government education system. As seen in Figure 4.5, we aim to do this at the policy level by aligning with national policies, state level by integrating it with the state academic structures, and classroom level by integrating it within classroom practice across diverse educational settings.

1. Policy-level integration

India's New Education Policy (2020) policy emphasizes strong foundational education for young children and play-based and activity-based learning approaches.

Every Child Counts, as a curriculum focused on developing early foundational skills through its play-based pedagogy, aligns strongly with this policy and its initiatives, creating a strong policy window for this program.

2. State-level integration

States in India interpret national policies and implementation methods differently. J-PAL SA collaborates with state-level stakeholders to adapt Every Child Counts to the specific geographical context and the state-level educational structures.

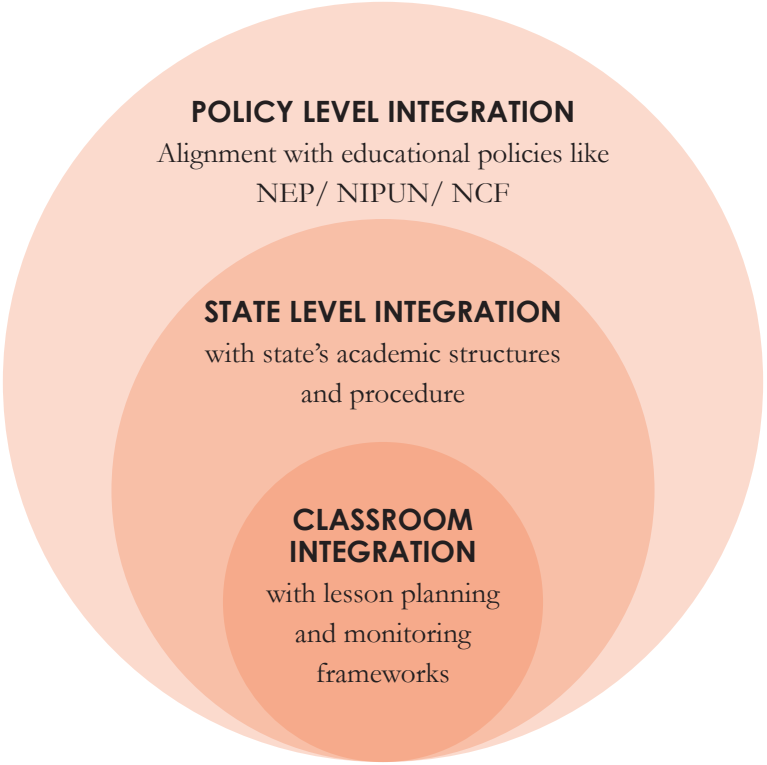


Fig 4.5: Integration for scale

3. Classroom-level integration

To ensure successful implementation operational alignment becomes crucial. This involves integrating Every Child Counts into the daily planning, routines and monitoring frameworks followed by teachers.

Through continuous collaboration with policymakers, educators, and other stakeholders, J-PAL SA strives to create a sustainable and impactful intervention that contributes to the broader goals of educational equity and improved learning outcomes for all children in India.

Following the third evaluation, efforts have been underway to scale up the program through two pathways:

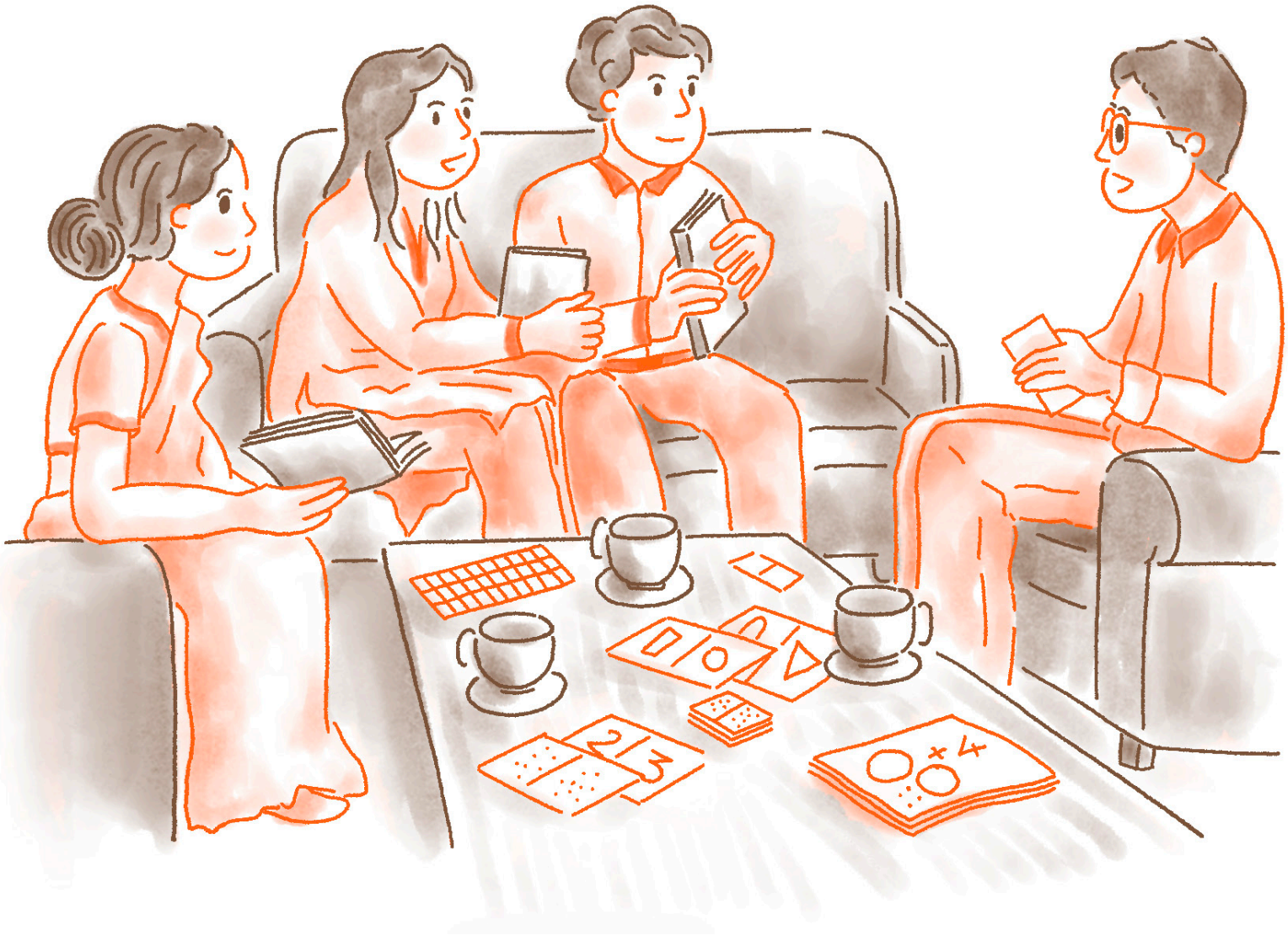
NGO-led implementation and advocacy:
Continuing implementation by partnering with our original RCT partner - Pratham in Himachal Pradesh, Delhi, Punjab, and Andhra Pradesh

Government-led implementation:
Direct partnerships with state governments such as the Government of Maharashtra.

Learning Phase of Scaling Imact	Partnering with Pratham and State Governments to take the program to scale
Core Partners	Education NGO, Pratham Foundation, Samgra Shiksha and SCERT
Model	Scaling and implementing the program though collaborative efforts between the implementation organization and the state governments
Scale of Program	Delhi, Punjab, and Himachal Pradesh, Maharashtra and Andhra Pradesh

Fig 4.6: Efforts of scaling up Every Child Counts

PLAN



IDENTIFYING PATHWAYS TO SCALE

This section elucidates the pilots undertaken by J-PAL SA to expand the Every Child Counts program across multiple regions. This expansion was facilitated through partnerships with state governments and civil society organizations. Additionally, it discusses the insights gained throughout this process and emphasizes the necessity of developing a coalition model to engage more effectively with the broader ecosystem.

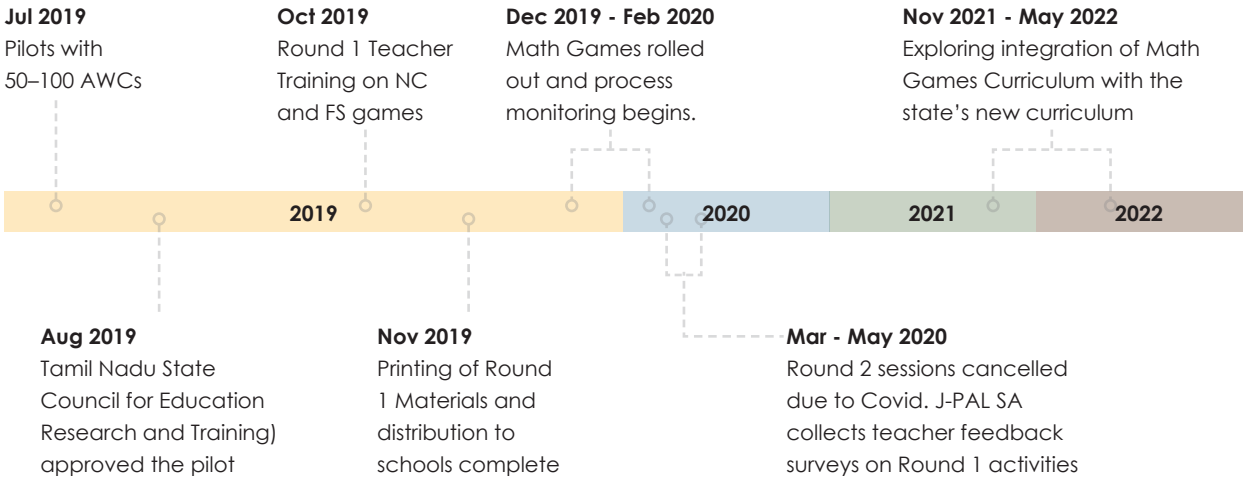


Fig 5.1: Activities undertaken with Tamil Nadu Government

WORK WITH THE TAMIL NADU GOVERNMENT

The Math Games pilot program was introduced in 50 government schools in Thiruvallur district, Tamil Nadu, during the 2019-20 academic year. Led by Samagra Shiksha and supported by J-PAL South Asia (J-PAL SA), the program aimed to improve basic math skills in UKG and Grade 1 students, reaching over 1,400 children. Teachers received training from J-PAL SA and implemented the games in 45-minute sessions three times a week.

A process evaluation showed successful implementation, with most teachers and students actively engaging with the games. However, the program's scalability was hindered by COVID-19 disruptions, budget constraints, personnel changes, and other challenges. Despite these setbacks, the pilot generated interest from other states and contributed to further game revisions. More details about the program can be found in Annexure B.

Tamil Nadu pilot was instrumental in generating interest from other states (Delhi, Himachal Pradesh, Punjab, Maharashtra, Odisha, and Andhra Pradesh), as well as informing games revisions by Prof. Elizabeth Spelke.

PARTNERSHIP WITH MAHARASHTRA SCERT

The Every Child Counts program in Maharashtra began in 2022 through a collaboration between J-PAL South Asia and the State Council of Education Research and Training (SCERT). J-PAL SA served as the knowledge partner, providing training and monitoring, while SCERT took on the responsibility of implementing the program in government schools. The initiative aimed to integrate Math Games into the Grade 1 curriculum to enhance students' foundational math skills.

In its first year (2022-23), the program was piloted in 50 schools in Pune district. Teachers were thoroughly trained and monitored. The findings revealed that while teachers were effective in explaining game rules and encouraging group activities, they faced challenges with time management and material handling. Conducting the games as a separate activity from the curriculum was particularly demanding given the packed academic schedule.

These insights informed significant adaptations in the program's second year (2023-24). Rather than treating Math Games as an extracurricular activity, the games were integrated into the existing foundational mathematics curriculum. This approach aimed to align the games with the annual teaching plan, making them complementary to the concepts taught in class. A mapping workshop was organized with teachers from the previous year to ensure that the games were effectively incorporated into the syllabus. As a result of this integrated approach, both students and teachers demonstrated a better understanding of the games and their relevance to the curriculum. However, there is still room for improvement, particularly in addressing the more nuanced aspects of gameplay.

Organizing the games separately from the curriculum requires extra time and presents material management challenges, so adapting components like time allocation and material management is crucial for scalability and improving cost-effectiveness per child.

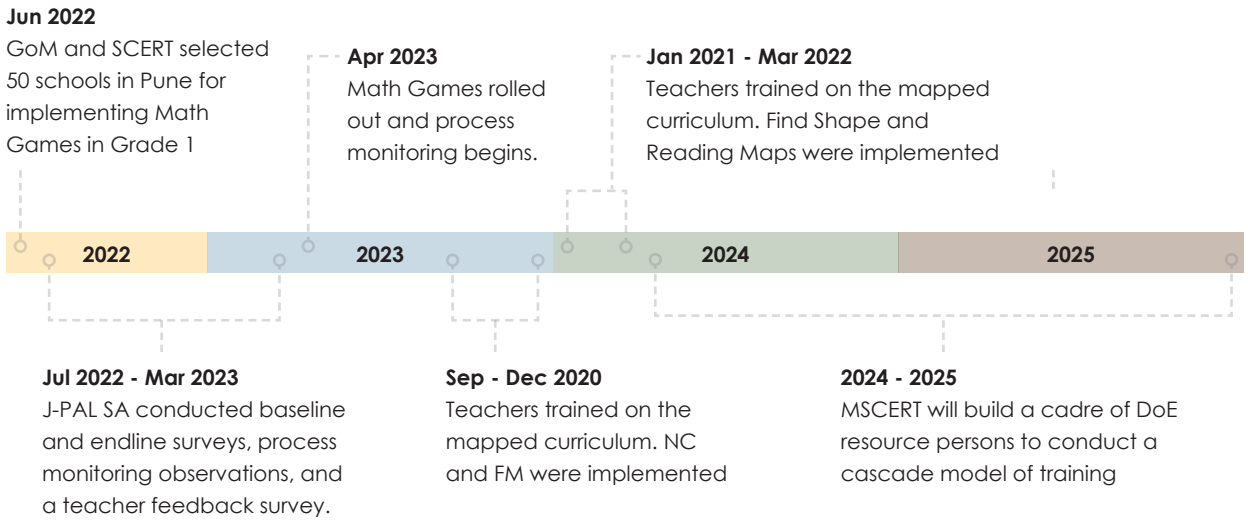


Fig 5.2: Activities undertaken with Maharashtra Government

Looking ahead, the learnings from the initial years will shape the future of the program. In the 2024-25 academic year, J-PAL SA and MSCERT plan to build a cadre of Department of Education (DoE) resource persons to conduct cascade training, monitor implementation, and mentor teachers. The goal is to refine the program based on continuous process monitoring and scale it up across more schools. By 2025-26, MSCERT will assume full ownership of the project, supported by the trained cadre, to ensure sustained implementation and impact. More details about the program can be found in Annexure C.

PARTNERSHIP WITH ANDHRA PRADESH SCERT

In Andhra Pradesh, the Math Games program was piloted in 45 Grade 1 classrooms across five districts starting in November 2022, with training sessions conducted in December 2022 and February 2023. The pilot concluded in March 2023. Following its initial success, the program continued in 46 schools in October 2023, with further training and materials distribution led by J-PAL South Asia and AP-SCERT.

We are exploring a pilot for 2024-25 that aims to inform the full integration of Math Games into the Grade 1 curriculum, targeting 2000 schools across the state. Training and monitoring will be gradually embedded into Andhra Pradesh's SALT program by Pratham, with the potential for further scale-up in 2025-26 based on findings. More details about the program can be found in Annexure D.

Fig 5.3: Activities undertaken with Andhra Pradesh Government

NEED TO ENGAGE IN A BROADER ECOSYSTEM

J-PAL has identified six distinct pathways to take Evidence to Policy [6]. These six pathways are: shifting global thinking, applying research insights, scaling up an evaluated pilot, institutionalizing evidence use, adapting and scaling a program, and scaling back an evaluated program.

Guided by our pathway on adapting and scaling a program, J-PAL SA has been collaborating with policymakers across states and NGO partners to scale Every Child Counts. Starting in 2020, J-PAL South Asia entered into partnerships with NGO Pratham, piloting in Himachal Pradesh, Delhi, and Punjab, and through direct state partnerships in Andhra Pradesh and SCERT of Maharashtra. USAID-DIV and ASPIRE support this initiative. However, with these ongoing pilots at scale across five states, the knowledge and learnings around the implementation of the Every Child Counts program have been restricted to only a few organisations, thus limiting the impact that can be had through engaging the full capacity within the education NGO ecosystem.

Accelerating The Supply Side: A New Pathway To Scale

Traditionally, J-PAL has worked on adaptations and scaling, focusing on transferring know-how to the government, often through the support of the original RCT partner. The latest effort to cascade the program is to work on the 'supply side' - a consortium of certified ecosystem partners as champions of the program. This would address the limitation stated above by gearing towards developing a new coalition model to scale the program by capacitating ecosystem partners to adopt and integrate the curriculum. This new coalition model launched under ASPIRE, a joint initiative between J-PAL South Asia at IFMR and the Veddis Foundation, aims to support cohorts of mission-and vision-aligned civil society organisations to implement the games through their existing programs or develop new foundational math programs. The certified implementing partners will regularly share learnings, challenges, and insights from the scaling-up process as part of an NGO Consortium.

Exploring Pathways to Scale	Sustaining existing Scale Ups	Coalition of Scale-Up Partners
Learning Agenda	Scaling with existing partners to facilitate adoption into government system	Building capacity of a consortium of partners through certification course
Outcome	Accelerated integration into the existing state curricula	Accelerated integration into the existing state curricula

Fig 5.4: Adding consortium of parters to the scale up

6 "Evidence to Policy | the Abdul Latif Jameel Poverty Action Lab." The Abdul Latif Jameel Poverty Action Lab (J-PAL), www.povertyactionlab.org/evidence-policy

Informing Thought Leadership On Evidence To Scale

This coalition model for innovating the scale-up of the Every Child Counts program is a recent addition to J PAL South Asia's scale-up strategy. The Every Child Counts team at JPAL SA will meticulously document the insights and lessons learned from this novel approach to scaling through a coalition model. This documentation will enhance the broader understanding of the science of scaling evidence based programs.

This would involve systematically studying challenges, addressing them through ongoing piloting efforts, and applying methods to expand successful interventions for effective broader scale-up. By analyzing factors such as context, implementation fidelity, and sustainability, the Every Child Counts team aims to identify best practices and potential pitfalls in the scaling process. This effort will not only improve the scalability of the Every Child Counts program but also provide valuable knowledge for scaling other evidence-based programs under ASPIRE.

Designing A Pathway To Scale

Objectives

- Create awareness about Math Games and disseminate evidence
- Enable adoption and scale of Math Games by transferring implementation knowledge to other non-profit organizations
- Build ecosystem capacity to adopt and scale evidence-based pedagogical innovations such as Math Games

To design an effective pathway for scaling through a coalition model, it was crucial to first establish specific objectives before delving into the methods of achieving those objectives. The key objectives include creating awareness about Math Games and disseminating evidence, enabling the adoption and scaling of Math Games by transferring implementation knowledge to other non-profit organizations, and building ecosystem capacity to adopt and scale evidence-based pedagogical innovations.

To achieve these objectives, J-PAL SA brainstormed on various low to high touch pathways that included a knowledge resource website, quarterly working group meetings, and a certification course coupled with ongoing support. Each pathway as highlighted in Annexure E varies in the level of engagement from J-PAL and expectations from NGO partners, offering a range of pros and cons related to resource demands, visibility into implementation, and troubleshooting effectiveness.

Amongst the three pathways, J-PAL SA had the most active role in the Certification pathway, which would have allowed the implementation partners to test the pilot in their schools and later scale the model state-wide. Given this advantage, the certification course was the preferred option for 2023-24 scale-up.

J-PAL South Asia initiated a new coalition model to scale the Every Child Counts program by building capacity in NGO partners to adopt and scale the curriculum. This model supported a cohort of mission- and vision-aligned NGOs to implement the games through their existing programs or develop new foundational math programs, including lesson planning, and assessments as well as equip them with metrics to check on the fidelity of implementation through monitoring processes.

PROJECT EXECUTION

LANDSCAPING

Landscaping various organizations to assess and identify potential organizations in ECCE space was crucial for the success of the program. In our efforts to design an impactful pathway for scaling Every Child Counts program through a coalition model, we conducted a comprehensive landscape analysis of more than thirty non-governmental organizations (NGOs) using the following key criteria:

- Firstly, **prior experience** in implementing educational programs (especially ECCE) was essential, as it ensured partners had the necessary expertise and understanding of the challenges involved.
- Secondly, **the scale of the organization's operations** was crucial, as larger organizations could potentially reach more beneficiaries. We particularly focused on the organization's current work with the government in various states.
- **Geography** also played a significant role, as partnering with organizations across diverse regions would have helped in adapting and scaling the program effectively in different contexts, thereby giving rich learnings to J-PAL in our scaling journey.
- **Alignment with the Math Games (MG) program** was another vital criterion, ensuring that the organization's programs of interests were compatible with the objectives of the Every Child Counts program.
- Finally, feedback from **J-PAL's Education Sector team** provided insights into the potential partner's capability and readiness to adopt and scale the program, drawing on the team's extensive experience and expertise in the education sector.

We collected secondary data about the organizations, enabling us to study their programs of interest, operational geographies, scale of operations, experience in collaborating with the government, feedback from other organizations, and their prior interactions with J-PAL's sector teams. Based on this analysis, we selected ten organizations for one-on-one conversations to gauge their interest and motivation.

Based on these criteria, the following three organizations were chosen:

Key Education Foundation

KEF delivers a School Readiness program in schools catering to low-income communities. They work with schools, teachers, parents, and children by providing age-appropriate, play-based learning material, participative teacher training, ongoing program support and periodic workshops for parents.

Centre for Learning Resources

In CLR's two-fold approach to change, they build the capacity of government system leaders and influence system processes. In partnership with the local and state education bodies, they co-create programs that shift teaching-learning practices and improve student learning and well-being. This work coupled with their research and advisory support to influence policies, they hope to create effective public education systems in India.

TiTLi

Titli works to strengthen the rural and urban machinery of delivering effective Early Childhood Care and Education in India. TiTLi's programs simplify best practices in Early Childhood Development (ECD) and inspire educators to provide a holistic learning environment for children. They work closely with Anganwadis and women to ensure that they become skilled early childhood professionals.

This landscape provided valuable insights into the current ecosystem and informed the development of our coalition model to ensure it meets the needs and leverages the strengths of these diverse sets of organizations. The primary purpose to assess organizations was to align the model of Every Child Counts program with their programs of interest.

CERTIFICATION COURSE

A five-day in-person training was held in Delhi, where practical sessions allowed organizations to develop integration plans for introducing the program into their existing curricula while receiving real-time feedback. The training introduced the program, the associated research from cognitive science, the evidence generated from multiple evaluations, and presented alignment with the government's renewed focus vis-à-vis the National Education Policy 2020 on the need for play-based and activity-based learning to engage young children. The training built capacity of NGOs on monitoring and evaluation on concepts like the Theory of Change, indicators, and monitoring frameworks, enabling them to develop their theory of change and monitoring plan for the implementation in their chosen geography. J-PAL South Asia supported travel and accommodation of two members from each organization (one senior member from the Curriculum/Training team and one senior field team/operations member) to New Delhi for the in-person event for five days. A combination of these team members allowed someone familiar with the partners' curriculum, as well as someone well-versed in the organization's field operations, to be trained on the Games and curriculum.

The NGO partners received support (in the form of printed teaching and training materials) to conduct pilots for 6 weeks, recommended in up to ten classrooms (which can be a combination of KG and Grade 1 classrooms), and monitor their implementation plan. J-PAL South Asia currently has materials available in Hindi, Telugu, Marathi, and English.

The partners were informed that the pilot must be completed within three months of the in-person training, and partners will be responsible for training/orienting their field teams and teachers on their integration/implementation plan, as well as the core implementation process of the program. Along with support on the knowledge transfer and implementation toolkit, the J-PAL South Asia team also conducted a round of process monitoring, allowing feedback and learning throughout the implementation. The process monitoring served as an example for implementing organizations to understand the best practices in monitoring. Upon successful completion of these requirements, partners received their certification in June 2024.

Every child counts - Plan

"The [games] are so beautifully crafted—simple, fun but effective means to enhance cognitive skills in young children… The team ensured the training was hands-on and playful and was very open to feedback. I am very excited to take this to our classrooms…"

—Swetha Guhan, Co-Founder and Director, Key Education Foundation.

MONITORING PLAN

THEORY OF CHANGE

The starting point for thinking about how to maintain fidelity and sustain impact as we scale is developing the program's theory of change. The Math Games theory of change shows how the program is expected to achieve its intended goals, and maps the expected causal pathway between inputs, activities and the desired outcomes. According to the Math Games theory of Change:

If teachers are trained in the Math Games curriculum and provided with relevant materials, they will then, with the support of monitors, successfully deliver evidence based and interactive Math Games curriculum in classrooms. If these classes are delivered well, the students will play the games attentively and in consultation with others in the group leading to improvement in game-related math competencies and finally an improvement in formal school mathematics.

The evidence from Math Games randomized evaluations conducted in Delhi demonstrates that, if implemented well, the Math Games programme will lead to an improvement in formal math learning outcomes of young children. However, as we planned to scale up the Math Games programme with other ecosystem partners, it was critical for us to revise and track input, output and outcome level indicators through a rigorous process evaluation to ensure that the programme was being implemented as per the evidence-based model.

Monitoring is important to ensure take-up and fidelity to program protocols and will be conducted by JPAL SA. This would ensure effective implementation of training and classroom implementation. With this objective in mind, J-PAL SA had conducted process monitoring, across the pilots of the three NGOs of the cohort, to understand the challenges of implementation and to observe the adherence to the fidelity of the programme in order to understand the effectiveness of the certification course to build pathways of scaling the program.

The following theory of change was followed:

Inputs	Activities	Outputs	Outcomes	Goal
Math Games curriculum	Capacity building of partner organisations	Partners from Cohort 1 are trained	Improved capacity of teachers to consistently conduct Math Games in the classroom	Improved Foundational Numeracy skills in students aged 4–6 from pilot schools
Resources to use game materials	Contextualisation of games by partner organisations	Games materials are available in classrooms	Students aged 4–6 exhibit improvement in cognitive skills of mathematics addressed through Math Games curriculum	Sustainable and state-wide scale up of Every Child Counts in respective geographies
Cohort 1 organisations	Capacity building of teachers by partner organisations	Teachers are trained on implementing Math Games		
Teachers	Program monitoring			
Funding from donors				

Assumptions

- The curriculum has been adapted correctly to the local context
- The curriculum, related resources and the knowledge sharing with ongoing support are enough for organisations to implement the program
- Organisations understand the value of games and are able to transfer the knowledge to teachers
- There is time to conduct classes within the academic calendar
- Teachers understand the value of the game-based curriculum and do not revert to status quo
- Improving game-related cognitive competencies can actually improve school Math scores
- Improving cognitive competencies is sufficient to improve school Math competencies (can you think of a situation where it isn't?)
- The teachers understand how to play the games and administer the curriculum correctly

The research question guiding this monitoring plan focuses on testing the fidelity of the program when the curriculum is delivered through partner organizations who are trained by J-PAL SA. We rigorously conducted process monitoring for all the classrooms to ensure successful program uptake. This involved making observations on whether training ecosystem partners, who then train other teachers, is an effective approach for ensuring consistent and quality implementation across all thirty classrooms. The monitoring of the program typically occurs through unannounced classroom observations when data is collected and then analyzed. This is critical for providing us comprehensive insights into the feasibility and impact of scaling up the Every Child Counts program through a coalition model. The flow of the monitoring tool utilized to collect the classroom and teacher feedback data has been detailed in the Annexure F.

As we explore new pathways to scale-up the Math Games curriculum, this requires careful thinking about the crucial components of the implementation. These include:

- game play specific indicators e.g. session completion, session duration;
- teacher specific indicators e.g. understanding of games by teachers, adherence to protocol, etc;
- student related indicators e.g. ability to play games independently, student collaboration and peer learning, cards played correctly, student engagement, etc.

MONITORING FRAMEWORK

Derived from the Theory of Change, the logical framework indicators for the program include the following areas inquiry:

Effective delivery: which refers to the quality of the instructions delivered by the teachers during the curriculum sessions in the classrooms. It captures whether the teachers provided all the instructions to the students, demonstrated the game properly, made use of all the relevant game materials, and spent sufficient time in playing the games.

Classroom feedback: which refers to the level of student engagement in the classrooms. It captures whether the students were accurately engaging with the game materials, engaging in group play, and whether the teacher was fostering this engagement for the students.

Material management: which refers to the teachers managing the materials in the classrooms during the game play sessions. It captures whether the teachers are managing the materials properly before, during, and after playing the games with students.

The metrics measured to capture the observations through the areas of inquiry have been detailed in Annexure G. In order to capture the observations through these areas of inquiry, a set of observation questionnaires was utilized throughout the implementation of the program. These questionnaires have been detailed in the next sections. The detailed classroom monitoring framework and the process monitoring tools have been mentioned in Annexure F to J.

OPERATIONALIZING DATA COLLECTION

SURVEY INSTRUMENTS

The classroom visits were informed observation visits and were made based on the time slot of implementation that the NGOs shared with J-PAL SA. The J-PAL SA members answered the set of questions from the following survey instruments:

1. A data collection survey questionnaire mentioned under Annexure H
2. A gameplay observation questionnaire mentioned under Annexure I
3. A teacher feedback interview questionnaire mentioned under Annexure J

The questions from the survey instrument focused on the games being conducted in the classroom, addressing the core indicators from the monitoring framework - teacher instructions, student steps, and material management during the session. Some questions were directed at the teachers to gauge their feedback on the program. The primary objective was to understand the implementation challenges and gather feedback from the teachers regarding the program. These observations would aid in understanding whether the teachers were conducting the games in the desired manner, whether the students were playing the games in the expected method, and whether the materials were easy to manage in the classroom. Following is the detailed list of the indicators that the survey instrument focused on:

1. Visibility of the posters: Were the posters for the respective four games visible at all times during a session?
2. Teacher instructions: Did the teacher go through the game-specific instructions during the session?
3. Teacher behaviour: How was the teacher's interaction with the students during the session?
4. Student steps: What steps from the game design did the students engage in during the sessions?
5. Classroom behaviour: Did the students comprehend the instructions? Were they productively engaged throughout the session?
6. Material management: How were the teachers managing the materials during the sessions? How were they accessing and arranging it? How were they storing it?

SURVEY TEAM

The J-PAL SA team which conducted the Process Monitoring exercise consisted of three members – one Policy Support Assistant, one Project Associate, and one Field Monitor. The J-PAL field team spent two weeks getting familiar with the nature of the program, to understand all the survey instruments, and to get a thorough understanding of the methodology of conducting classroom observations and feedback surveys using the survey instruments.

Action & Learn

IMPLEMENTATION FINDINGS

The first cohort of the certification course implemented the program in their respective geographies. The implementation took place in thirty classrooms across three distinct states. This implementation was adopted by teachers with diverse skill levels across pre-primary and Anganwadi classrooms. The data collection process to monitor the implementation across different geographies resulted in valuable insights.

KEF initiated the program in January, enabling J-PAL SA to conduct 24 classroom observations in Karnataka schools. TiTLi began implementation in March, providing J-PAL SA with opportunities to document sixteen classroom observations. CLR executed the program throughout the first half of 2024, allowing J-PAL SA to observe nine classrooms and gather feedback from ten teachers regarding the program.

J-PAL SA utilized the monitoring framework to assess the program's fidelity. Each organization's pilot offered unique learning opportunities which resulted in specific insights from each pilot. As each organization's insights are distinct, this report will first shed light on the NGO-specific analysis, with insights for each organization derived through the following methods. The consolidated learnings from the overall program will be synthesized in the concluding section of the report.

Narrative analysis: This involved a thorough examination of the goals, capabilities, and engagement levels of the NGO partners in the 2023-24 cohort. This was carried out by analyzing scoping conversations with course participants, reviewing their training and classroom implementation and monitoring plans for the program, engaging in regular conversations during the implementation, and assessing the learnings shared by the participants.

Thematic analysis: This entailed analyzing observations for each NGO throughout the implementation of the certification course. This was carried out by studying the findings that have been derived from the process monitoring carried out by J-PAL SA to understand the teacher delivery, student engagement, material management, and the program feedback.

Based on the above analysis for each NGO, we synthesize key insights. This involved summarizing the unique findings and recommendations for each NGO. It ensured a detailed and nuanced understanding of each NGO's implementation, providing valuable insights and lessons for future program iterations. The detailed analysis of each organization's pilot implementation is presented in the following sections.

Every child counts - Act~~ion~~ and learn

IMPLEMENTATION FINDINGS

KARNATAKA

KEF took up the Every Child Counts certification course in 2023-2024. They are a not-for-profit organization in Karnataka working to ensure quality early childhood education for all children, since 2016, contributing to the ecosystem of education. They run various programs catering to the educational needs of students from pre primary to primary grades. One of these programs, called Enriching Pre Primary Education (EPPE), enabled through a Memorandum of Understanding (MoU) with the Samagraha Shiksha Karnataka, focuses on creating model schools at the block level in Karnataka.

ANALYSIS OF KEF'S EVERY CHILD COUNTS PILOT

This thorough analysis examines KEF's implementation of the Every Child Counts program in ten Kindergarten classrooms in Karnataka. It outlines the preparation, execution, and outcomes of the pilot phase, highlighting key challenges and successes.

The analysis is based on detailed observations, feedback from teachers and students, and regular communication between KEF and J-PAL SA. Data was collected through 24 informal classroom visits and structured check-in conversations.

10
Kindergarten classrooms involved

24
Observations and check-in conversations

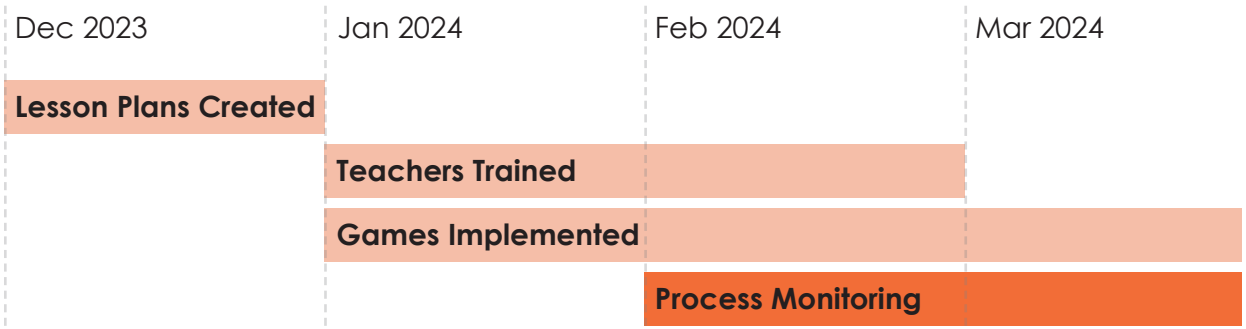
03
Math Games observed - FS, FM, RM

MAJOR FINDINGS

- Teachers effectively introduced and explained games. There could have been more emphasis on students playing in groups and teachers spending less time on answer-checking.
- KEF observed that teachers were having some difficulty in introducing and explaining the later decks of Find Shape as the concepts of angles and symmetry were not found in the school curriculum.
- Active participation in group activities, particularly with Reading Maps was observed among all students. There were difficulties with number recognition and game instructions, especially among younger students. There is room for improvement in conducting the symbolic sections of the games like Number Comparison, Find Shape, and Find and Move.
- Creating an engaging timetable is crucial for students to not get bored with the gameplay.
- Teachers used appropriate materials, occasionally substituting with equivalents without affecting gameplay.
- KEF found the game materials and the related videos and manuals useful. They requested more support for translation and packaging.
- Students struggled with more complex numbers and shape properties in the latter part of the curriculum.
- Classrooms with effective student behavior management are able to conduct the step-by-step game sessions in a more systematic manner

PROGRAM TRAINING

Following their selection and onboarding, KEF team members attended an in-person training workshop held in Delhi. KEF decided to implement the program in their Enriching Pre-Primary Education (EPPE) schools in Anekal block. KEF maintained active communication with the teachers at these schools to train them on the implementation of various programs. To ensure a comprehensive understanding of the program, KEF conducted an internal workshop for its members. Since KEF indicated that teachers would require materials in Kannada for ease of implementation, J-PAL SA provided the necessary materials for contextualization. KEF planned to translate these materials before the teacher training sessions.



IMPLEMENTATION PLAN

The first round of teacher training was completed in January, followed by the second round in February. KEF undertook the translation of the teacher manual, instructional videos, and back scripts into Kannada and successfully shared these resources with J-PAL by the first week of February.

Throughout the implementation, KEF gathered and shared feedback from teachers as well as observations of students engaging with the games. These insights are detailed in the following section. Additionally, J-PAL SA and KEF initiated discussions on scaling up the program for the 2024-25 academic year, facilitated by a workshop aimed at sharing findings from both organizations.

IMPLEMENTATION FINDINGS

J-PAL SA team members conducted 24 observational visits to these classrooms. A brief set of questions were addressed in these visits to capture the observations and the teachers feedback. If the program is shown to be well-received by both students and teachers and subsequently scaled across Karnataka schools, J-PAL SA would adopt a more structured approach to the observation visits. KEF also regularly observed their classrooms to monitor the program's implementation. The observations from the Karnataka schools are as follows:

A. Math Games

During these visits, the game most observed was Find and Move. This is because most visits were made in the latter weeks of February and the former weeks of March when the second round of games was implemented; hence J-PAL SA members saw the games Find Shape, Find & Move, and Reading Maps. J-PAL SA could not observe the game Number Comparison in the Karnataka classrooms. The observations and the conversation with KEF have provided the following learnings. There are seven learning categories, each focusing on one program component. The learnings offer insight into how the program was implemented in the Karnataka classrooms.

B. Teacher delivery

- Teachers were able to create weekly plans, keep materials ready and create a routine for the game for students.More than half of visits witnessed the teacher introducing the game and explaining the math components to the students, while less than half of visits witnessed teachers also explaining the game-specific instructions like the representation of black dots for finding and pink dots for moving, or the use of circles for ten dots in the game Find & Move. Very few visits witnessed teachers modeling a practice card and repeating the practice cards.
- Very few visits witnessed teachers forming groups of students. No visit witnessed teachers distributing materials directly to students. Almost all teachers had asked the students to collect the materials and sit in their assigned groups before the gameplay began.
- KEF observed that teachers are spending a lot of time on the answer-checking. They also noted that teachers are less trained on the grouping mechanisms and following class management strategies among students outside of this program, which could be a prerequisite for the games to be effectively implemented.

C. Student Involvement

- In most visits, students actively participated in groups of four, particularly during the Reading Maps games. This game was perceived by teachers as relatively easy for students.
- The students were observed playing with math games when teachers kept it as a play corner for free play.
- Despite occasional misunderstandings of the game's structure, instructions, or number concepts, students were engaged throughout the game play session
- KEF observed that students were struggling and making errors in the Number Comparison game with certain cards with close numbers like five and seven, or numbers that mirror each other like twelve and 21. While the teachers made an effort to introduce the game and explain the math property involved, the students were not able to pay attention to the teacher.
- We observed that for the Find Shape, the children are calling out the shape names but are struggling to understand the hints on the properties of the shapes.

- For FM they can "Find" the number on the board but are not able to "Move" to the second number.
- Some teachers of the Karnataka schools shared that students are getting bored by playing the same game consecutively and thus conducted two games alternatively to keep the students engaged for all sessions.
- Some teachers also mentioned that the LKG students in the classroom were having more difficulty playing the games, than the UKG students.

D. Materials Utilized

- While almost all the visits witnessed the teacher utilizing the correct materials for the respective game being played, few observations were made where the materials were replaced with something seemingly equivalent to the program materials. This replacement was observed for the red and blue trays in the find shape game.
- KEF found the program materials, along with the teacher training materials like the training manual and the video to be easy to understand and adapt. They shared that support for the translation of the resources and the packaging of the materials would have helped them to better implement the program in the classrooms.

E. Management of Materials

- Most of the visits observed that teachers were accessing the materials from a table or a platform, and very few accessed the program materials from the J-PAL SA provided management box. Similar observations were made for storing the materials. This is probably seen as the teachers had provided dedicated slots for the game sessions and thus was likely to prepare the materials in advance.
- It can be seen that teachers were preparing in advance for the game play session as the students were also divided into groups before the session started, as was noted in the teacher delivery section.
- Some teachers shared that the design of the materials for the Reading Maps game could be improved by highlighting the dots on the cards to help children identify the dots better.
- A few teachers also mentioned that the volume of materials is a lot for the LKG students, which KEF also highlighted.

Challenges throughout implementation

The most frequent challenge for the Bangalore school teachers was the rigor of the curriculum. Teachers shared that while students are able to engage with the first half of the curriculum, where the numbers are from zero to ten, and the shape focuses on the number of sides, students have a difficult time understanding the second half of the curriculum that focuses on the number from eleven to thirty and the length of sides of the shapes. They shared that due to this difficulty, students were having a hard time playing the Find & Move game and the hint cards of the shape game Find Shape and Reading Maps. KEF also shared that the teachers frequently made errors with later concepts such as angles, intersecting lines, and symmetry.

Overall Suggestions

There is potential to enhance the demonstration of the game to ensure students have a clear understanding. Furthermore, teachers should actively promote group engagement and encourage students to share answers, fostering a collaborative peer learning environment in the classroom. Additionally, improvements can be made in conducting the symbolic sections of the game, such as Number Comparison, Find Shape, and Find and Move, to optimize their effectiveness. For the Find Shape and Number Comparison cards, there is a potential for the students to be confused when using different colored trays or baskets. Hence, it would be better to follow the structure of sorting the cards into red and blue trays.

CONCLUDING THE PILOT

The findings from the KEF pilot indicate that the implementation of the Every Child Counts program is feasible for teachers and students in government kindergarten classrooms. Effective implementation is particularly evident in classrooms where classroom management is already established. The program can be piloted at a larger scale to gather more learnings and insights into maintaining the fidelity and integrating it with the state curriculum. This conclusion is supported by three primary factors:

First, **the level of structure and student management within the classrooms facilitated the step-by-step game-based learning approach.** Most of the teachers were able to follow the program methodically and engage students in a peer-learning-focused style of gameplay. While teachers were able to demonstrate the key aspects of the delivery, there is scope for improvement in contextualisation of the kit (especially later decks of NC and FS), demonstration of the game and encouraging group engagement. Interestingly, students found most of the games engaging and many were able to play the games. Some even took initiative to play the games set up in the activity corners.

Second, **meticulous planning, robust programmatic monitoring, and effective communication resulted in the successful operationalization of the program.** The KEF team continuously gathered and shared feedback on various program elements, including instructions, curriculum, and materials with J-PAL SA. During J-PAL SA's classroom visits and interactions with teachers, valuable insights into the curriculum's rigor were shared, further informing the implementation process. This consistent communication, paired with the thoughtful planning and monitoring helped in timely addressing areas of support and preparing for foreseen challenges.

Third, **building on the success of the pilot in ten classrooms, J-PAL SA has begun early efforts, in collaboration with KEF, to implement the program at scale in Karnataka schools.** The key to successfully scaling the curriculum in Karnataka is to address the challenges identified during the pilot. These include improving material management, such as ensuring that teachers have user-friendly storage and access solutions, bridging gaps in teacher training to help them confidently deliver lessons and manage classrooms, and simplifying the curriculum to make advanced concepts easier to understand for both teachers and students. By resolving these issues, the program can be implemented more effectively on a larger scale. Drawing from the pilot findings and ongoing discussions with the KEF team, J-PAL SA is confident that with minor adjustments to the curriculum, the program can be scaled effectively for smoother adoption across Karnataka schools. The potential for scaling is further strengthened by KEF's commitment to expanding education programs and their ongoing support to the Government of Karnataka's Department of Education in improving foundational student learning outcomes.

IMPLEMENTATION FINDINGS

UTTAR PRADESH

CLR, a not-for-profit organization founded in 1984, participated in the Every Child Counts certification course in 2023-2024. Working in Maharashtra, CLR focuses on improving the education and development of socio-economically disadvantaged children and youth. Partnering with the ICDS scheme, CLR implemented the program in ten Anganwadi classrooms in Lucknow, targeting early childhood care and education.

ANALYSIS OF CLR'S Every Child Counts PILOT

This thorough analysis examines CLR's implementation of the Every Child Counts program in ten Anganwadi classrooms in Uttar Pradesh. It outlines the preparation, execution, and outcomes of the pilot phase, highlighting key challenges and successes.

The analysis is based on nine detailed classroom observations, ten feedback sessions with teachers, and regular communication between CLR and J-PAL SA through seven check-ins over three months.

10
Anganwadi classrooms involved

16
Observations and check-in conversations

02
Math Games observed - NC, FS

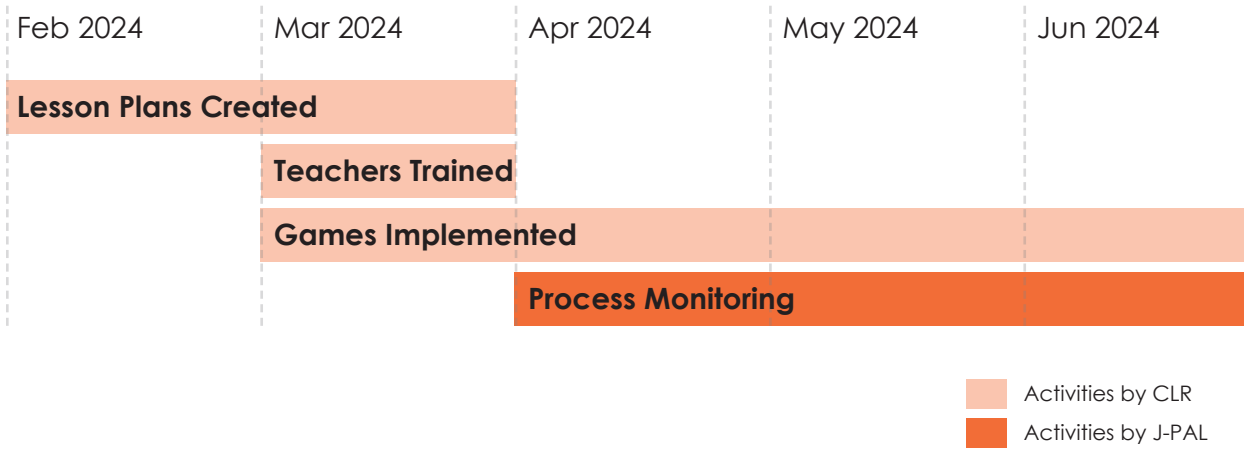
10
Teacher feedback conversations

MAJOR FINDINGS

- Teachers are introducing the games and explaining the math concepts to the students, along with the instructions to ensure that students are understanding the game mechanics as well as the math components of the game.
- Most of the older students are playing the games independently and interacting within the groups to discuss answers. The younger students are having trouble playing the games independently and require the support of the teacher or the Anganwadi helper.
- CLR shared that the teachers liked the training resources, such as videos and found the practice cards and the answer keys helpful to conduct the games in the classrooms.
- The younger students are having trouble identifying and thus playing with the larger numbers in Number Comparison; they can simply map the smaller numbers, and hence they were given to play the cards with smaller numbers or those with only dots.

IMPLEMENTATION PLAN

Understanding the program's objectives, CLR decided to implement this across Lucknow Anganwadis. Teacher trainings were conducted in two rounds between January and April 2024. Teachers responded positively to the training, though some expressed concerns about the complexity of the "Find Shape" game.



IMPLEMENTATION FINDINGS

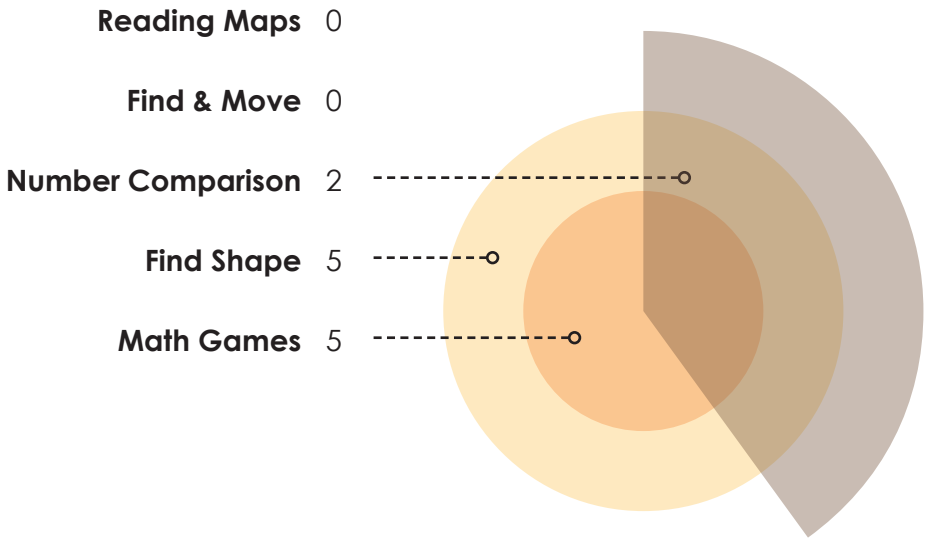


Fig 11.1: Math games observed, total visit = 5

A. Math Games

J-PAL SA process monitoring team made 5 visits observed Math Games sessions being implemented 5 times.

Most observations were for the "Number Comparison" and "Find Shape" games (fig 1), as they were implemented first. Regular program monitoring by CLR and J-PAL SA aimed to address real-time challenges and gather feedback for course correction.

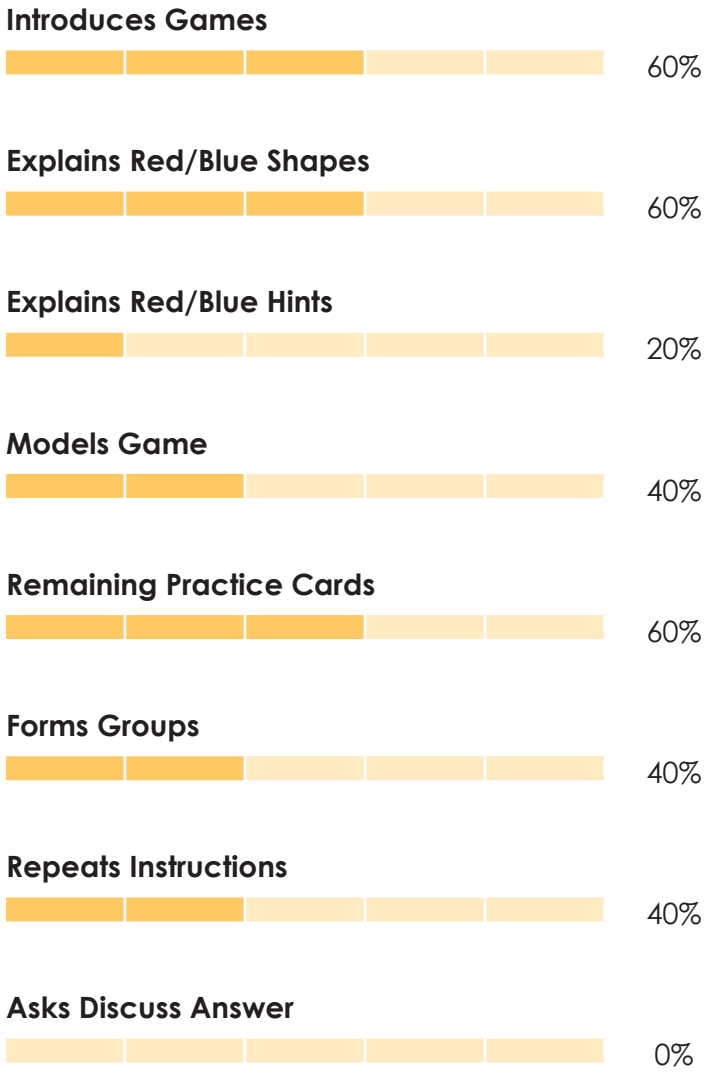


Fig 11.2: % of FS sessions with teacher instructions; n=5

B. Teacher Delivery

During the Find Shape game sessions, most teachers effectively introduced the games and explained the math concepts, ensuring students understood the mechanics and math curriculum (fig 2). Some teachers formed groups based on the recommended age, while others engaged the entire class. However, many teachers did not prompt discussions or answer sharing (fig 3). CLR noted that teachers struggled with the curriculum, especially in later decks, and often focused on practice cards rather than progressing to the main decks. Further observations are needed to better understand the delivery of the program.

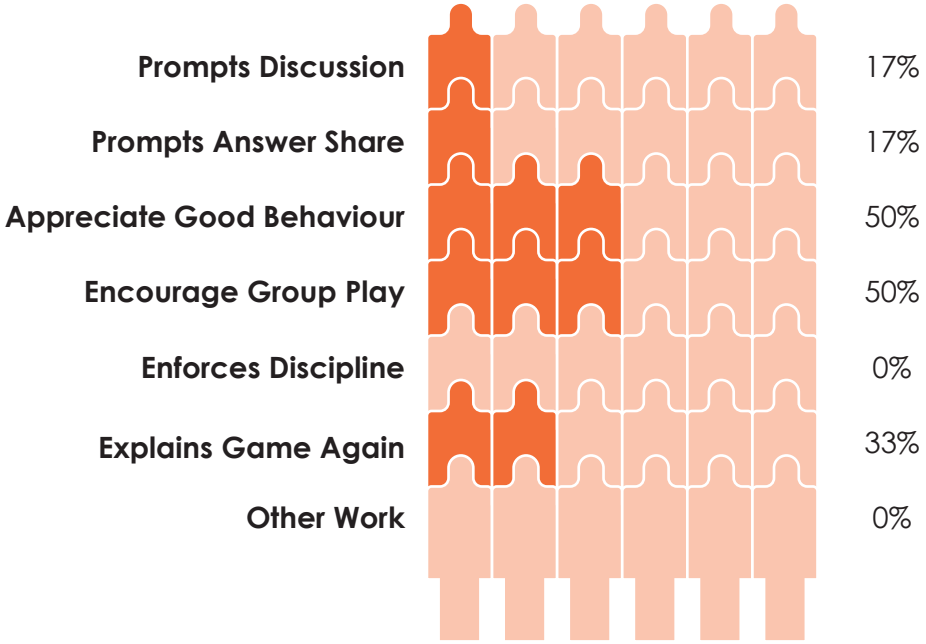


Fig 11.3: Sessions with teacher behaviour; n=6

C. Student Involvement

Students responded enthusiastically to the game materials, with most engaging in activities like sorting cards and playing in turns (fig 5). Some students were following the instructions closely, while some students were also playing the games independently and discussing answers in groups (fig 6). Younger students struggled to play independently and needed support from teachers or helpers.

While group play was observed in half of the sessions, the recommended group structure was not followed consistently (fig 7). Teachers noted that engaging the entire class helped younger students learn from peers. Further observations are needed to assess student engagement with the program.

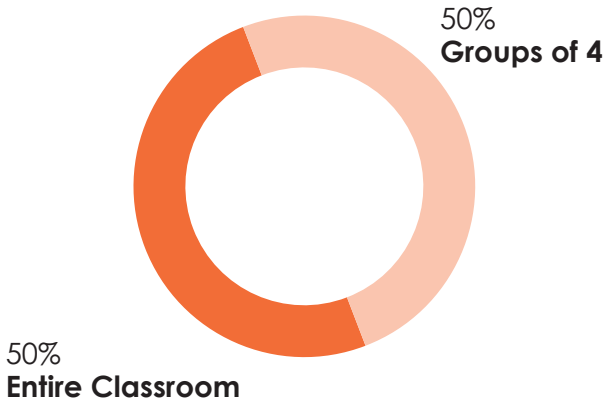


Fig 11.7: % of sessions with group settings; n=8

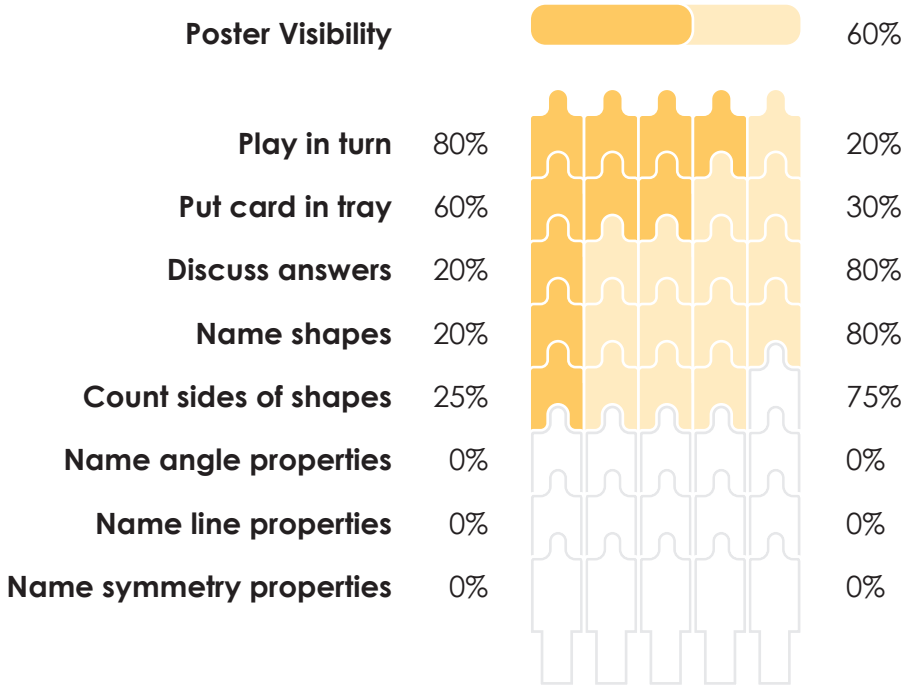


Fig 11.4: % of sessions with the FS poster visible

Fig 11.5: FS sessions with student steps

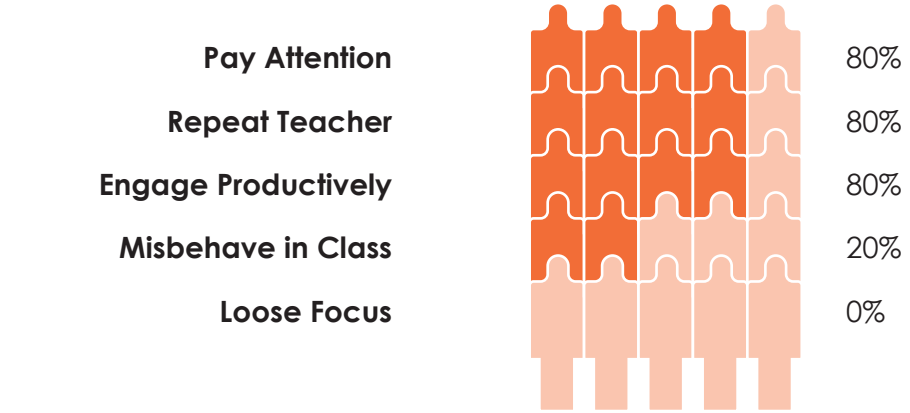


Fig 11.6: Sessions with student behaviour; n=5

D. Material Management

The J-PAL SA management box was intended to help teachers efficiently manage and store program materials, with compartments for organization of materials. Despite its design, none of the visits showed the box being used during gameplay. Instead, teachers primarily used tables or platforms to access and store materials. It seems the box might be used post-session for storing materials, but its full potential has not been realized. Further observations are necessary to evaluate how effectively materials are managed and to determine if teachers are utilizing the box as intended.

Some teachers accessed materials from the box but stored them on tables afterward, indicating potential use of the box between sessions. Further observation is needed to understand material management practices.

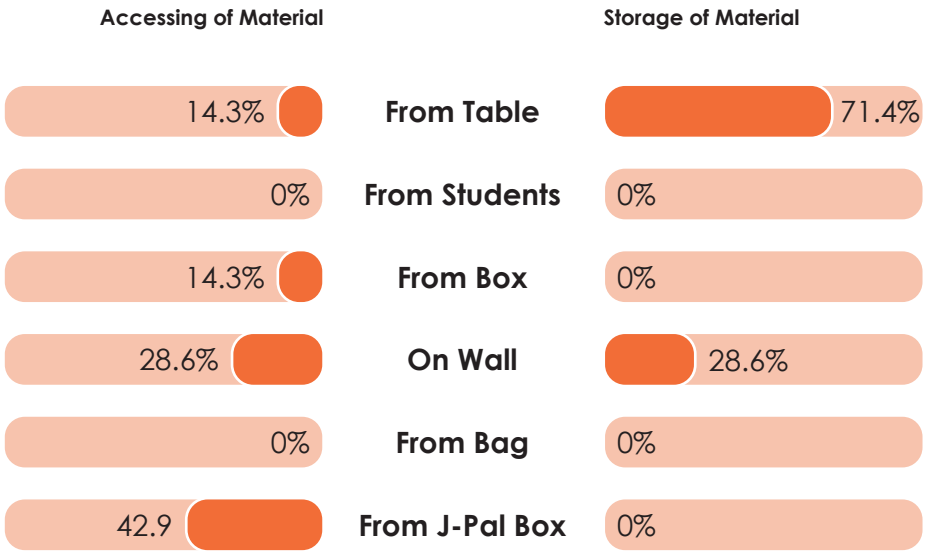


Fig 11.8: Ways of material management by teacher; n=5

E. Program Feedback

Teachers provided positive feedback, appreciating the training resources, instructional videos, and practice cards. They valued the play-based learning approach and observed student engagement, particularly in the "Number Comparison" and "Reading Maps" games.

Fig 11.9v: Frequency of positive feedback categories by teachers; n=5

F. Challenges Faced

Teachers required significant support to understand and accurately conduct the games. Material management was difficult due to space constraints, and younger students struggled with complex aspects of the curriculum. Additionally, cold weather and teacher duties like immunization affected program implementation and student attendance.

Overall, feedback suggests that students can engage with the games when guided properly by teachers to understand the math concepts.

CONCLUDING THE PILOT

The findings from the CLR pilot indicate that the implementation of the Every Child Counts program for teachers and students in Anganwadi classrooms requires significant modification to the program curriculum to facilitate easier adoption of the program. The existing curriculum poses a challenge for the Anganwadi teachers due to the compromised student and teacher capacity, and the lack of a structure to implement educational programs in the classrooms. As many governments are transitioning 5+ year-olds to Balvatikas and merging pre-primary with primary schools, the Math Games program will need considerable changes for implementation in Anganwadi centers, with no guaranteed scalability in the long term.

The compromised response from students and the programmatic challenges that teachers faced, highlights the need to adapt the program to better foster the core components of the program. Students are facing challenges in engaging in the step-by-step mechanism of the games. The lack of student management in some cases hampers the gameplay structure and poses a challenge for the teacher to involve the students in the core elements of the program like peer-learning. The younger students find the curriculum difficult to learn and the structure hard to grasp as their skills are developing. Thus, the inclusion of younger students in the classroom also became a challenge for the teachers while conducting the games for all students.

Given the lack of education training that Anganwadi teachers get, CLR recommends incorporating a hand-holding phase in the knowledge transfer process to enable teachers to more effectively grasp the games curriculum. Evaluating whether such a modification in training would enhance the delivery of the program to students warrants further investigation.

Teachers in Anganwadis need active support and streamlined responsibilities to accurately implement math games and foster a learning environment, especially in multigrade classrooms. Teachers require active support to comprehend the games curriculum and instructions, conduct the games, and manage the materials along with the students in their classrooms, especially the multi-grade ones. CLR shared that the teachers are assigned multiple duties throughout the year that focus on the healthcare and nutrition aspects of the students' development, which results in a compromise on time dedicated to instructional activities on learning. **Hence, there is a need for education programs for Anganwadi to foster a learning environment, in general.**

IMPLEMENTATION FINDINGS

JHARKHAND

Titli, a Jharkhand-based not-for-profit, is enhancing early childhood care through its TiTLi Sanghrakshini program, focusing on Anganwadi centers. In 2023-2024, they participated in the Every Child Counts certification course, which aims to strengthen early childhood education.

Titli chose to implement the certification program in ten Anganwadi classrooms. J-PAL SA provided materials and support. Teacher training occurred in March 2024, covering all four games. Post-training feedback was positive, with teachers eager to use the games.

ANALYSIS OF TITLI'S Every Child Counts PILOT

This thorough analysis examines Titli's implementation of the Every Child Counts program in ten Anganwadi classrooms in Jharkhand. It outlines the preparation, execution, and outcomes of the pilot phase, highlighting key challenges and successes.

The analysis is based on detailed observations, feedback from teachers and students, and regular communication between Titli and J-PAL SA. Data was collected through sixteen data collection observations and seven structured check-in conversations.

10

Anganwadi classrooms involved

16

Observations and check-in conversations

04

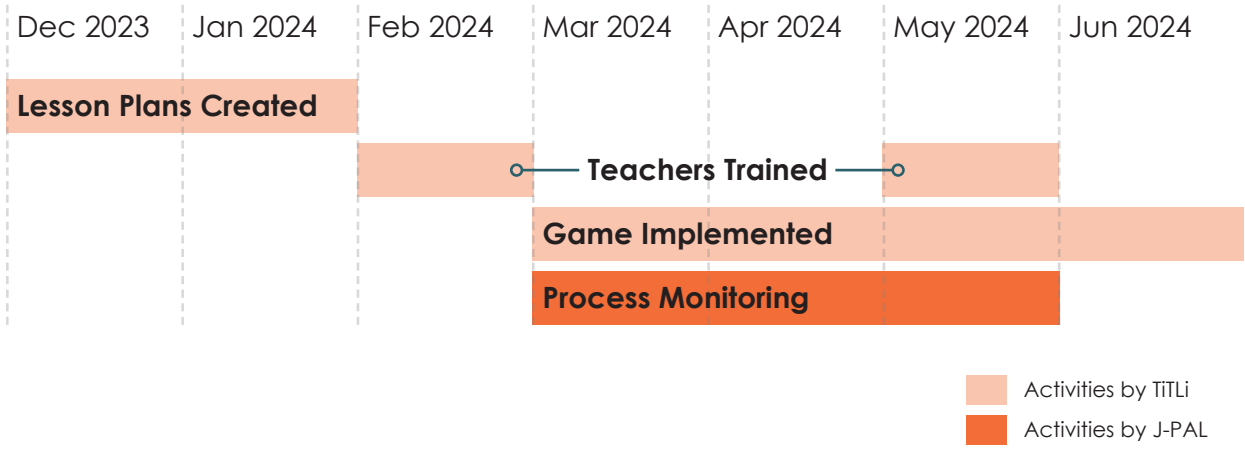
Math Games observed - NC, FS, FM, RM

MAJOR FINDINGS

- The response from teachers and students have been positive. However, teachers have not been able to dedicate proper time to the game sessions.
- There is scope for the teachers to improve on the instruction delivery of the games and engage all the students in the classroom. Teachers are introducing the game and encouraging group discussion but not practicing the game enough.
- There is scope for improving the visibility of posters in the classroom while the games are being conducted. Students are not referring to the posters oftentimes during the gameplay.
- Student behaviour management strategies can enable them to sit in groups and play games, thereby increasing the engagement of students during the gameplay.
- The current program model poses challenges like curriculum difficulty for students in Anganwadi classrooms below the age off our years.
- TiTLi found the program crucial for Anganwadi classrooms to cultivate an environment of play-based learning. They shared that the materials could be difficult for the teachers to manage in the classroom due to the volume and progression of difficulty.

IMPLEMENTATION PLAN

J-PAL SA and TiTLi monitored ten Koderma Anganwadi classrooms from April to June 2024. J-PAL SA conducted sixteen data collection sessions, assessing game implementation, teacher instructions, student engagement, and material management. Key indicators included poster visibility, teacher behaviour, student participation, and material management.



IMPLEMENTATION FINDINGS

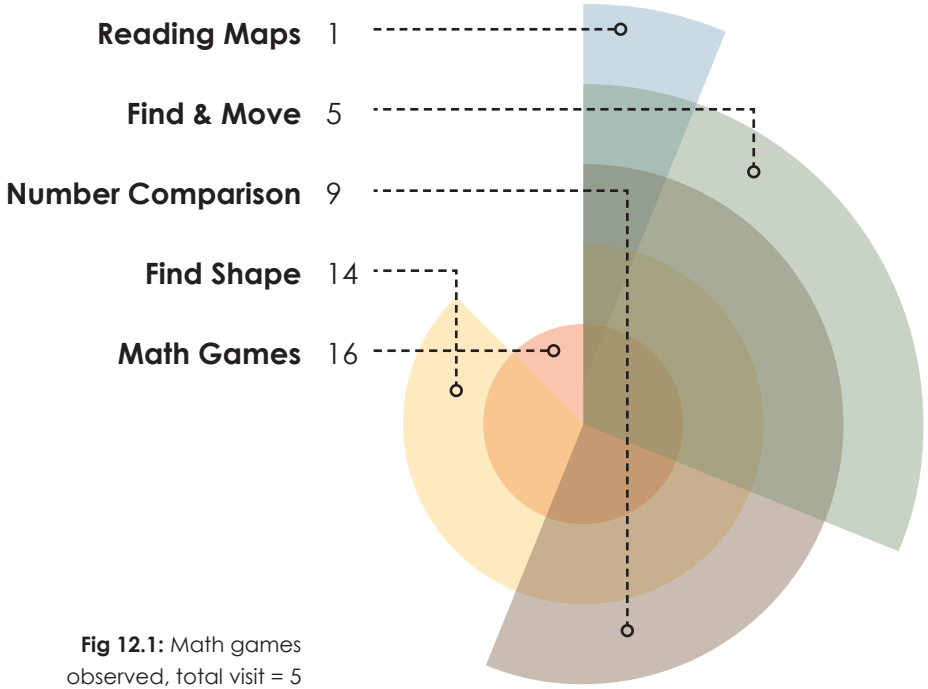


Fig 12.1: Math games observed, total visit = 5

A. Math Games

J-PAL SA process monitoring team made 16 visits observed Math Games sessions being implemented 16 times (fig 12.1).

Observations focused on the Number Comparison game, with some sessions of Reading Maps. Insights were gathered on implementation challenges and teacher feedback, informing future improvements in the program.

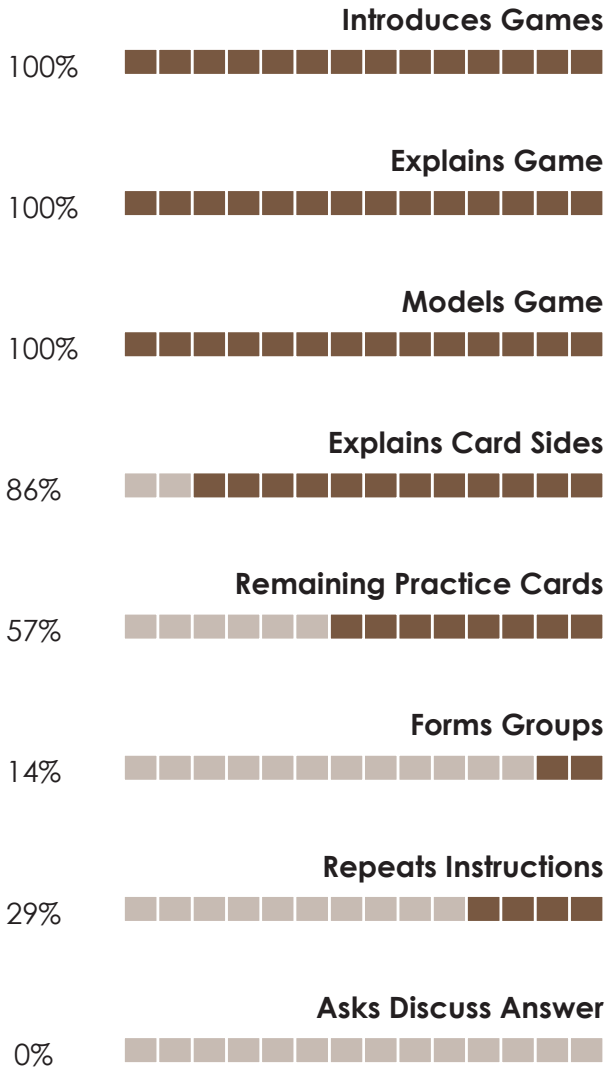


Fig 12.2: % of NC sessions with teacher instructions; n=14

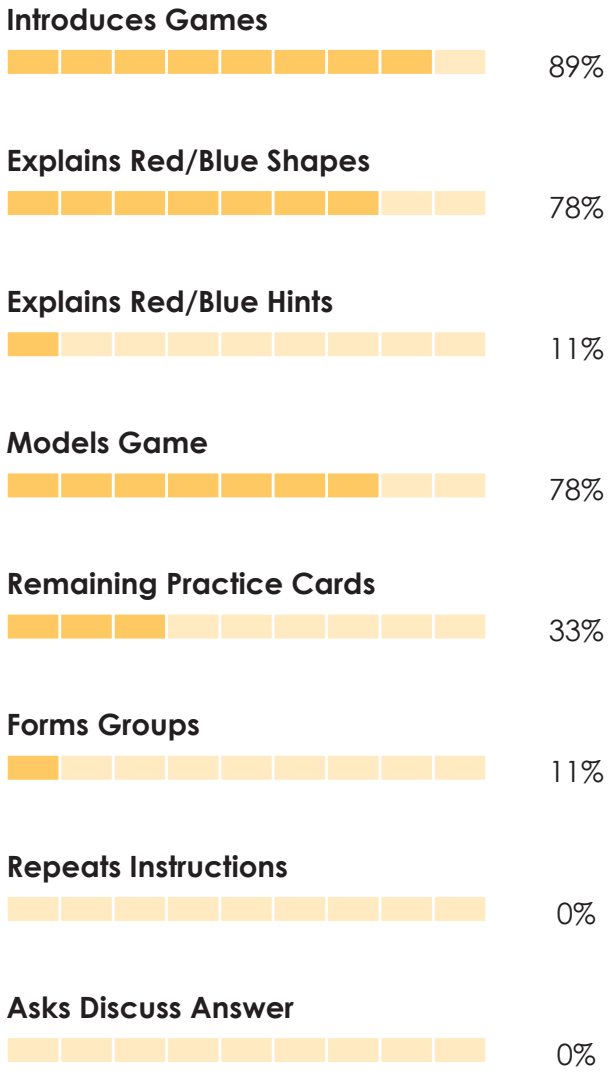


Fig 12.3: % of FS sessions with teacher instructions; n=9

B. Teacher Delivery

Teachers consistently followed the initial game instructions, with 100% of observation visits noting the introduction and modeling of Number Comparison. Additionally, over 75% of visits observed the introduction and modeling of practice cards across all games. However, only 60% of visits saw teachers continuing with the remaining practice cards, indicating challenges in maintaining structure (fig 2 and 3).

Teachers appreciated the games' novelty and found the practice card scripts helpful. However, less than 50% of visits saw teachers encouraging group discussions or positive interactions, and classroom management was limited, with under 10% enforcing discipline. There is room for improvement in sustaining engagement and fostering student interaction during gameplay.

C. Student Involvement

Most sessions saw students actively participating by playing in turns and placing cards in trays, with 93% engagement in Number Comparison. However, this engagement dropped in other games like Find Shape and Find & Move. Less than 30% of visits observed students consistently discussing answers, though Number Comparison saw over 70% discussing, taking number names, and referring to posters.

Some classrooms had all students playing simultaneously, but over 90% had group settings, with only 13% of visits showing the recommended groups of four. Teachers should be encouraged to form groups of four to ensure equal participation and better concept understanding.

While teachers effectively manage gameplay, there is a need to improve student engagement, particularly in calling out math properties and discussing answers. Engaging the entire class during instructions and ensuring all practice cards are taught can help improve student participation and understanding.

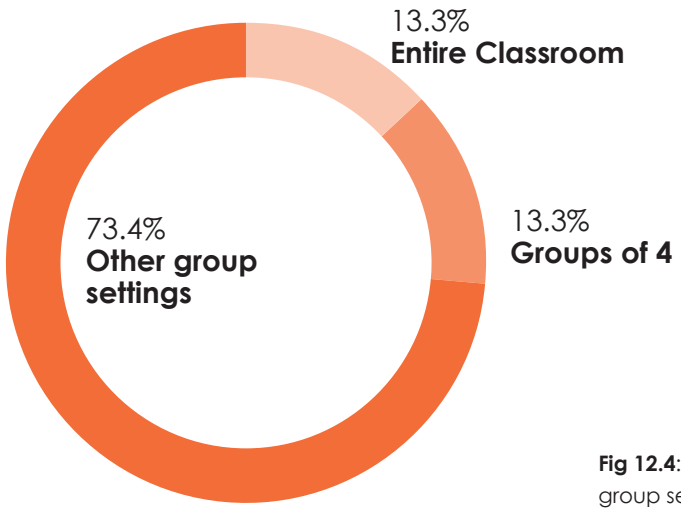
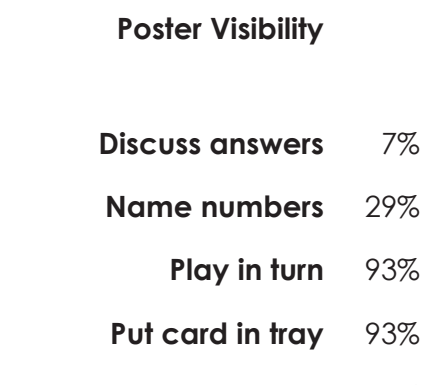
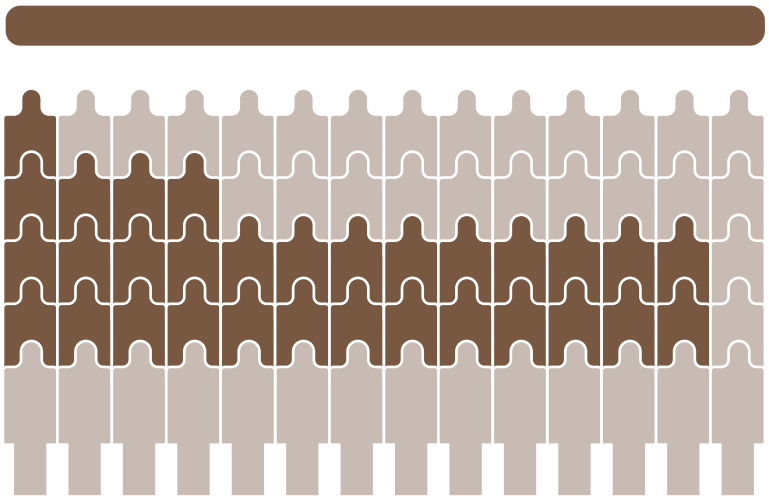


Fig 12.4: % of sessions with group settings; n=30





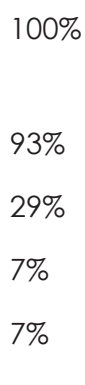


Fig 12.5: % of sessions with the NC poster visible

Fig 12.6: % of the NC sessions with student steps; n=14

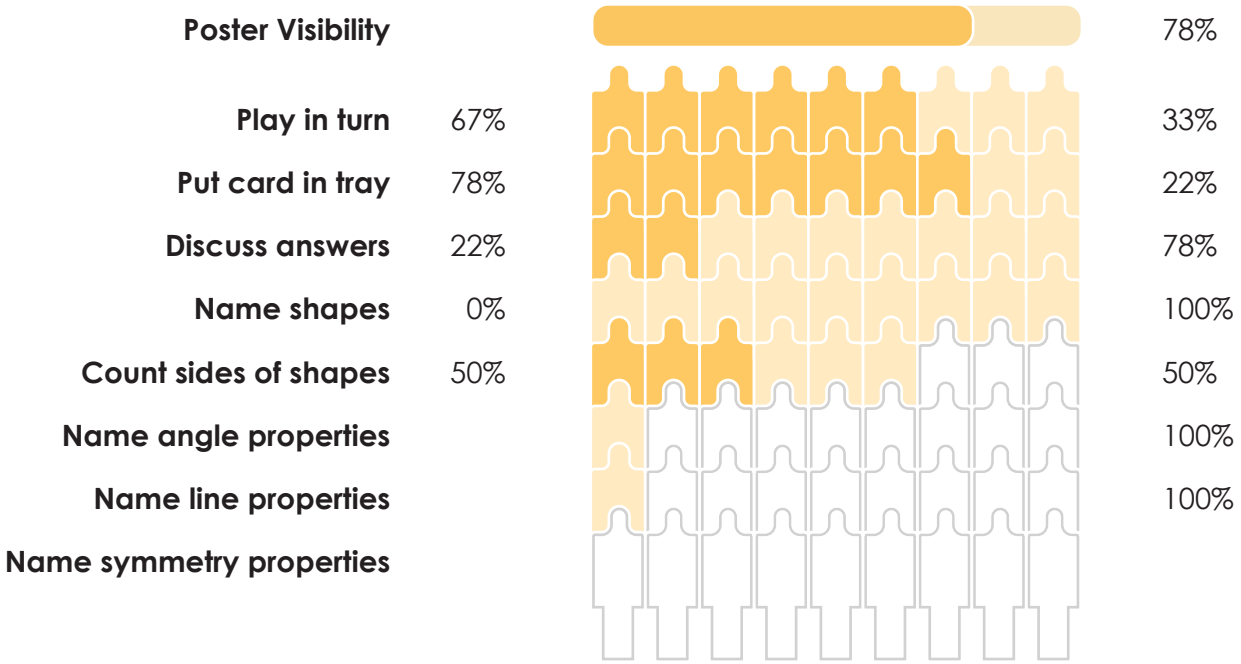


Fig 12.7: % of sessions with the FS poster visible

Fig 12.8: FS sessions with student steps

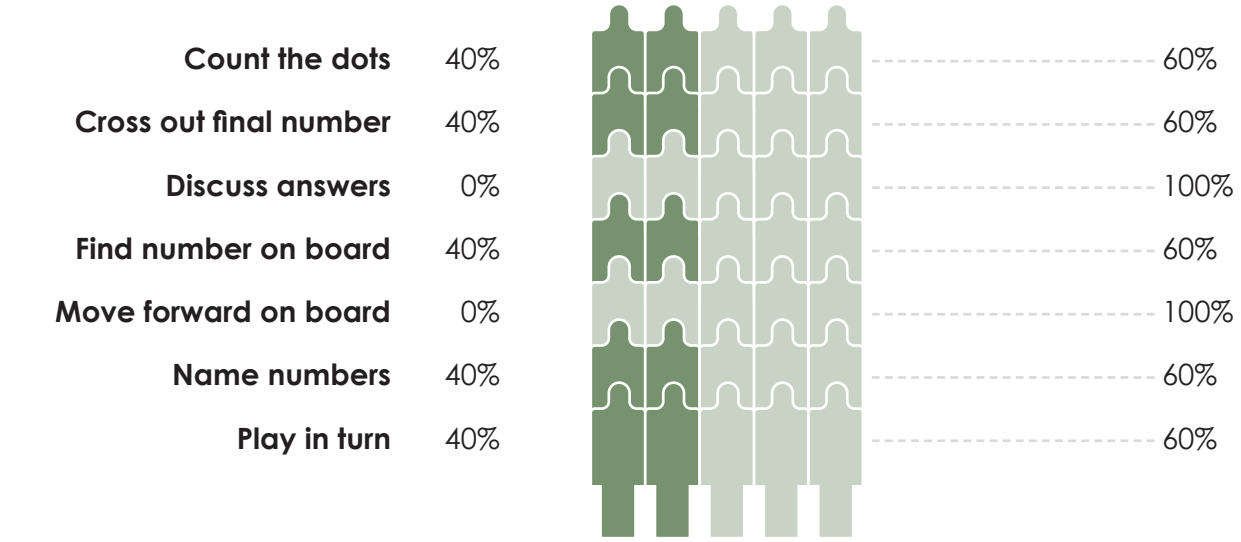


Fig 12.9: FM sessions with student steps; n=5

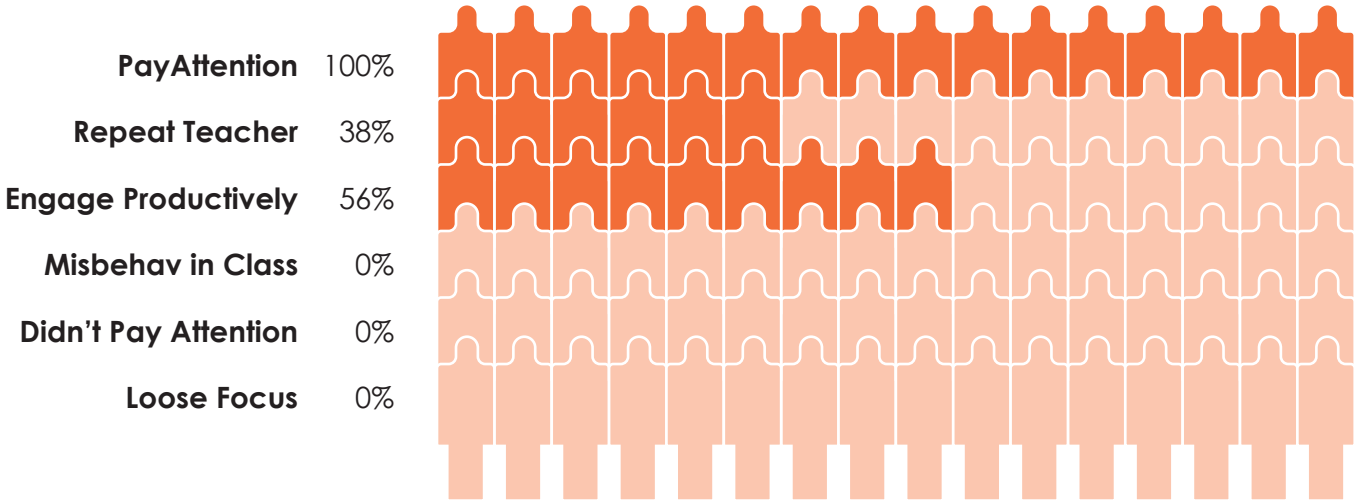


Fig 12.10: Sessions with student behaviour; n=16

D. Material Management

J-PAL SA provided a management box to help teachers efficiently access and store game materials. However, none of the visits observed teachers using this box. Instead, teachers commonly used a table or platform for accessing and storing materials. Titli noted that the J-PAL SA box was too heavy and difficult to store, so teachers used regular boxes instead. Approximately 60% of visits saw materials being accessed and stored on a table or platform, highlighting a preference for simpler storage solutions.

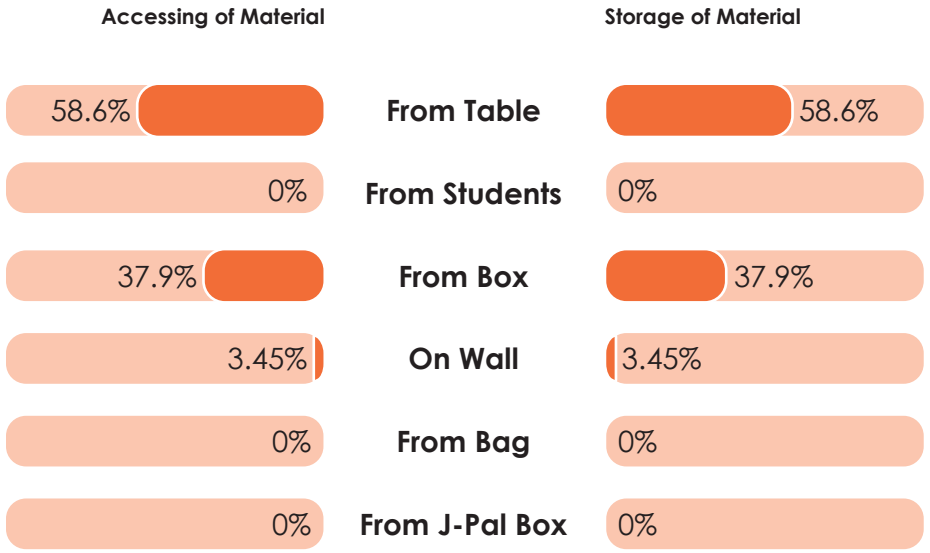


Fig 12.11: Ways of material management by teacher; n=16

E. Program Feedback

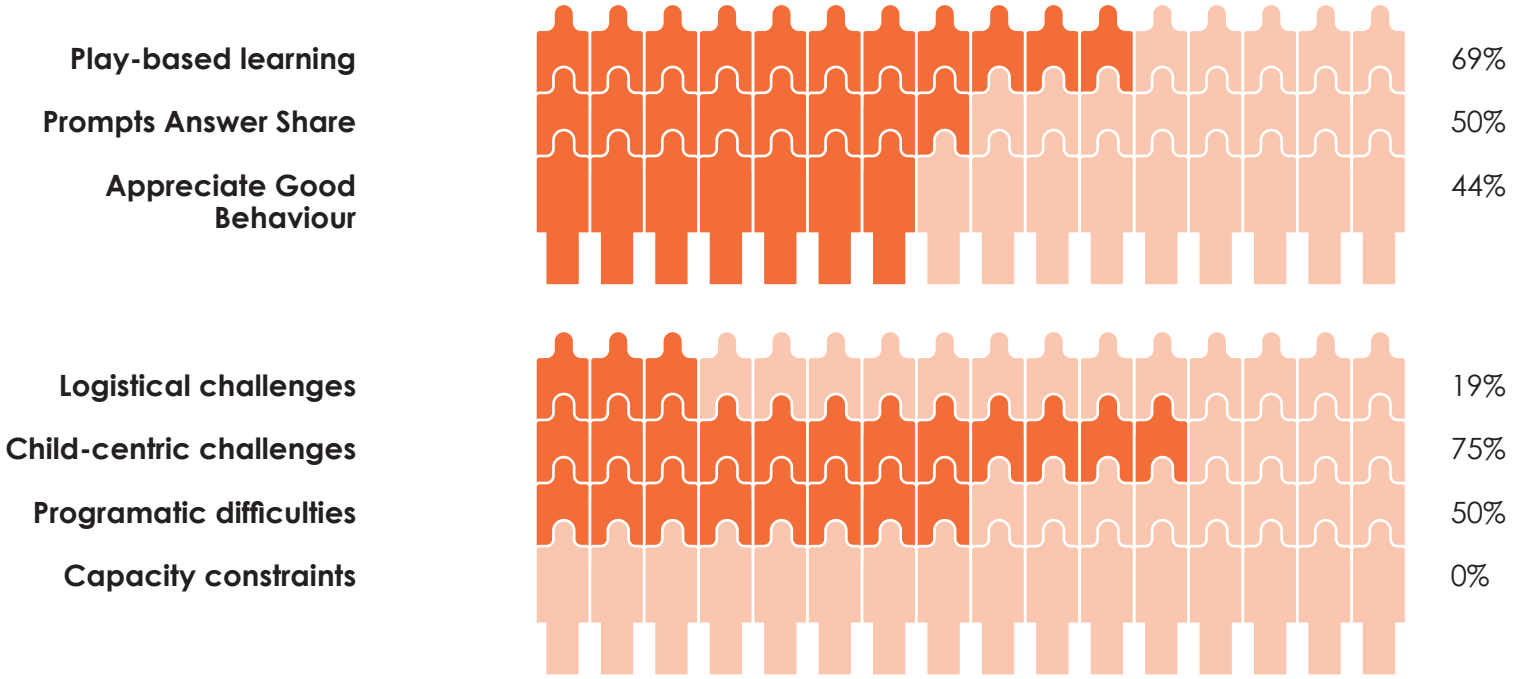


Fig 12.12: Frequency of positive feedback categories by teachers; n=16

Fig 12.13: Teacher feedback frequency on implementation challenges; n=16

CONCLUDING THE PILOT

The findings from the Titli pilot indicate that the implementation of the Every Child Counts program for teachers and students necessitates active support from implementation partners beyond the initial training of teachers. **While training is essential for imparting knowledge of gameplay to teachers, there is a clear need for ongoing observation and support as teachers implement the games.** Implementation partners must consistently iterate on their execution plans and address challenges as they arise throughout the program. This iterative process is crucial to ensure that the program reaches teachers and students in its intended format, thereby maximizing its effectiveness. Titli acknowledged the necessity of conducting structured observation visits to provide feedback to teachers and improve the program's adoption. Additionally, Titli noted that a better understanding of the program's monitoring framework would have facilitated more effective classroom observations and enhanced implementation.

Titli's pilot efforts underscore the **challenges of implementing a structured approach to early childhood education in Anganwadi classrooms.** During the pilot, teachers struggled to allocate time for game sessions due to frequent absences related to election duties, which led to incomplete implementation of the program. Additionally, the current Anganwadi curriculum predominantly focuses on healthcare and nutrition with minimal emphasis on education. Titli's ongoing work to build the capacity of Anganwadi centers to enhance education and development highlights the necessity of sustained engagement with the Anganwadi system to ensure that educational programs are effectively adopted by both teachers and students.

Considering the Anganwadi curriculum's limited focus on education and the difficulties younger students encounter with game-based activities, it is crucial to **explore potential curriculum modifications to facilitate the program's seamless adoption in Anganwadi settings.**

Way Ahead

13. CONCLUDING THE COHORT 2023-24
14. WAY FORWARD

CONCLUDING THE COHORT 2023-24

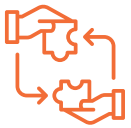
The report enfolds the progression right from conceptualizing the cascade model to executing the initial pilot with three NGOs, which has proven to be both successful in meeting its objectives and insightful to inform future strategies. Collaborating with NGOs to scale the Every Child Counts program has presented unique opportunities for JPAL SA to learn across diverse environments. The pilot results thus far underscore the need for a different approach to effectively address foundational numeracy on a large scale within the Anganwadi system, which faces challenges such as limited teacher capacity and diverse student needs. The pilot findings also underscore the need to tailor the program for younger students in pre-primary classrooms. To comprehensively understand the efficiency of the NGO cascade model in scaling evidence-based pedagogical interventions like Every Child Counts, we present lessons derived from our process monitoring and feedback discussions with our NGO partners from the initial cohort.

INCLUSION

Including organisations that are aware of the local context in which the implementation will take place is crucial for the success of the program. The certificate course of the Every Child Counts program included organisations working at the grassroots to improve the learning outcomes of pre-primary and primary level students. It aids to have multiple extensive scoping conversations with ecosystem partners to be able to include the relevant organisations in scaling the evidence.

These organizations have been engaging with the larger ecosystem, including active interaction with the governments, focusing on various aspects of the education system like the student curriculum and the teacher capacity, to name a few. These organizations have provided active feedback to J-PAL SA on various aspects of the program like game model, training, monitoring, etc. Through this novel approach of NGO cascade model for Every Child Counts, we have learnt that the support of a local implementation partner can facilitate the efficient transfer of contextualized knowledge to teachers, ensure timely operationalization of classroom implementation, and provide structured programmatic monitoring.

The coalition model is thus able to increase the awareness about the program and share the knowledge of the evidence and scale-up efforts with the ecosystem of grassroot organizations.



INTEGRATION

Integrating the Every Child Counts program with the NGOs' program design and monitoring frameworks is essential for effectively delivering the program in classrooms on a smaller scale and gathering valuable insights. Through this pilot, we observed that success depends on how well NGOs can envision the potential of making Every Child Counts a core program within their organization. This alignment with their existing frameworks and program of interest ensures consistency and quality, while also positioning the program as a priority within the NGO's broader mission.

The feedback we received from NGOs after the pilot also informed us that the insights gathered during the certification course process can guide NGOs in considering further integration of the program with state curricula and monitoring structures, aiming for a larger and more sustained impact. To successfully integrate the curriculum with the state system, it is crucial for NGOs to carefully study implementation through core indicators—teacher delivery, student engagement, and material management to continuously identify any gaps. For example, each partner from Cohort 1 contextualized the games and monitoring framework to suit their specific contexts and integrate them with their internal structures.

As observed through this Cohort, these elements collectively contribute to generating interest with government bodies about scaling the program for broader implementation.

ITERATION

Iterating the program design, informed by the learnings from implementation and adaptation processes, is pivotal for opening new pathways to facilitate rapid scale-up. The pilot phase of the Every Child Counts program demonstrated that such iterative processes are most effective when NGOs engage in comprehensive program monitoring and make real-time adjustments. We learnt that by adopting this iterative approach, NGOs can use monitoring outcomes to innovate and develop new methods for implementing and integrating programs within their unique regional contexts, which could accelerate the scaling impact.

While some of these innovations, such as the expansion of teacher training modules to cater to the Anganwadi system, contribute positively to the program's success, others pertaining to making modifications in the curriculum may jeopardize program fidelity. Such innovations, if implemented, would warrant rigorous evaluations to ascertain the impact at scale. It is thus essential to maintain oversight of these innovations being undertaken by NGO partners and continue to act as a learning and knowledge partner to keep a close eye on fidelity. With this constant role that J-PAL SA envisions to play, it will be exciting to explore how the NGO cascade model can be designed for effectiveness in a low-touch framework. This will be an avenue for future exploration by the team!

WAY FORWARD

J-PAL SA is committed to expanding the transformative potential of Every Child Counts in bridging learning gaps and providing children from disadvantaged backgrounds with an impetus as they embark on their educational journey. By ensuring that all children, regardless of their socio-economic background, have access to inclusive and equitable quality education, Every Child Counts has the potential to catalyze educational equity and sustainable development in the Indian context.

- Following the certification, organizations plan to come together as a consortium of certified implementers (anchored by J-PAL SA) on a need basis to ensure fidelity to the curriculum and evaluated design. Partner NGOs and J-PAL SA **will have need based working group meetings for continued support** and to ensure the games' fidelity when integrated. The broader idea for this initiative is to cultivate a consortium of implementers and scalers of the Every Child Counts program, who can come together to share learnings, insights, and challenges faced in the process.
- For the 2024-25 academic year, J-PAL SA and the Key Education Foundation (KEF) propose **integrating the math curriculum into the Chili Pili Plus curriculum in Karnataka,** with a goal to ensure that it is taken to scale in the coming years. Phase 1 pilot at scale is planned for 100 schools across six districts. The program aims to enhance foundational numeracy skills in these schools by training teachers and incorporating math games into the pre-primary curriculum.
- While the coalition model has the potential to successfully integrate the program into structured classrooms with trained teachers, the program might benefit from **modification to foster smoother implementation in other classroom settings like for younger students, especially in Anganwadis,** which faces challenges such as limited teacher capacity and student diversity. As of June 2023, India has approximately 1.396 million Anganwadis, making it imperative for the program to adapt to these settings given the existing constraints. J-PAL SA is committed to adapting and scaling this evidence for various contexts to bridge learning gaps and provide quality education for all students.
- J-PAL SA will enhance the NGO Certification training course by exploring new formats such as **digitising the training modules** that offer flexible and accessible learning for NGO staff, allowing them to learn at their own pace and revisit materials as needed. We will also explore creating a centralized website for accessing game materials, enabling partner organizations to easily print, share, and track resources for efficient use and distribution. J-PAL SA aims to establish a platform for NGOs involved in the Every Child Counts program to share best practices, challenges, and effective solutions.

Every child counts - Way Forward

Annexure

Annexure A to I

Annexure A: Evidence from Randomized Evaluations of Every Child Counts

RCT 1: Pratham Balwadis

Year: 2013-15

Hypothesis

- Children living with unschooled adults, in homes without books or board games, may benefit from Games that exercise the core systems of numbers and geometry.
- Games played in groups with educated adults in a social context inviting mathematical language, may enhance children's number concepts and increase their readiness for school math learning

Study details

This RCT evaluated the curriculum with 1200 children in 71 Pratham preschools (another group of 71 preschools was randomly assigned to receive a curriculum based on games targeting social cognitive abilities, and a third group of 72 preschools served as the comparison group).

Results

- Students exposed to non-symbolic games (where there is no mention of numbers) show marked and enduring improvement in their intuitive abilities relative to the no-treatment group.
- The effect of the games on symbolic math abilities (math taught in schools) was seen only immediately after the intervention and disappeared over time.

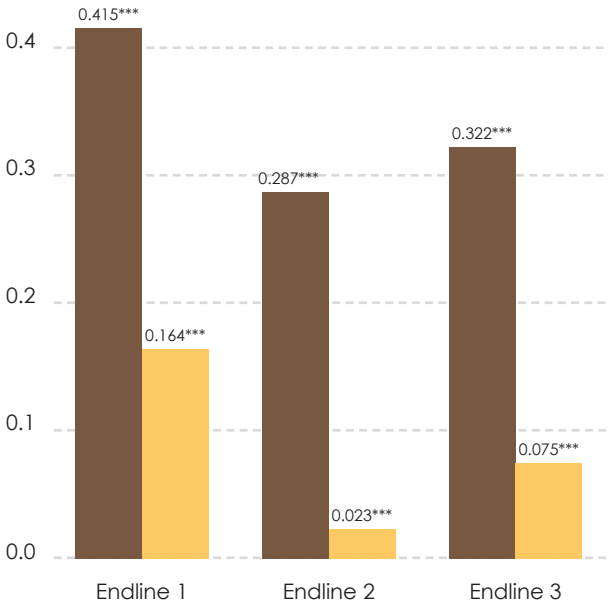


Fig A.1: Z-score of non-symbolic composite

Learnings

- A preschool intervention that effectively fosters an attunement of intuitive mathematical skills, in social and communicative contexts, is not sufficient to promote children's later learning of school mathematics, as was measured in the context of primary schools in India. Playing non-symbolic games did not lead to any impact on school math though they had an enduring impact on non-symbolic abilities they trained.
- The researchers noted that a math treatment might be more effective at fostering school readiness if the games were presented in a way that connects their nonsymbolic mathematical content directly to the mathematical language and symbols used in school.

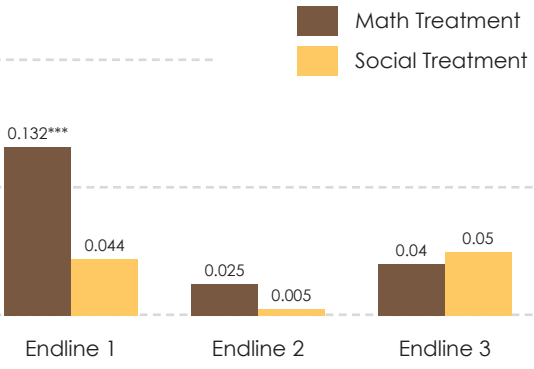


Fig A.2: Z-score of symbolic composite

RCT 2: Pratham Balwadis

Year: 2015-17

Hypothesis

Modified curriculum linking the non-symbolic games to the symbol systems of elementary school mathematics (transition games) played in groups with educated adults in a social context inviting mathematical language, may enhance children's number concepts and promote later learning of formal school mathematics.

Study details

In 2015-16, a modified curriculum linking the non-symbolic games to the symbol systems of elementary school mathematics was evaluated in 174 Pratham preschools reaching 1500 children in Delhi.

Results

Results from this RCT that covered a total of 256 Pratham preschools indicated that the transition games intervention not only showed an immediate impact on non-symbolic and symbolic math outcomes immediately after the intervention, but this effect strengthened and persisted even 1 year after the completion of the intervention.

Learnings

Symbolic, non-symbolic and transition games led to strong impact on symbolic math outcomes. The findings established that exposure to games involving both symbolic and non-symbolic math content leads to lasting gains in symbolic math.

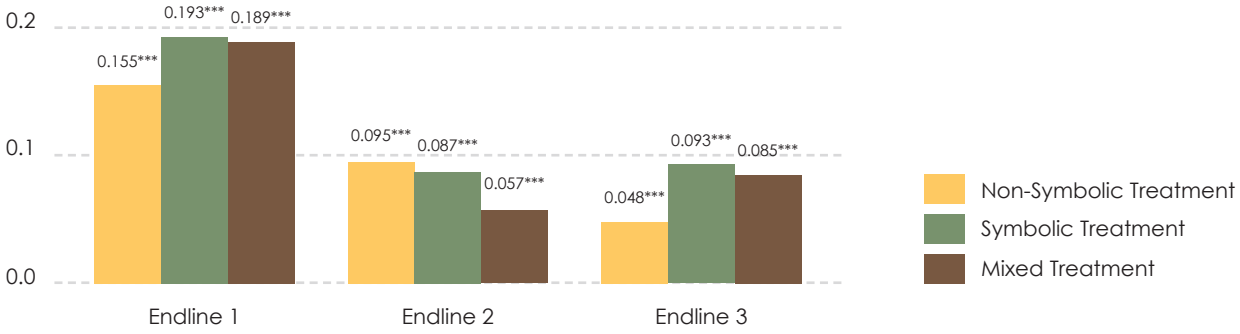


Fig A.3

RCT 3: Pratham Balwadis

Year: 2017-19

Hypothesis

The modified curriculum will maintain its impact on symbolic and non-symbolic math outcomes (even 1 year after the completion of the intervention) even in traditional government classrooms with larger pupil-teacher ratios, thereby establishing the effectiveness of the curriculum at scale.

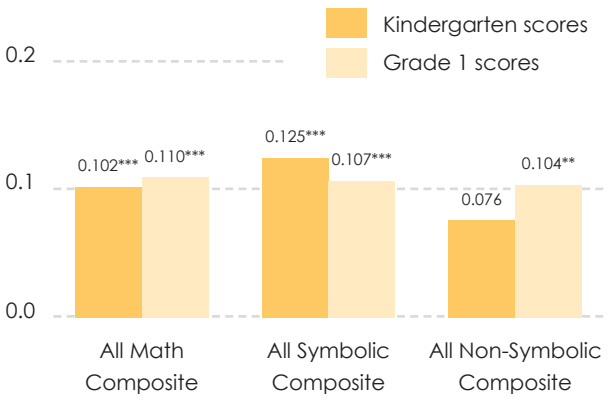


Fig A.1: Z-score of non-symbolic composite

Study detail

With the first and second RCTs providing proof of concept to the curriculum, in 2018-19, a final model of the curriculum was evaluated in Kindergarten and Grade 1 classes of 71 government schools reaching ~1200 children to establish findings for a scale model of the program.

Results

Math games led to a strong impact on symbolic math outcomes for both Kindergarten and Grade 1 students. Results from this RCT that covered a total of 141 government schools demonstrated the effectiveness of the curriculum when implemented in traditional government classrooms with a larger pupil-teacher ratio.

Annexure B: Tamil Nadu Program Details

Pursuant to the encouraging findings of the Math Games RCTs, the games were introduced on a pilot basis in Tamil Nadu in 2019-20 and accompanied by a rigorous process evaluation to assess fidelity of implementation to the proven model and understand implementation challenges. The program was implemented in Government schools in Thiruvallur district in Tamil Nadu until March, 2020 when the schools were shut down due to the pandemic.

The Math Games pilot programme was implemented by Samagra Shiksha in UKG and Grade-I classes across fifty schools in Thiruvallur district, Tamil Nadu, across fourteen blocks, reaching over 1400 children during the academic year 2019-20 for improving their basic mathematics skills. The programme was led by ninety government teachers, who had been trained on the Math Games curriculum by J-PAL SA staff for four days in two rounds of teacher training (in October 2019 and February 2020). Teachers started implementing the Math Games curriculum in classrooms in December 2019 and J-PAL SA provided two weeks of initial mentoring support to teachers in imparting the Math Games curriculum in their classrooms. Math Games was implemented as a complement to the existing math curriculum, with 45 min sessions conducted three times in the school week. While Math Games was planned to be implemented in classrooms from December 2019 to April 2020 - for a period of four months as per the evidence-backed model, the programme was interrupted mid-March 2020 due to Covid-19 induced school closures.

The learnings from the Math Games program pilot in fifty government schools in Tamil Nadu adds to our evidence that these games can be successfully implemented by government school teachers during the school day with minimum additional support at pilot scale, laying the necessary foundation on which to build an approach to supporting government implementation at greater scale.

The objective of the Tamil Nadu 2019-20 pilot and the associated process evaluation study was to provide insights on implementation related aspects and inform the government's decision to scale-up in the following academic year as well as train government school teachers who could act as master trainers and cascade the curriculum to other teachers. However, a combination of factors have hindered the take-up of evidence and technical assistance from this project by the Government of Tamil Nadu. COVID-19-induced school closures and budget constraints from March 2020 to November 2021 left little scope for implementing an in-person program like Math Games. Additionally, key personnel changes, such as the transfer of the Education Secretary in February 2020 and the retirement of the State Project Director in June 2020, along with the 2021 state elections, disrupted continuity. The uncertain status of the government's new pilot program for kindergarten classes in Anganwadi Centres, with policy reversals due to teacher shortages, added further complications. Efforts to integrate Math Games into the Grade 1 curriculum as part of Tamil Nadu's Foundational Literacy and Numeracy Mission have also progressed slowly due to the NGO managing the curriculum being reluctant to engage with additional partners.

Despite these challenges, the Tamil Nadu pilot results have been instrumental in generating interest from other states (Delhi, Himachal Pradesh, Punjab, Maharashtra, Odisha, and Andhra Pradesh), as well as informing games revisions by Prof. Elizabeth Spelke.

Annexure C: Maharashtra Program Details

The implementation of Every Child Counts in Maharashtra has started in 2022 in partnership with the State Council of Education Research and Training (SCERT). This partnership is on its way to map the curriculum of the program with the government-prescribed syllabus for Grade 1 students. J-PAL SA has played the role of the knowledge partner and SCERT has taken the responsibility of implementing the program in the schools. Throughout the partnership, J-PAL SA has conducted various rounds of training and the process level monitoring of the implementation.

In the first year of implementation, that is 2022-23, fifty classrooms were selected by SCERT across the Pune district and were trained on the games in two rounds of training conducted two months apart. This 50-school pilot concluded in early April 2023, throughout which J-PAL SA conducted baseline and endline surveys, process monitoring observations, and a teacher feedback survey.

The process monitoring collated observations from the implementation on student- and teacher-specific indicators like teacher instructions, teacher behaviour, student steps, and classroom behaviour.

The teacher feedback survey conducted in May 2023, however, highlighted some learnings of on-ground implementation. It was seen that conducting the games as a separate activity from the curriculum demands additional time, especially in light of a tightly packed academic calendar, and material management was said to be a challenge.

The need to adapt the components of the games to suit the available time is seen as a key approach to enhance scalability. These components include, but are not restricted to, time allotment and material management. The adaptation will also improve the cost-effectiveness or per-child cost of the kit.

These learnings informed the second year of the partnership with Maharashtra SCERT (2023-2024) where we continue the implementation of the games in the same fifty schools, with different teachers for Grade 1, but with solutions that are more locally relevant. We implemented Math Games not as an extracurricular activity but rather integrate the Games as complementary materials into the foundational mathematics curriculum. Math Games were utilized as a complementary game kit to the concepts taught in school.

To understand the scope and scale of integration, J-PAL SA organized a mapping workshop with a subset of teachers from the 2022-2023 cohort of classrooms. Teachers mapped the Math Games implementation plan to the annual teaching plan prescribed by SCERT. The integrated approach with math games being a part of the annual teaching plan, leveraging existing teaching/learning materials and tying in with the concepts covered in the curriculum resulted in both students and teachers understanding the basic rules of the games and playing it efficiently. Nonetheless, there is scope of improvement in the more nuanced aspects of game play.

In the year 2024-25, J-PAL SA along with MSCERT will build a cadre of DoE resource persons to conduct a cascade model of training, monitor implementation and mentor teachers. On the basis of the findings through Process monitoring of the first year (2024-25), the Every Child Counts Program will be proposed for a larger scale. MSCERT will be taking ownership of the project from 2025-26 with the help of the cadre of people built with the knowledge transfer.

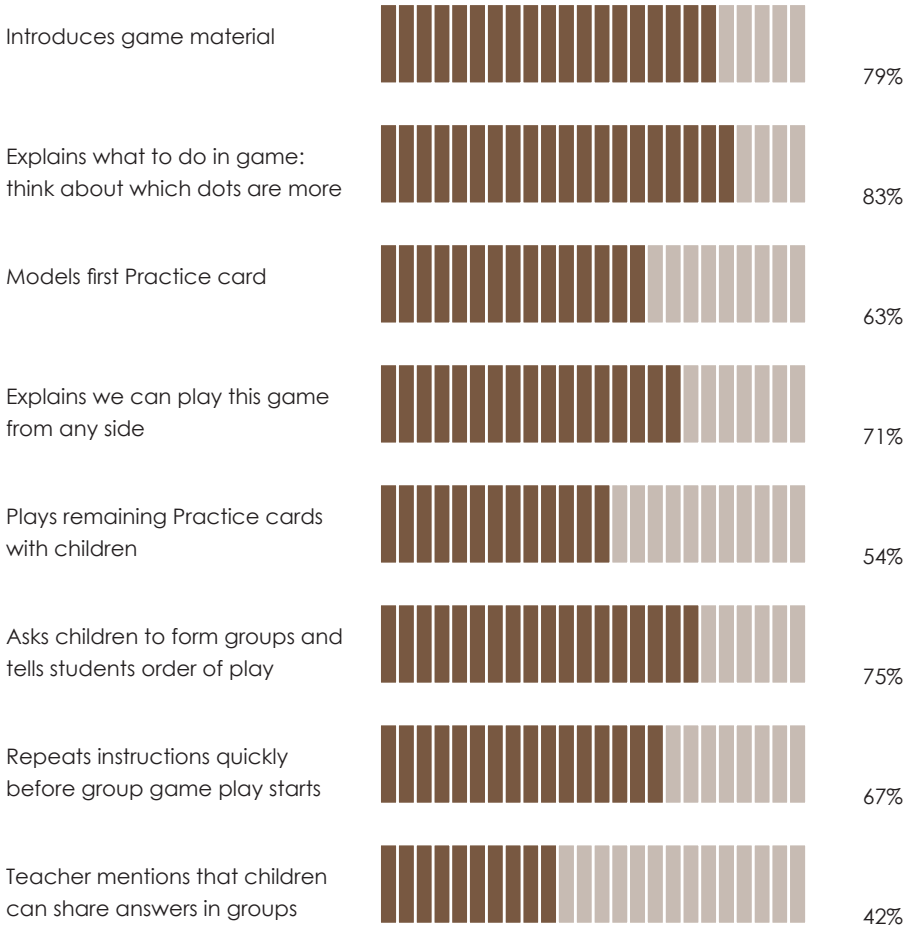


Fig C.1: NC-% of classrooms where an instruction was given; n=24

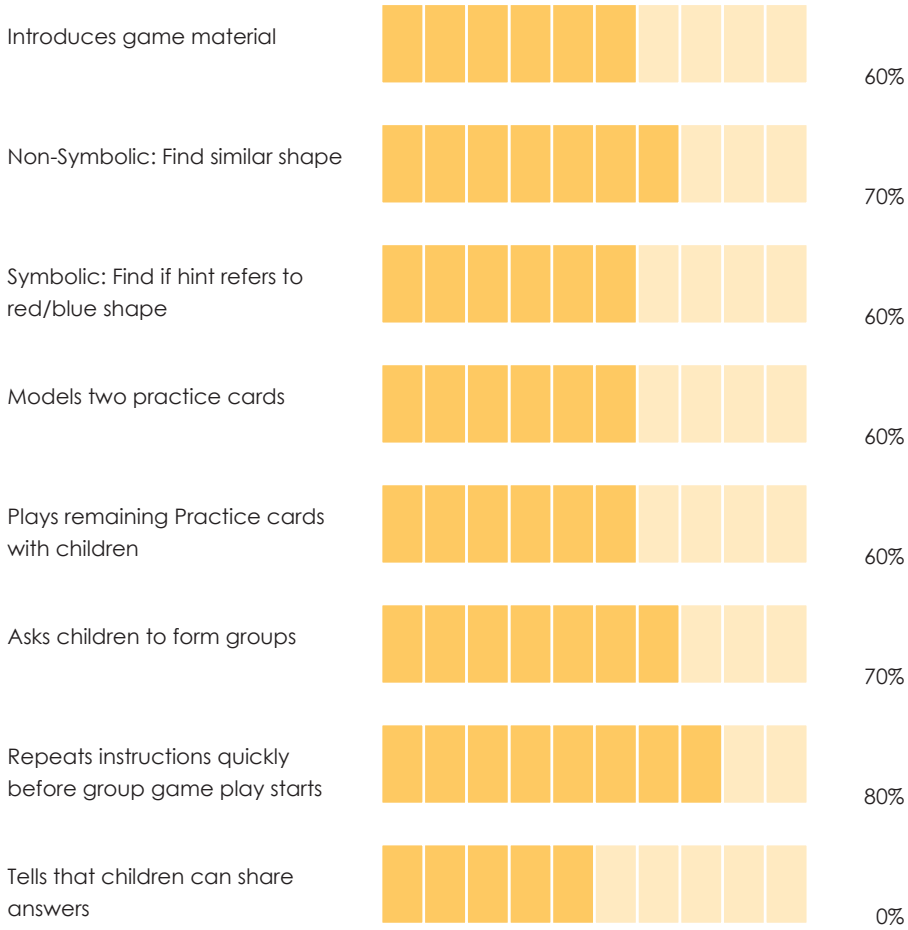


Fig C.2: FS-% of classrooms where an instruction was given; n=10

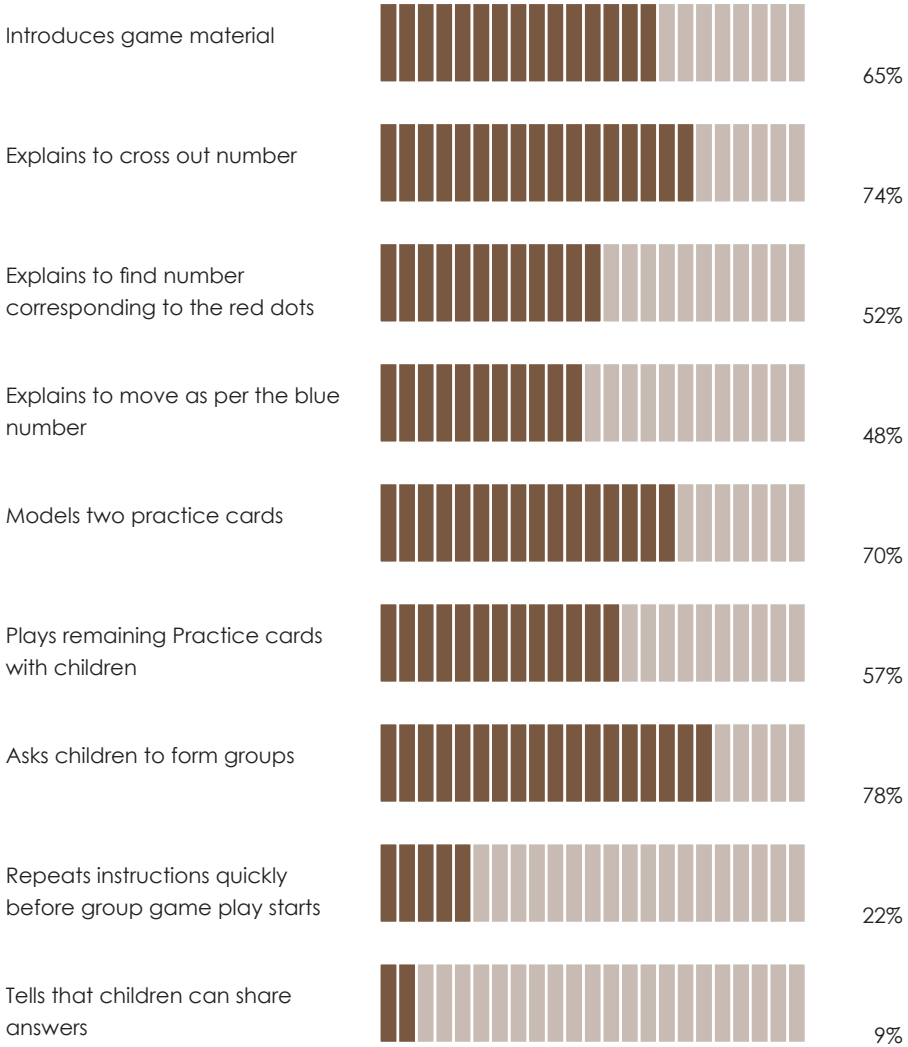


Fig C.3: FM-% of classrooms where an instruction was given; n=23

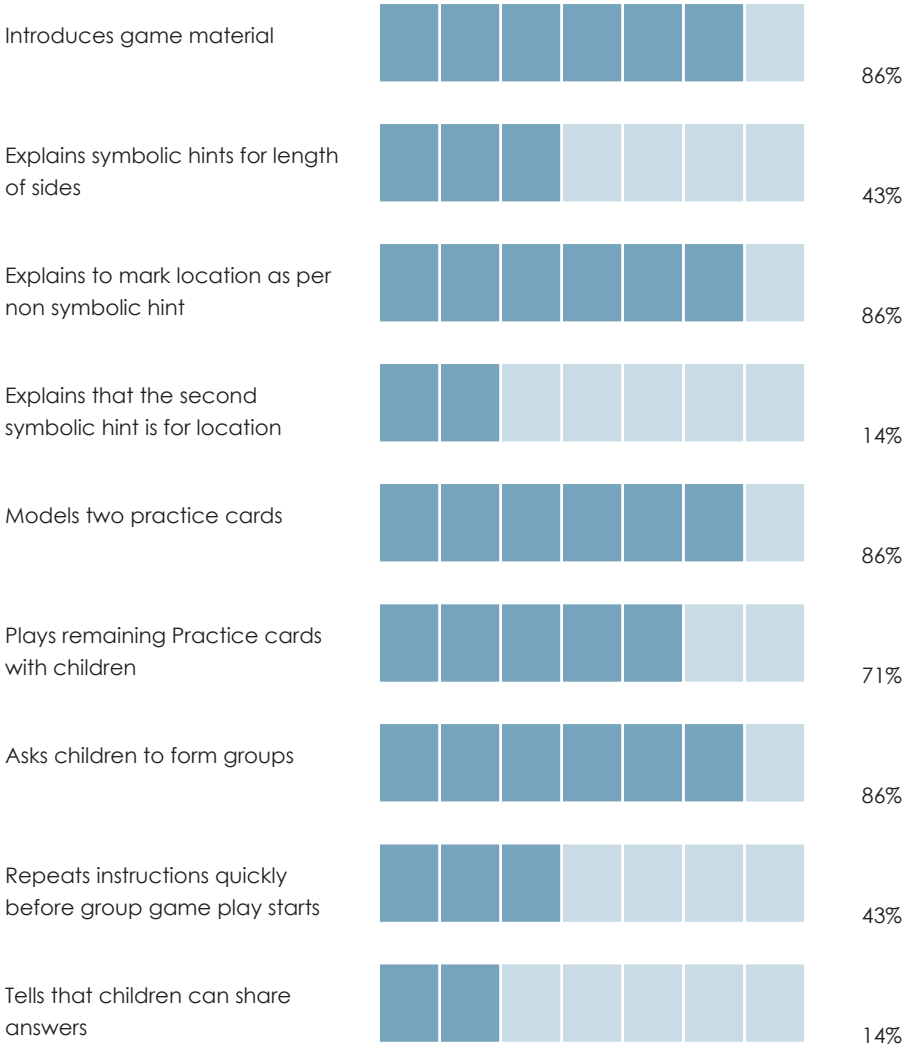


Fig C.4: RM-% of classrooms where an instruction was given; n=7

Annexure D: Andhra Pradesh Program Details

In Andhra Pradesh, the Math Games program was piloted in 45 Grade 1 classrooms across five districts starting in November 2022, with teacher training sessions conducted in December 2022 and February 2023. The pilot was completed by March 2023. A continued pilot was approved for 46 schools in October 2023, with additional training in December 2023, led by J-PAL South Asia. The 45-school pilot is ongoing and started in early December 2023 along with JPAL SA's process monitoring. JPAL SA staff also conducted a teacher review meeting with all the participating teachers, SCERT Faculty and Consultants at the Samagra Shiksha Abhiyan Office in February 2024. The pilot was framed primarily to give us findings to inform the integration of math games at scale in AP for the academic year 2024-25.

For 2024-25, Math Games aim to integrate into the AP curriculum for Grade 1 at scale i.e., the training for the integrated curriculum will be a part of Pratham's Year 2 training and reach shortlisted schools in the state through the existing cascade model of training in the SALT program as described below.

- The game will be integrated into the existing curriculum, however, materials will have to be printed and distributed state-wide depending on the integration.
- The focus of Math Games Implementation will be in 2500+ of the 4200 co-located foundational schools in Andhra Pradesh

As part of the SALT deliverables, Pratham is also responsible for the training, mentoring and monitoring of forty Model Centers (Foundation Schools - Anganwadi + Grade 1 and 2) across the state. In Year 2 of the math games program, i.e. 2024-2025, the math games curriculum can also be included in these forty Model Centers supported by Pratham and scaled up in 2025-2026 depending on the findings of the pilot.

J-PAL SA will continue to conduct an external process monitoring in a sample of schools to ensure fidelity in the 2500+ Grade 1 classrooms as well as the Model Centers.

Fig D.1: Training model Andhra Pradesh Government

Based on the results from the Model Centers and the findings from the process monitoring, the math games curriculum can be considered for integration into Anganwadis through the 120-day Certificate Course for Anganwadi workers delivered by Pratham in Year 3, i.e. 2025-2026.

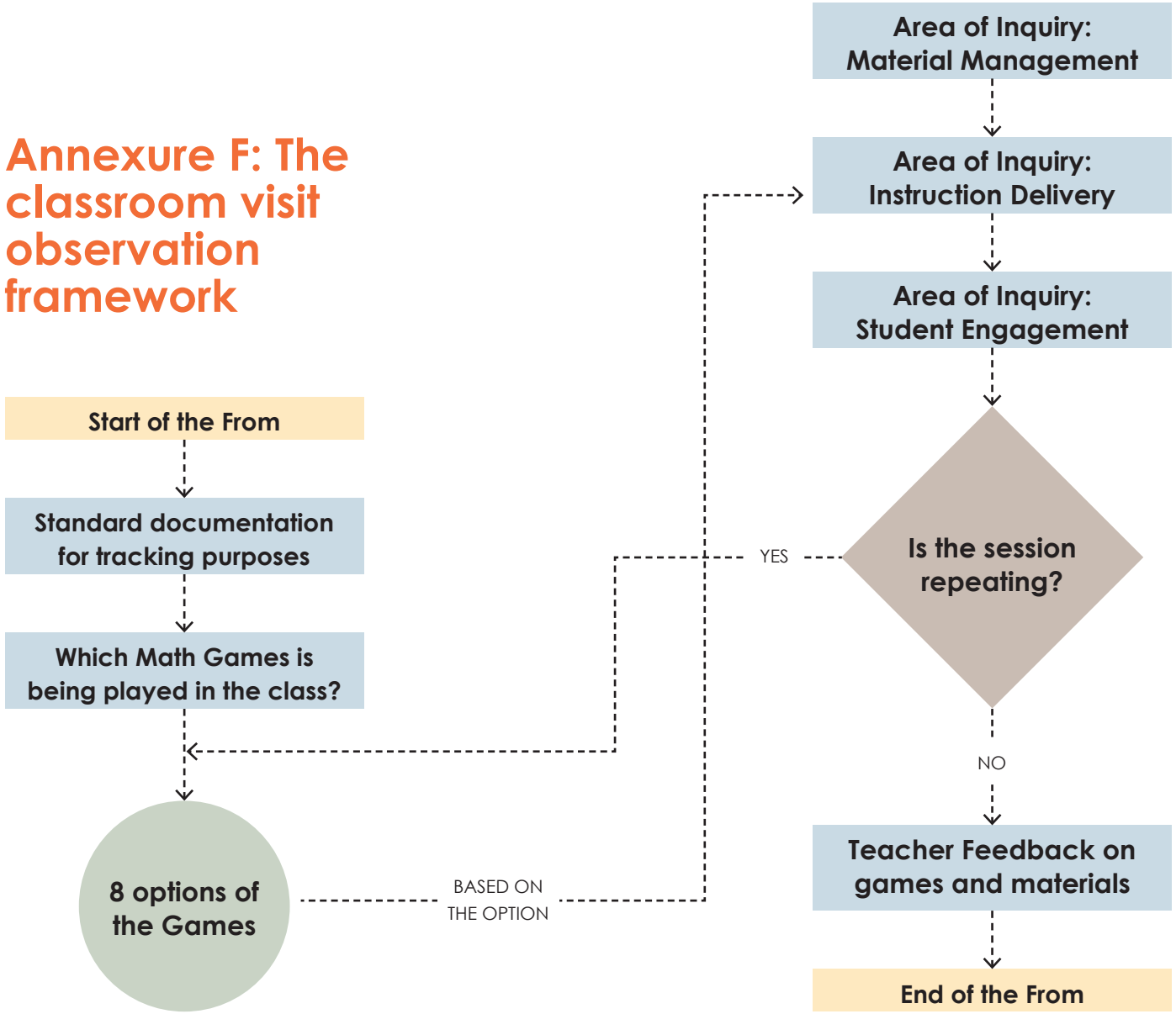
Out of 127, in 80% of the classrooms, teachers gave the right instructions to the children and exhibited positive behaviours in the classrooms. As time progressed and students became more familiar with the games, their engagement with the games seems to have increased slightly and this is evidenced by the increase in group play

Annexure E: Pathways to Scale

	Knowledge resource website	Knowledge resources + Working groups	Certification course + working groups
Structure	One-stop shop for all Math Games resources - e.g., findings from the studies, implementation toolkits and handbooks, printable resources, FAQs - and a dedicated email for support	In addition to a knowledge bank of resources, J-PAL provides implementation support via quarterly working group meetings aimed at disseminating learnings, troubleshooting issues, and providing support to implementers in a structured format.	A certification course (e.g. ESP) to provide deep expertise on how to implement and monitor Math Games, including access to the knowledge base. Certification is provided upon completion of a 6-week pilot to integrate Math Games into existing/new programming. After course completion, support is provided through working group meetings every two months with the consortium of certified implementers
J-PAL role	**Low Touch** Curation of resources, responses to email support on a monthly basis	**Medium Touch** Curation of resources, responses to email support on a monthly basis, organizing working group meetings, agenda, and content	**Medium to High Touch** Curation and creation of course content, provision of training, consultation throughout the pilot,organizing working group meetings, agenda, and content
Expectation from NGO partner	N/A - partners access content and resources as needed and implement as they see fit	Working group members who choose to implement share quarterly scale metrics in an agreed-upon format	• Demonstrated implementation via a 6-week pilot • Sharing of quarterly scale data and other challenges/learnings/reflections from implementation

	Knowledge resource website	Knowledge resources + Working groups	Certification course + working groups
Pros	• Low resource option where the maximum pull is at the beginning to set up the knowledge bank • Open access increases accessibility	• Visibility into some aspects of implementation • Quarterly access to scale metrics • Nuances from implementation learnings so far are perhaps better communicated through an face to face interaction	• Visibility into implementation and fidelity via the pilot • Access to scale metrics • Partners are "certified by J-PAL" - which brings credibility and may allow them to unlock additional funds to scale • Nuances from implementation learnings so far are perhaps better communicated through a F2F interaction • Troubleshooting is timely within the duration of the pilot
Cons	• Limited visibility on the implementation process and fidelity of the games • Lack of access to scale metrics • Dissemination efforts may be intense at first to create awareness	• Limited visibility on the implementation process and fidelity of the games • Troubleshooting may not be timely	• High touch engagement at the beginning • May need to provide implementation grants for the certification pilot

Annexure F: The classroom visit observation framework



Annexure G: The classroom visit observation framework

Area of Inquiry	Level of Inquiry	Core question	Indicators
1. Effective Delivery	Classroom Level	How was the quality of the instructions delivered during the curriculum sessions?	% of classrooms with sufficient instruction time % of classrooms that used all the game materials % of classrooms where all 4 steps were conducted % of classrooms with accurate game play set up
2. Classroom Feedback	Student Level	Were the students engaged during the curriculum sessions?	% of Children playing games independently % of Children actively engaged during gameplay
	Teacher Level	Were the teachers engaging the students in the curriculum sessions?	% of Teachers encouraging Students to play independently % of Teachers ensuring complete classroom involvement
3. Material Management	Teacher Level	Were the teachers managing the materials in the classrooms?	% of teachers using the correct materials during implementation % of teachers storing materials in an optimum manner

Annexure H: Classroom Observation Tool

This process monitoring tool contains a set of questions that are used to document the observations in the classroom during the gameplay session of the program. These questions are designed to capture the core indicators within the theory of change for the program.

Section X: Monitor Tracking Information

X1. **Date of Observation** — Select Date

X2. **Monitor ID** — Select ID

X3. **Name of Monitor** — Pre-Filled

X4. **State** — Select State

X5. **State_ID** — Pre-Filled

X6. **Name of School/Anganwadi Center** — Select Name

X7. **Area of School/Anganwadi Center** — Pre-Filled

X8. **School ID** — Pre-Filled

X9. **When did you reach the classroom?**

- ○ Before the session started
- ○ Within 10 minutes of the session starting
- ○ Towards the end of the math games session
- ○ After the math games session ended

X10. **Why did you reach late?** — Type

Section A: Classroom Scenario

A1 **Is the school open today?**

- ○ Yes ○ No

A2 **Why is the school not open today?** — Type

A3 **How many students are present in the classroom?** — Number (0-99)

A4 **Which grade students are sitting in the classroom?**

- ○ LKG or equivalent
- ○ UKG or equivalent
- ○ Both LKG and UKG or equivalent
- ○ Other grades _____

A5 **Is the teacher present in classroom?**

- ○ Yes ○ No

A6 **Why is the teacher not present in the classroom?** — Type

A7 **What is happening in the classroom?**

- ○ Students are eating food.
- ○ Students are getting vaccinations.
- ○ Students are getting a health check up
- ○ Students are in health education class.
- ○ Students are in nutrition education class.
- ○ Students are engaged in learning activities.
- ○ Students are engaged in physical play.
- ○ Others _____

A8 **Are MATH GAMES being conducted?**

○ Yes ○ No

A9 **Why are Maths Games not being taught in the classroom?**

- ☐ The teacher has already completed the expected session
- ☐ The teacher wants to engage in curricular activities
- ☐ The teacher has never received training on math games
- ☐ The teacher is not aware of the math games schedule
- ☐ The teacher has not received the required materials yet
- ☐ The required materials have been damaged or misplaced
- ☐ The number of students is not enough for proper gameplay
- ☐ Other reasons _____

Section B: Every Child Counts (Math Games) Curriculum

<Insert inbuilt time stamp here to record when the monitor starts to observe the math games class>

Record the time when you started observing the math games class HH:MM

B1. **What is happening in the classroom?**

- ○ NC Pre-training
- ○ Number Comparison
- ○ FS Pre-Training- Number of Sides and Length of sides
- ○ FS Pre-Training- Angles and Parallel Lines
- ○ Find Shape
- ○ Find and Move
- ○ Reading Maps Pre-training
- ○ Reading Maps

Section C: Number Comparison Pre-Training

C1 **What is the teacher teaching?**

- ☐ Poster 1 (0-10)
- ☐ Poster 2 (11-20)
- ☐ Poster 3 (21-30)

C2 **Materials Present: What materials is the teacher using?**

- ☐ Number Jar Poster 0 - 10
- ☐ Number Jar Poster 11 - 20
- ☐ Number Jar Poster 21-30
- ☐ Pre-Training Set 1 (0-10)
- ☐ Pre-Training Set 2 (11-20)
- ☐ Pre-Training Set 3 (21-30)
- ☐ None

C3 **How did the teacher get these materials?**

- ○ Teacher took the materials from a table or platform.
- ○ Teacher took the materials from a box or cupboard.
- ○ Teacher took the materials from a bag or sack.
- ○ Teacher asked another student to bring the materials.
- ○ Teacher has pasted the poster on the wall.
- ○ Teacher took the materials from the J-PAL SA box.
- ○ Other method _____

C4 **Materials in order: please select materials visible to children**

- ☐ ALL Poster(s) is/are visible at the back of the class-room
- ☐ ALL Poster(s) is/are visible at the corners
- ☐ ALL cards are visible at the back of the class-room
- ☐ ALL cards are visible at the corners
- ☐ Others _____
- ☐ None

C5 **Other materials in order** Type

C6 **Steps for the poster:**

(Answer when teacher has completed teaching the poster)

- ☐ Introduce the poster
- ☐ Tell children what number name it is for EACH number
- ☐ Counted each number from 0-10
- ☐ Counted each number from 11-20
- ☐ Counted each number from 21-30
- ☐ None

C7 **How many pre-training cards were played?** Number (0-10)

C8 **Card <pre-filled>. Steps for card played:**

- ☐ Introduced the card
- ☐ Asked how many dots are on the card from one child
- ☐ Turned card and count the dots
- ☐ Teacher referred to poster if answer was wrong
- ☐ Teacher asked another child if answer of first child was wrong
- ☐ Teacher herself/himself told the right answer if the answer was wrong
- ☐ None

C9 **How is the teacher storing the materials used?**

- ○ Teacher has placed the materials onto a table or platform.
- ○ Teacher has placed the materials in a box or cupboard.
- ○ Teacher has placed the materials in a bag or sack.
- ○ Teacher has asked another student to store the materials.
- ○ Teacher has pasted the poster on the wall.
- ○ Teacher has placed the materials in the J-PAL SA box.
- ○ Other method _____

C10 **Next game played:**

- ○ Number Comparison
- ○ FS Pre-Training- Number of Sides and Length of Sides
- ○ FS Pre-Training- Angles and Parallel Lines
- ○ Find Shape
- ○ Find and Move
- ○ Reading Maps Pre-training
- ○ Reading Maps
- ○ Other Activity _____
- ○ None

Section D: Number Comparison

D1 **What ALL does the teacher do while giving game instructions?**

- ☐ Introduces game material
- ☐ Explains what to do in game: think about which dots are more
- ☐ Models first Practice card
- ☐ Explains we can play this game from any side
- ☐ Plays remaining Practice cards with children
- ☐ Asks children to form groups and tells students order of play
- ☐ Repeats instructions quickly before group game play starts
- ☐ Teacher mentions that children can share answers in groups
- ☐ None

D2 **How did the teacher get these materials?**

- ○ Teacher took the materials from a table or platform.
- ○ Teacher took the materials from a box or cupboard.
- ○ Teacher took the materials from a bag or sack.
- ○ Teacher asked another student to bring the materials.
- ○ Teacher has pasted the poster on the wall.
- ○ Teacher took the materials from the J-PAL SA box.
- ○ Other method _____

D3 **Proceeded to main deck?**

- ○ Yes ○ No

D4 **Why is the main deck not being played?**

- ○ Main decks not available/damaged for any of the groups.
- ○ Shortage of time
- ○ Other _____

D5 **DECK** Select Deck (1 - 14)

D6 **In what setting are the children playing?**

- ○ In groups of 4
- ○ In groups of less than 4
- ○ In groups of more than 4
- ○ In pairs
- ○ Mix of the above

D7 **How many groups/pairs are playing?** Number (0-10)

D8 **Are all children playing at the same time?**

○ Yes ○ No

D9 **Are the children playing sequentially?**

○ Yes ○ No

OBSERVE ONE GROUP PLAYING THE GAMES AND ANSWER THE NEXT SET OF QUESTIONS FOR THAT GROUP.

D10 **Number of students in group** (Answer for the group being observed) Number (0-6)

D11 **Materials Present** (Answer for the group being observed)

- ☐ Cards
- ☐ Red Tray or equivalent
- ☐ Blue Tray or equivalent
- ☐ Number Poster is visible
- ☐ None

D12 **Steps followed by the students in the group** (Answer for the group being observed)**:**

- ☐ Children play when their turn comes
- ☐ Children put the card in the red/blue tray or equivalent
- ☐ Children discuss correct answer in group
- ☐ Children take number names
- ☐ Children refer to NCPT poster if required
- ☐ None

D13 **How many students are playing the game independently** (Answer for the group being observed)**:**

- ○ ALL Students in this group
- ○ More than half students in this group
- ○ Less than half students in this group
- ○ Nobody in this group

D14 **Which side does the group prefer to play with?** (Answer for the group being observed)

- ○ ALL students play from the NUMBER side
- ○ ALL students play from the DOTS side
- ○ Most students play from the NUMBER side
- ○ Most students play from the DOTS side
- ○ Half the group plays from the NUMBER side and the other half plays from the DOTS side
- ○ Kids are flipping the cards and refer to both sides
- ○ Others _____

D15 **Additional Observations** (Answer for the group being observed):

- ☐ One student takes the lead and others follow
- ☐ ALL students get equal chances to play
- ☐ Students help each other
- ☐ The group is not interested in playing the game
- ☐ Others _____

D16 **Math Games Teacher Behavior while students are playing main deck**

- ☐ Prompted answer discussion in the group
- ☐ Appreciated students sharing answers
- ☐ Positively appreciates good behavior
- ☐ Teacher encourages all children to play in the group
- ☐ Teacher was enforcing discipline
- ☐ Teacher was involved in other work
- ☐ Teacher explained the game to the children again
- ☐ Others _____

D17 **For how many groups/pairs did the teacher check the cards?** Number (0-10)

D18 **Do you want to add information for another deck**

- ○ Yes ○ No

D19 **What ALL does the teacher do while repeating game instructions?**

- ☐ Models first Practice card
- ☐ Explains we can play this game from any side
- ☐ Plays remaining Practice cards with children
- ☐ Asks children to remain in groups and tells students order of play
- ☐ Repeats instructions quickly before group game play starts
- ☐ Teacher mentions that children can share answers in groups
- ☐ None

D20 **How was the class behaviour?**

- ☐ Most children were looking at the teacher while teacher was giving instructions
- ☐ Most children were following teacher instructions
- ☐ Most children were repeating after the teacher
- ☐ Most children were productively engaged throughout the session
- ☐ Most children were misbehaving
- ☐ Most children were NOT looking at the teacher while teacher was giving instructions
- ☐ Most children were NOT following teacher instructions
- ☐ Most children were NOT interested in playing Math Game
- ☐ Children lost interest in pre-training
- ☐ Children were not able to understand the pre-training
- ☐ Children lost focus during pre-training
- ☐ Most children lost focus on the teacher after the first deck
- ☐ Most children lost focus on the teacher after the second deck
- ☐ Most children lost focus on the teacher after the third deck
- ☐ Others _____

D21 **How is the teacher storing the materials used?**

- ○ Teacher has placed the materials onto a table or platform.
- ○ Teacher has placed the materials in a box or cupboard.
- ○ Teacher has placed the materials in a bag or sack.
- ○ Teacher has asked another student to store the materials.
- ○ Teacher has pasted the poster on the wall.
- ○ Teacher has placed the materials in the J-PAL SA box.
- ○ Other method _____

D22 **Next game played:**

- ○ FS Pre-Training- Number of Sides and Length of Sides
- ○ FS Pre-Training- Angles and Parallel Lines
- ○ Find Shape
- ○ Find and Move
- ○ Reading Maps Pre-training
- ○ Reading Maps
- ○ NC Pre Training
- ○ Other Activity _____
- ○ None

Section E: Find Shape Pre Training: Number and Length of Sides

E1 **Materials Present: What materials is the teacher using?**

- ☐ Pre-Training Poster 1
- ☐ Pre-Training Poster 2
- ☐ None

E2 **How did the teacher get these materials?**

- ○ Teacher took the materials from a table or platform.
- ○ Teacher took the materials from a box or cupboard.
- ○ Teacher took the materials from a bag or sack.
- ○ Teacher asked another student to bring the materials.
- ○ Teacher has pasted the poster on the wall.
- ○ Teacher took the materials from the J-PAL SA box.
- ○ Other method _____

E3 **Materials in order: please select materials visible to children**

- ☐ Poster is visible at the back of the class-room
- ☐ Poster is visible at the corners
- ☐ Others _____

E4 **Other_materials in order** Type

E5 **Steps for the poster:**

(Answer when teacher has completed teaching the poster)

- ☐ Introduce the poster
- ☐ Tell students that there are curved/straight shapes
- ☐ Introduce the three-sided figures
- ☐ Introduce the four-sided figures
- ☐ Introduce the five-sided figures
- ☐ Introduce the length of different triangles(three-sided figures)
- ☐ Introduce the length of different four-sided figures
- ☐ Introduce the length of different five-sided figures
- ☐ None

E6 **For which shapes did the teacher count sides?**

- ☐ 3 sided figures
- ☐ 4 sided figures
- ☐ 5 sided figures
- ☐ None

E7 **For which shapes did the teacher explain length of sides?**

- ☐ 3 sided figures
- ☐ 4 sided figures
- ☐ 5 sided figures
- ☐ None

E8 **How is the teacher storing the materials used?**

- ○ Teacher has placed the materials onto a table or platform.
- ○ Teacher has placed the materials in a box or cupboard.
- ○ Teacher has placed the materials in a bag or sack.
- ○ Teacher has asked another student to store the materials.
- ○ Teacher has pasted the poster on the wall.
- ○ Teacher has placed the materials in the J-PAL SA box.
- ○ Other method _____

E9 **Next game played:**

- ○ FS Pre-Training- Angles and Parallel Lines
- ○ Find Shape
- ○ Find and Move
- ○ Reading Maps Pre-training
- ○ Reading Maps
- ○ NC Pre-Training
- ○ Number Comparison
- ○ Other Activity _____
- ○ None

Section H - Find Shape Pre Training: Angles and Parallel Lines

H1 **Materials Present: What materials is the teacher using?**

- ☐ Pre-Training Poster 1
- ☐ Pre-Training Poster 2
- ☐ None

H2 **How did the teacher get these materials?**

- ○ Teacher took the materials from a table or platform.
- ○ Teacher took the materials from a box or cupboard.
- ○ Teacher took the materials from a bag or sack.
- ○ Teacher asked another student to bring the materials.
- ○ Teacher has pasted the poster on the wall.
- ○ Teacher took the materials from the J-PAL SA box.
- ○ Other method _____

H3 **Materials in order: please select materials visible to children**

- ☐ Poster is visible at the back of the class-room
- ☐ Poster is visible at the corners
- ☐ Others _____

H4 **Other_materials in order** Type

H5 **Steps for the poster:**

- ☐ Introduce the poster
- ☐ Tell students that lines make different kinds of angles
- ☐ Introduce parallel lines
- ☐ Introduce non-parallel lines
- ☐ Introduce 'special angle' using 'T'
- ☐ Introduce 'big angle' using 'T'
- ☐ Introduce 'small angle' using 'T'
- ☐ Tell students that closed shapes make different kinds of angles
- ☐ Introduce angles of a triangles
- ☐ Introduce angles of four-sided shapes
- ☐ Introduce angles of five-sided shapes
- ☐ Explain the symbols/hints for angles for all the shapes
- ☐ None

H6 **Did the teacher use hand gestures to explain parallel lines?**

○ Yes ○ No

H7 **For which shape did the teacher explain angles using her hands?**

- ☐ 3 sided figures
- ☐ 4 sided figures
- ☐ 5 sided figures
- ☐ None

H8 **How is the teacher storing the materials used?**

- ○ Teacher has placed the materials onto a table or platform.
- ○ Teacher has placed the materials in a box or cupboard.
- ○ Teacher has placed the materials in a bag or sack.
- ○ Teacher has asked another student to store the materials.
- ○ Teacher has pasted the poster on the wall.
- ○ Teacher has placed the materials in the J-PAL SA box.
- ○ Other method _____

H9 **Next Game played:**

- ○ Find Shape
- ○ Find and Move
- ○ Reading Maps Pre-training
- ○ Reading Maps
- ○ NC Pre-Training
- ○ Number Comparison
- ○ FS Pre-training- Number of Sides and Length of Sides
- ○ Other Activity _____
- ○ None

Section K - Find Shape Main Game

K1 **What ALL does the teacher do while giving game instructions?**

- ☐ Introduces game material
- ☐ NON-SYMBOLIC: Explains what to do in game: Find if red/blue shape similar to black
- ☐ SYMBOLIC: Explains what to do in game: Find if hint refers to red/blue shape
- ☐ Models two first Practice cards
- ☐ Plays remaining Practice cards with children
- ☐ Asks children to form groups and tells students order of play
- ☐ Repeats instructions quickly before group game play starts
- ☐ Teacher mentions that children can share answers in groups
- ☐ None

K2 **How did the teacher get these materials?**

- ○ Teacher took the materials from a table or platform.
- ○ Teacher took the materials from a box or cupboard.
- ○ Teacher took the materials from a bag or sack.
- ○ Teacher asked another student to bring the materials.
- ○ Teacher took the materials from the J-PAL SA box.
- ○ Other Methods _____

K3 **Proceeded to Main Deck?**

○ Yes ○ No

K4 **Why is the main deck not being played?**

- ○ Main decks not available/damaged for any of the groups.
- ○ Shortage of time
- ○ Other _____

K5 **DECK** Select Deck (1 - 24)

K6 **In what setting are the children playing?**

- ○ In groups of 4
- ○ In groups of less than 4
- ○ In groups of more than 4
- ○ In pairs
- ○ Mix of the above

K7 **How many groups/pairs are playing?** Number (0-10)

K8 **Are all children playing at the same time?**

○ Yes ○ No

K9 **Are the children playing sequentially?**

○ Yes ○ No

OBSERVE ONE GROUP PLAYING THE GAMES AND ANSWER THE NEXT SET OF QUESTIONS FOR THAT GROUP.

K10 **Number of students in group** Number (0-6)
(Answer for the group being observed)

K11 **Materials Present** (Answer for the group being observed)

- ☐ Pre-training Poster 1 is visible
- ☐ Pre-training Poster 2 is visible
- ☐ Red Tray or equivalent
- ☐ Blue Tray of equivalent
- ☐ Cards
- ☐ None

K12 **Steps followed by the students in the group** (Answer for the group being observed)**:**

- ☐ Children play when their turn comes
- ☐ Children put the card in the red/blue tray or equivalent
- ☐ Children discuss answers in their group
- ☐ Children take shape names
- ☐ Children count sides of shapes
- ☐ Children measure the length of sides
- ☐ Children call out angles properties
- ☐ Children call out line properties
- ☐ Children call out symmetry properties
- ☐ None

K13 **How many students are playing the game independently** (Answer for the group being observed)**:**

- ○ ALL Students in this group
- ○ More than half students in this group
- ○ Less than half students in this group
- ○ Nobody in this group

K14 **Additional Observations** (Answer for the group being observed)**:**

- ☐ One student takes the lead and others follow
- ☐ ALL students get equal chances to play
- ☐ Students help each other
- ☐ The group is not interested in playing the game
- ☐ Others _____

K15 **Math Games Teacher Behavior while students are playing main deck**

- ☐ Prompted answer discussion in the group
- ☐ Appreciated students sharing answers
- ☐ Positively appreciates good behavior
- ☐ Teacher encourages all children to play in the group
- ☐ Teacher was enforcing discipline
- ☐ Teacher was involved in other work
- ☐ Teacher explained the game to the children again
- ☐ Others _____

K16 **For how many groups/pairs did the teacher check the cards?** Number (0-10)

K17 **Do you want to add information for another deck**

- ○ Yes ○ No

K18 **What ALL does the teacher do while repeating game instructions?**

- ☐ Models first Practice card
- ☐ Plays remaining Practice cards with children
- ☐ Asks children to remain in groups and tells students orderof play
- ☐ Repeats instructions quickly before group game play starts
- ☐ Teacher mentions that children can share answers in groups
- ☐ None

K19 **How was the class behaviour?**

- ☐ Most children were looking at the teacher while teacher was giving instructions
- ☐ Most children were following teacher instructions
- ☐ Most children were repeating after the teacher
- ☐ Most children were productively engaged throughout the session
- ☐ Most children were misbehaving
- ☐ Most children were NOT looking at the teacher while teacher was giving instructions
- ☐ Most children were NOT following teacher instructions
- ☐ Most children were NOT interested in playing Math Game
- ☐ Children lost interest in pre-training
- ☐ Children were not able to understand the pre-training
- ☐ Children lost focus during pre-training
- ☐ Most children lost focus on the teacher after the first deck
- ☐ Most children lost focus on the teacher after the second deck
- ☐ Most children lost focus on the teacher after the third deck
- ☐ Others _____

K20 **How is the teacher storing the materials used?**

- ○ Teacher has placed the materials onto a table or platform.
- ○ Teacher has placed the materials in a box or cupboard.
- ○ Teacher has placed the materials in a bag or sack.
- ○ Teacher has asked another student to store the materials.
- ○ Teacher has pasted the poster on the wall.
- ○ Teacher has placed the materials in the J-PAL SA box.
- ○ Other method _____

K21 **Next Game played:**

- ○ Find and Move
- ○ Reading Maps Pre-training
- ○ Reading Maps
- ○ NC Pre-Training
- ○ Number Comparison
- ○ FS Pre-Training- Number of Sides and Length of Sides
- ○ FS Pre-Training- Angles and Parallel lines
- ○ Other Activity _____
- ○ None

Section L - Find and Move Main Game

L1 **What ALL does the teacher do while giving game instructions?**

- ☐ Introduces game material
- ☐ Only Find: Explains that we have to count dots and find the number on the board
- ☐ Find and Move: Explains that black dots mean "find the number" and pink dots/numbers mean "move forward"
- ☐ Explains that student will cross out the final answer using their color pencil
- ☐ Models first Practice card
- ☐ Plays remaining Practice cards with children
- ☐ Asks children to form groups and tells students order of play
- ☐ Repeats instructions quickly before group game play starts
- ☐ Teacher mentions that children can discuss answers in groups
- ☐ None

L2 **How did the teacher get the practice and student materials?**

- ○ Teacher took the materials from a table or platform.
- ○ Teacher took the materials from a box or cupboard.
- ○ Teacher took the materials from a bag or sack.
- ○ Teacher asked another student to bring the materials.
- ○ Teacher took the materials from the J-PAL SA box.
- ○ Other Methods _____

L3 **How did the teacher get teaching boards?**

- ○ Teacher took the materials from a table or platform.
- ○ Teacher took the materials from a box or cupboard.
- ○ Teacher took the materials from a bag or sack.
- ○ Teacher asked another student to bring the materials.
- ○ Teacher has pasted the board on the wall.
- ○ Teacher took the materials from the J-PAL SA box.
- ○ Other Methods _____

L4 **Proceeded to Main Deck?**

○ Yes ○ No

L5 **Why is the main deck not being played?**

- ○ Main decks not available/damaged for any of the groups.
- ○ Shortage of time
- ○ Other _____

L6 **DECK** Select Deck (1 - 8)

L7 **In what setting are the children playing?**

- ○ In groups of 4
- ○ In groups of less than 4
- ○ In groups of more than 4
- ○ In pairs
- ○ Mix of the above

L8 **How many groups/pairs are playing?** Number (0-10)

L9 **Are all children playing at the same time?**

○ Yes ○ No

L10 **Are the children playing sequentially?**

○ Yes ○ No

OBSERVE ONE GROUP PLAYING THE GAMES AND ANSWER THE NEXT SET OF QUESTIONS FOR THAT GROUP.

L11 **Number of students in group** Number (0-6)
(Answer for the group being observed)

L12 **Materials Present** (Answer for the group being observed)

- ☐ Cards
- ☐ Board
- ☐ Colour pencils or equivalent
- ☐ Number Grid is visible
- ☐ None

L13 **Steps followed by the students in the group** (Answer for the group being observed)**:**

- ☐ Children play when their turn comes
- ☐ Children put the card in the red/blue tray or equivalent
- ☐ Children discuss answers in their group
- ☐ Children take shape names
- ☐ Children count sides of shapes
- ☐ Children measure the length of sides
- ☐ Children call out angles properties
- ☐ Children call out line properties
- ☐ Children call out symmetry properties
- ☐ None

L14 **How many students are playing the game independently** (Answer for the group being observed)**:**

- ○ ALL Students in this group
- ○ More than half students in this group
- ○ Less than half students in this group
- ○ Nobody in this group

L15 **Which side does the group prefer to play with?** (Answer for the group being observed)

- ○ ALL students play from the NUMBER side
- ○ ALL students play from the DOTS side
- ○ Most students play from the NUMBER side
- ○ Most students play from the DOTS side
- ○ Half the group plays from the NUMBER side and the other half plays from the DOTS side
- ○ Children are flipping the cards and refer to both sides
- ○ 7. Children refer to the Pre-Training Poster
- ○ Others _____

L16 **Additional Observations** (Answer for the group being observed):

- ☐ One student takes the lead and others follow
- ☐ ALL students get equal chances to play
- ☐ Students help each other
- ☐ The group is not interested in playing the game
- ☐ Others _____

L17 **Math Games Teacher Behavior while students are playing main deck**

- ☐ Prompted answer discussion in the group
- ☐ Appreciated students sharing answers
- ☐ Positively appreciates good behavior
- ☐ Teacher encourages all children to play in the group
- ☐ Teacher was enforcing discipline
- ☐ Teacher was involved in other work
- ☐ Teacher explained the game to the children again
- ☐ Others _____

L18 **For how many groups/pairs did the teacher check the cards?** Number (0-10)

L19 **Do you want to add information for another deck**

- ○ Yes ○ No

L20 **What ALL does the teacher do while repeating game instructions?**

- ☐ Models first Practice card
- ☐ Plays remaining Practice cards with children
- ☐ Asks children to remain in groups and tells students order of play
- ☐ Repeats instructions quickly before group game play starts
- ☐ Teacher mentions that children can share answers in groups
- ☐ None

L21 **How was the class behaviour?**

- ☐ Most children were looking at the teacher while teacher was giving instructions
- ☐ Most children were following teacher instructions
- ☐ Most children were repeating after the teacher
- ☐ Most children were productively engaged throughout the session
- ☐ Most children were misbehaving
- ☐ Most children were NOT looking at the teacher while teacher was giving instructions
- ☐ Most children were NOT following teacher instructions
- ☐ Most children were NOT interested in playing Math Game
- ☐ Children lost interest in pre-training
- ☐ Children were not able to understand the pre-training
- ☐ Children lost focus during pre-training
- ☐ Most children lost focus on the teacher after the first deck
- ☐ Most children lost focus on the teacher after the second deck
- ☐ Most children lost focus on the teacher after the third deck
- ☐ Others _____

L22 **How is the teacher storing the practice and student materials?**

- ○ Teacher has placed the materials onto a table or platform.
- ○ Teacher has placed the materials in a box or cupboard.
- ○ Teacher has placed the materials in a bag or sack.
- ○ Teacher has asked another student to store the materials.
- ○ Teacher has placed the materials in the J-PAL SA box.
- ○ Other method _____

L23 **How is the teacher storing the teacher boards?**

- ○ Teacher has placed the materials onto a table or platform.
- ○ Teacher has placed the materials in a box or cupboard.
- ○ Teacher has placed the materials in a bag or sack.
- ○ Teacher has asked another student to store the materials.
- ○ Teacher has pasted the poster on the wall.
- ○ Teacher has placed the materials in the J-PAL SA box.
- ○ Other method _____

L24 **Next game played:**

- ○ Reading Maps Pre-Training
- ○ Reading Maps
- ○ NC Pre-Training
- ○ Number Comparison
- ○ FS Pre Training - Number of Sides and Length of sides
- ○ FS Pre Training - Angles and Parallelism
- ○ Find Shape
- ○ Other Activity _____
- ○ None

Section M - Reading Maps Pre Training

M1 **What is the teacher teaching?**

- ☐ Cards Property Set 1- Shapes with different NUMBER of sides
- ☐ Cards Property Set 2- Shapes with different side LENGTHS
- ☐ None

M2 **Materials Present: What materials is the teacher using?**

- ☐ Cards Property Set 1- Shapes with different NUMBER of sides
- ☐ Cards Property Set 2- Shapes with different side LENGTHS
- ☐ None

M3 **How did the teacher get these materials?**

- ○ Teacher took the materials from a table or platform.
- ○ Teacher took the materials from a box or cupboard.
- ○ Teacher took the materials from a bag or sack.
- ○ Teacher asked another student to bring the materials.
- ○ Teacher took the materials from the J-PAL SA box.
- ○ Other Methods _____

M4 **Materials in order: please select materials visible to children**

- ☐ ALL cards are visible at the back of the class-room
- ☐ ALL cards are visible at the corners
- ☐ Others _____
- ☐ None

M5 **Other_Materials in order** Type

M6 **How many pre-training cards were played?** Number (0-8)

M7 **Card** <pre-filled>. **Steps for card played:**

- ☐ Introduced the card
- ☐ Asked which dot is inside
- ☐ Asked which dot is on the longest side
- ☐ Asked which dot is on the shortest side
- ☐ Asked which dot is on the corner
- ☐ None

M8 **How is the teacher storing the materials used?**

- ○ Teacher has placed the materials onto a table or platform.
- ○ Teacher has placed the materials in a box or cupboard.
- ○ Teacher has placed the materials in a bag or sack.
- ○ Teacher has asked another student to store the materials.
- ○ Teacher has placed the materials in the J-PAL SA box.
- ○ Other method _____

M9 **Next game played:**

- ○ Reading Maps
- ○ NC Pre-Training
- ○ Number Comparison
- ○ FS Pre Training - Number of Sides and Length of sides
- ○ FS Pre Training - Angles and Parallelism
- ○ Find Shape
- ○ Find and Move
- ○ Other Activity _____
- ○ None

Section N - Reading Maps Main Games

N1 **What ALL does the teacher do while giving game instructions?**

- ☐ Introduces game material
- ☐ NON SYMBOLIC: Explains that we need to mark a cross on the board at the spot as shown on the card
- ☐ SYMBOLIC: Explains that the hint is to help us find the correct dot on the board
- ☐ SYMBOLIC (Property Set 1): Teacher explains that Hint 1 describes the NUMBER of sides. Hint 2 describes the spot within this shape
- ☐ SYMBOLIC (Property Set 2): Teacher explains that Hint 1 describes the LENGTH of sides. Hint 2 describes the spot within this shape
- ☐ Models first Practice card
- ☐ Plays remaining Practice cards with children
- ☐ Asks children to form groups and tells students order of play
- ☐ Repeats instructions quickly before group game play starts
- ☐ Teacher mentions that children can discuss answers in groups
- ☐ None

N2 **How did the teacher get the practice and student materials?**

- ○ Teacher took the materials from a table or platform.
- ○ Teacher took the materials from a box or cupboard.
- ○ Teacher took the materials from a bag or sack.
- ○ Teacher asked another student to bring the materials.
- ○ Teacher took the materials from the J-PAL SA box.
- ○ Other Methods _____

N3 **How did the teacher get teaching boards?**

- ○ Teacher took the materials from a table or platform.
- ○ Teacher took the materials from a box or cupboard.
- ○ Teacher took the materials from a bag or sack.
- ○ Teacher asked another student to bring the materials.
- ○ Teacher has pasted the board on the wall
- ○ Teacher took the materials from the J-PAL SA box.
- ○ Other Methods _____

N4 **Proceeded to Main Deck?**

○ Yes ○ No

N5 **Why is the main deck not being played?**

- ○ Main decks not available/damaged for any of the groups.
- ○ Shortage of time
- ○ Other _____

N6 **DECK** Select Deck (1 - 6)

N7 **In what setting are the children playing?**

- ○ In groups of 4
- ○ In groups of less than 4
- ○ In groups of more than 4
- ○ In pairs
- ○ Mix of the above

N8 **How many groups/pairs are playing?** Number (0-10)

N9 **Are all children playing at the same time?**

○ Yes ○ No

N10 **Are the children playing sequentially?**

○ Yes ○ No

OBSERVE ONE GROUP PLAYING THE GAMES AND ANSWER THE NEXT SET OF QUESTIONS FOR THAT GROUP.

N11 **Number of students in group** Number (0-6)
(Answer for the group being observed)

N12 **Materials Present** (Answer for the group being observed)

- ☐ Cards
- ☐ Board
- ☐ Colour pencils or equivalent
- ☐ None

N13 **Steps followed by the students in the group** (Answer for the group being observed)**:**

- ☐ Children play when their turn comes
- ☐ Children find the spot
- ☐ Children cross the spot
- ☐ Children take shape names
- ☐ Children count sides of shapes
- ☐ Children call out shape properties (inside, longest, shortest, corner, etc.)
- ☐ Children discuss correct answer in group
- ☐ Children refer to the Pre-Training Posters.
- ☐ None

N14 **How many students are playing the game independently** (Answer for the group being observed)**:**

- ○ ALL Students in this group
- ○ More than half students in this group
- ○ Less than half students in this group
- ○ Nobody in this group

N15 **Additional Observations** (Answer for the group being observed):

- ☐ One student takes the lead and others follow
- ☐ ALL students get equal chances to play
- ☐ Students help each other
- ☐ The group is not interested in playing the game
- ☐ Others _____

N16 **Math Games Teacher Behavior while students are playing main deck**

- ☐ Prompted answer discussion in the group
- ☐ Appreciated students sharing answers
- ☐ Positively appreciates good behavior
- ☐ Teacher encourages all children to play in the group
- ☐ Teacher was enforcing discipline
- ☐ Teacher was involved in other work
- ☐ Teacher explained the game to the children again
- ☐ Others _____

N17 **For how many groups/pairs did the teacher check the cards?** Number (0-10)

N18 **Do you want to add information for another deck**

- ○ Yes ○ No

N19 **What ALL does the teacher do while repeating game instructions?**

- ☐ Models first Practice card
- ☐ Plays remaining Practice cards with children
- ☐ Asks children to remain in groups and tells students order of play
- ☐ Repeats instructions quickly before group game play starts
- ☐ Teacher mentions that children can share answers in groups
- ☐ None

N20 **How was the class behaviour?**

- ☐ Most children were looking at the teacher while teacher was giving instructions
- ☐ Most children were following teacher instructions
- ☐ Most children were repeating after the teacher
- ☐ Most children were productively engaged throughout the session
- ☐ Most children were misbehaving
- ☐ Most children were NOT looking at the teacher while teacher was giving instructions
- ☐ Most children were NOT following teacher instructions
- ☐ Most children were NOT interested in playing Math Game
- ☐ Children lost interest in pre-training
- ☐ Children were not able to understand the pre-training
- ☐ Children lost focus during pre-training
- ☐ Most children lost focus on the teacher after the first deck
- ☐ Most children lost focus on the teacher after the second deck
- ☐ Most children lost focus on the teacher after the third deck
- ☐ Others _____

N21 **How is the teacher storing the practice and student materials?**

- ○ Teacher has placed the materials onto a table or platform.
- ○ Teacher has placed the materials in a box or cupboard.
- ○ Teacher has placed the materials in a bag or sack.
- ○ Teacher has asked another student to store the materials.
- ○ Teacher has placed the materials in the J-PAL SA box.
- ○ Other method _____

N22 **How is the teacher storing the teacher boards?**

- ○ Teacher has placed the materials onto a table or platform.
- ○ Teacher has placed the materials in a box or cupboard.
- ○ Teacher has placed the materials in a bag or sack.
- ○ Teacher has asked another student to store the materials.
- ○ Teacher has pasted the poster on the wall.
- ○ Teacher has placed the materials in the J-PAL SA box.
- ○ Other method _____

N23 **Next game played:**

- ○ NC Pre Training
- ○ Number Comparison
- ○ FS Pre Training - Number of Sides and Length of sides
- ○ FS Pre Training - Angles and Parallelism
- ○ Find Shape
- ○ Find and Move
- ○ Reading Maps Pre-training
- ○ Other Activity _____
- ○ None

Section Q - Teacher Feedback

<Insert inbuilt time stamp here to record when the monitor stops to observe the math games class>

Record the time when you stopped observing the math games class HH:MM

ASK THE NEXT SET OF QUESTIONS TO THE TEACHER ONCE THE OBSERVATION OF THE CLASSROOM IS OVER.

Q1 **Have you been trained on the Math Games Curriculum by the NGO's training team?**

○ Yes ○ No

Q2 **Did anyone attend the Math Games training on your behalf?**

○ Yes ○ No

Q3 **Please provide details on the person who attending Math Games training on your behalf. (Name and Grade they teach)** Type

Q4 **How are you administering the games if you did not receive training?**

☐ By going through the training ppt slides

☐ By going through the instruction videos

☐ By going through the instruction manual

☐ By going through the notes of the teacher who attended the training sessions

☐ Others _____

☐ Refused to give an answer

Q5 **Why is the teacher who attended the training not administering the games?**

○ I am responsible for this classroom.

○ I am now the replacement teacher for this classroom.

○ I am substituting for that teacher today

○ Others _____

Q6 **Who trained you on Math Games?**

○ Other Anganwadi worker

○ Other staff from the NGO

○ Others _____

Q7 **Which of the following games have you been trained on as of today?**

○ Number Comparison

○ Find Shape

○ Find and Move

○ Reading Maps

Q8 **What was the date of training for this game?**

Select Date

Q9 **How confident do you feel about implementing Math Games in your classroom?**

○ ○ ○ ○ ○ ○ ○ ○

Q10 **What do you like about playing Math Games?**

- ☐ My class is learning and playing at the same time.
- ☐ Children learn from each other.
- ☐ Games are very engaging.
- ☐ Children can play games independently.
- ☐ Games are easy to understand.
- ☐ I don't need to prepare any additional material.
- ☐ These games are very simple to execute.
- ☐ These games do not take a very long time to execute.
- ☐ Other _____
- ☐ Nothing.

Q11 **What challenges do you face while playing Math Games?**

- ☐ It's difficult to take out time from the syllabus.
- ☐ Later decks of games are very difficult.
- ☐ Games eventually get boring.
- ☐ It's difficult to remember all the rules and instructions.
- ☐ I don't think children are learning any math through these games.
- ☐ This time can be put to more useful tasks like school work.
- ☐ There is a lot of material.
- ☐ There is a lot of paperwork.
- ☐ It is difficult to maintain discipline when games are being played.
- ☐ It is difficult to check cards after each deck.
- ☐ I have to take up many classes due to the lack of teachers in the school.
- ☐ I teach a multi-grade class so it is difficult to adjust the Math Games sessions.
- ☐ There are many teacher trainings so I am unable to complete the sessions.
- ☐ There are insufficient basic resources at the schools to conduct the Math Games.
- ☐ I do not teach in the given language, so the Math Games materials are hard to follow.
- ☐ Other challenges _____
- ☐ No challenges.

Q12 **What challenges do you face while storing and managing math games materials?**

- ☐ The materials are hard to arrange in order for gameplay.
- ☐ The materials are hard to assemble after gameplay
- ☐ The materials are hard to distribute during gameplay.
- ☐ The materials are hard to reuse for revision of games.
- ☐ The materials are hard to store in the classroom.
- ☐ The materials are hard for children's use.
- ☐ Other challenges _____
- ☐ No challenges.

Section Z - Survey Close

Z1 **Please select the status of Process Monitoring**

- ○ Complete (Skip to Z3)
- ○ Revisit the school at a later point
- ○ Back check ((Skip to Z3)
- ○ Consent not given (End)

Z2 **Why was Process Monitoring not completed?**

Type

Z3 **Please add any additional observations from the classroom, if any.**

Type your answer...

Annexure I: Monitoring questions for informal visits

This observation questionnaire contains a set of questions that are used to note the observations in the classroom during the gameplay session of the program. These questions aim to capture the general classroom implementation of the program.

A. Monitor ID/Name

B. State ID/Name

C. School/Center ID/Name

D. Date of Observation

1. Which Math Game is the teacher playing?
   Only asking which Math Game they are playing.
2. Did the teacher introduce the poster?
   Which poster did the teacher introduce?
3. What materials are present at the teacher's disposal?
4. How did the teacher get to access these materials?
5. How many pre-training cards did the teacher teach?
6. Which instructions did the teacher give before playing the game?
7. Is the teacher conducting the main deck?
   Why not?
   <Surveyor can leave if no main deck is played>
8. Which deck is the teaching conducting?
9. In what settings (children in a group) are the children playing?
10. How many such groups/pairs are engaged in the class?
11. Are other materials being used instead of the Math Games toolkit by teachers or students?
12. Please elaborate on these materials:
    - What materials are these, and what are they replacing?
    - How are these materials being used?
    - How well are the teachers and students making use of these materials?
13. How was the classroom behaviour?
    Were the children engaged, active, concentrating, or participating in the games?
14. How is the teacher storing the Math Games materials?
15. What challenges have the teacher faced so far?
    <ask teacher>
16. How useful did the teacher find their training from the NGO staff?
    <ask teacher>
17. What are some innovative practices teachers are using to conduct the games with children?

Annexure J: Informal teacher survey questions for NGO PM 2023-24

This teacher feedback questionnaire contains a set of questions that are addressed to the teachers that are trained for the classroom implementation of the program. These questions aim to capture the feedback of the teachers on various components of the program

Math Games Training

1. Have you been trained on the Math Games Curriculum by the NGO's training team?
   1.1 If No, how are you administering the games if you did not receive training?
2. If yes, which of the Math games have you been trained on as of today?
3. What was the date of training for this game?

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4. Which games have been conducted in the classrooms?
5. What was the frequency with which you conducted Math Games?
6. How confident do you feel about implementing Math Games in your classroom?
7. What do you like about playing Math Games?
8. What challenges do you face while playing Math Games?
9. What challenges do you face while storing and managing math game materials?
10. Do the kids play the games outside of the Math Games session?
11. Do the kids refer to the charts outside of the math games session?

Feedback on the Math Games

12. How did the children respond to the games in the classroom? How was their behaviour during gameplay?
13. How did children of different ages play the games? Did the three-year-old kids also play the games actively?
14. What do you think can be done to improve the math game?
15. What do you think about the instructions for the math games? How are the children responding to these instructions?

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16. What activities do you conduct in the classroom for children's education?
17. What Math topics do you cover in your classroom outside of Math Games?
18. How frequently do you conduct these activities?

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