

# EVERY CHILD COUNTS

## Math Games Implementation Toolkit

SEPTEMBER 2025



# ABOUT J-PAL

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 more than 1,000 researchers at universities around the world, J-PAL conducts randomized impact evaluations to answer critical questions in the fight against poverty.

J-PAL co-founders Abhijit Banerjee and Esther Duflo, with longtime affiliate Michael Kremer, were awarded the 2019 Nobel Prize in Economics for their pioneering approach to alleviating global poverty.

**J-PAL South Asia**, based at the Institute for Financial Management and Research (IFMR) in Chennai, leads J-PAL's efforts to advance evidence-informed policymaking in the region. By conducting rigorous randomized evaluations, forging strategic partnerships, and scaling effective programs, J-PAL South Asia works to generate better evidence that helps governments design better policies - so people can lead better lives.

Established in 2007, J-PAL South Asia is the oldest and the largest among all J-PAL offices. J-PAL South Asia has 255 ongoing and completed evaluations in the region across 11 sectors to date. In India, J-PAL South Asia's deep understanding of government policy priorities, combined with pioneering academic research from J-PAL's researcher network have resulted in more than 30 research, policy, and training partnerships with governments across 20 states.

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### **Cover Photo**

Children playing math games in the Every Child Counts program.

Photo credit: Matthew Edmundson, J-PAL

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Photo credit: Sushant Pawar, J-PAL

## ACKNOWLEDGEMENTS

The Every Child Counts journey represents the collaboration of researchers, governments, NGOs, donors, and dedicated staff committed to strengthening foundational numeracy in India and across the world. This toolkit is a product of their collective vision and hard work.

We are deeply indebted to Professor Elizabeth Spelke and the Harvard Laboratory of Developmental Studies for their critical contributions to cognitive development research, which laid the foundation for the design of the math games. We recognize Professor Spelke's longstanding contributions to the field of cognitive development, as well as the work of her collaborators, which remain central in shaping this program. We are equally grateful to Professor Esther Duflo, Dr. Harini Kannan, Professor Moira Dillon, and Professor Joshua Dean for their rigorous research and leadership, whose evaluations and insights have ensured that the program is both effective and scalable.

We thank our funding partners: J-PAL's Innovation in Government Initiative, USAID Development Innovation Ventures, and ASPIRE at J-PAL South Asia, for their belief in this work and their sustained support of scale-up efforts. We further thank the What Works Hub for Global Education for supporting the creation of this guide.





Photo credit: Sandeep Singh

Our sincere appreciation goes to government partners who have embraced this innovation and championed its integration: Samagra Shiksha, Department of Education in Andhra Pradesh, the Maharashtra State Council of Educational Research and Training, and the Department of Education, Government of Karnataka. We also extend our gratitude to all government staff across all levels, and to the many school teachers whose commitment and support have been central to bringing these games into classrooms. Their leadership and openness to evidence have been vital in advancing this program.

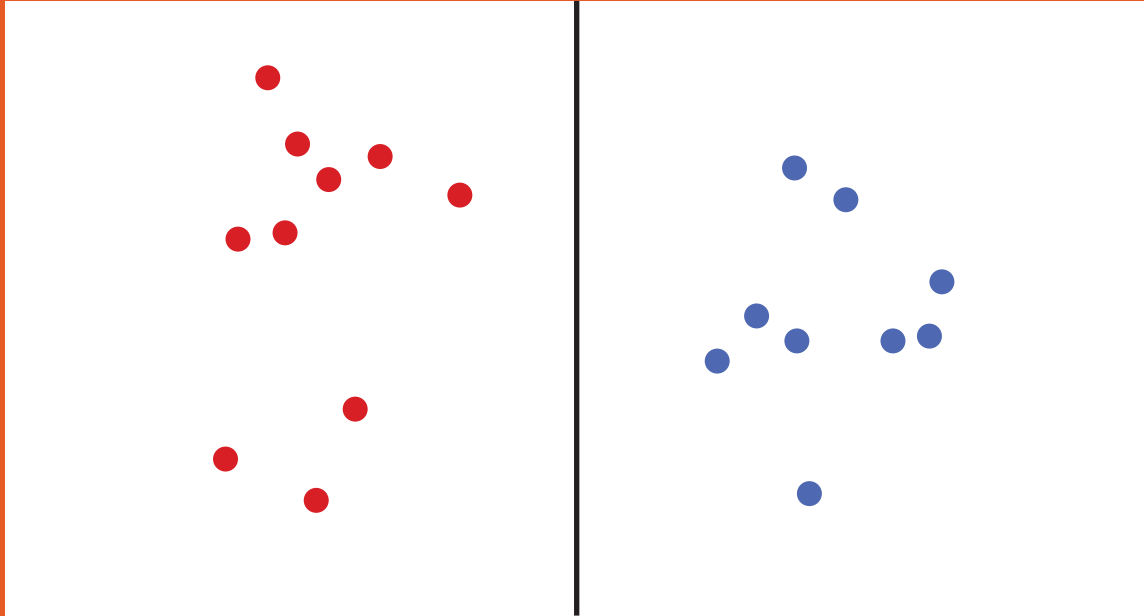
We are grateful to our NGO collaborators, Pratham Education Foundation and Key Education Foundation, whose partnership has enriched both implementation and learning.

At J-PAL South Asia, this work has been carried forward by the Policy Scale-Ups team, led by Vijayalakshmi Iyer, with continued guidance from Dr. Harini Kannan. We also acknowledge the tireless efforts of the Every Child Counts scale-up team and the many J-PAL South Asia staff members who, over the years, have contributed to building and sustaining this initiative. We would also like to thank the J-PAL Global Education team, design team, and Evidence to Scale vertical for their support on this guide.

Finally, this toolkit is dedicated to the young children we ultimately aim to reach. Their curiosity, engagement, and potential are the driving force behind this work and the reason we continue to innovate and scale.

## EXECUTIVE SUMMARY

**Question:** With a quick look, can you tell which of the following boxes has more dots?



If you answered yes (and you answered “red”), what you’ve just demonstrated is an example of intuitive or non-symbolic math. Research with infants provides evidence that they have an intuitive grasp of numbers, geometry, and language, which grows over their preschool years.

In this guide, you’ll learn about a unique curriculum that builds on fifty years of research in cognitive science. It helps children connect their intuitive abilities in math to more formal math – the kind that is taught in school. This curriculum has been rigorously tested, refined, and is currently scaling across multiple states in India, with impressive results in foundational numeracy. Read on to learn more!

The world is facing a growing foundational literacy and numeracy crisis, worsened by the COVID-19 pandemic. According to UNESCO, in low- and middle-income countries, the share of 10-year-olds unable to read and understand a simple text rose from 57% in 2019 to 70% in 2022. In rural India, 74% of children in third grade could still not perform a subtraction operation taught in second grade.

Every Child Counts, a curriculum designed by Harvard University professor Elizabeth Spelke, in collaboration with J-PAL South Asia, is rooted in decades of Elizabeth’s and wider research from cognitive and developmental psychology.



The Every Child Counts curriculum consists of a set of math games, played three times a week for less than an hour, that can be implemented in regular preschool and early primary school classrooms in resource-constrained settings, with little additional resources or teaching staff. It leverages young children's innate understanding of non-symbolic mathematics to bridge the gap between their natural abilities and the formal mathematical concepts they will encounter later in school. For example, pre-numeracy skills strengthened through this curriculum are necessary for the formal mathematical skills found in typical curriculum in grades 1-3.

Every Child Counts is particularly effective because it aligns with the principles that early childhood experiences shape lifelong abilities, and that nurturing these innate skills can significantly improve academic performance in foundational literacy and numeracy. It also encourages play-activity based learning, which is strongly recommended for early childhood. Finally, it is highly cost-effective, and as it continues to scale across six Indian states, it's getting even more cost-effective.

We're thrilled you're here and excited to tell you more!

#### SYMBOLIC & NON-SYMBOLIC MATH

Symbolic math is typically what is taught in school, involving the use of numerals (i.e. 1, 2, 3) and operational symbols (i.e. +, -, ÷, x)

On the other hand, non-symbolic math is based on the intuition that this many apples:



is more than this many apples...



It is based on our innate abilities to perceive sizes and quantities.





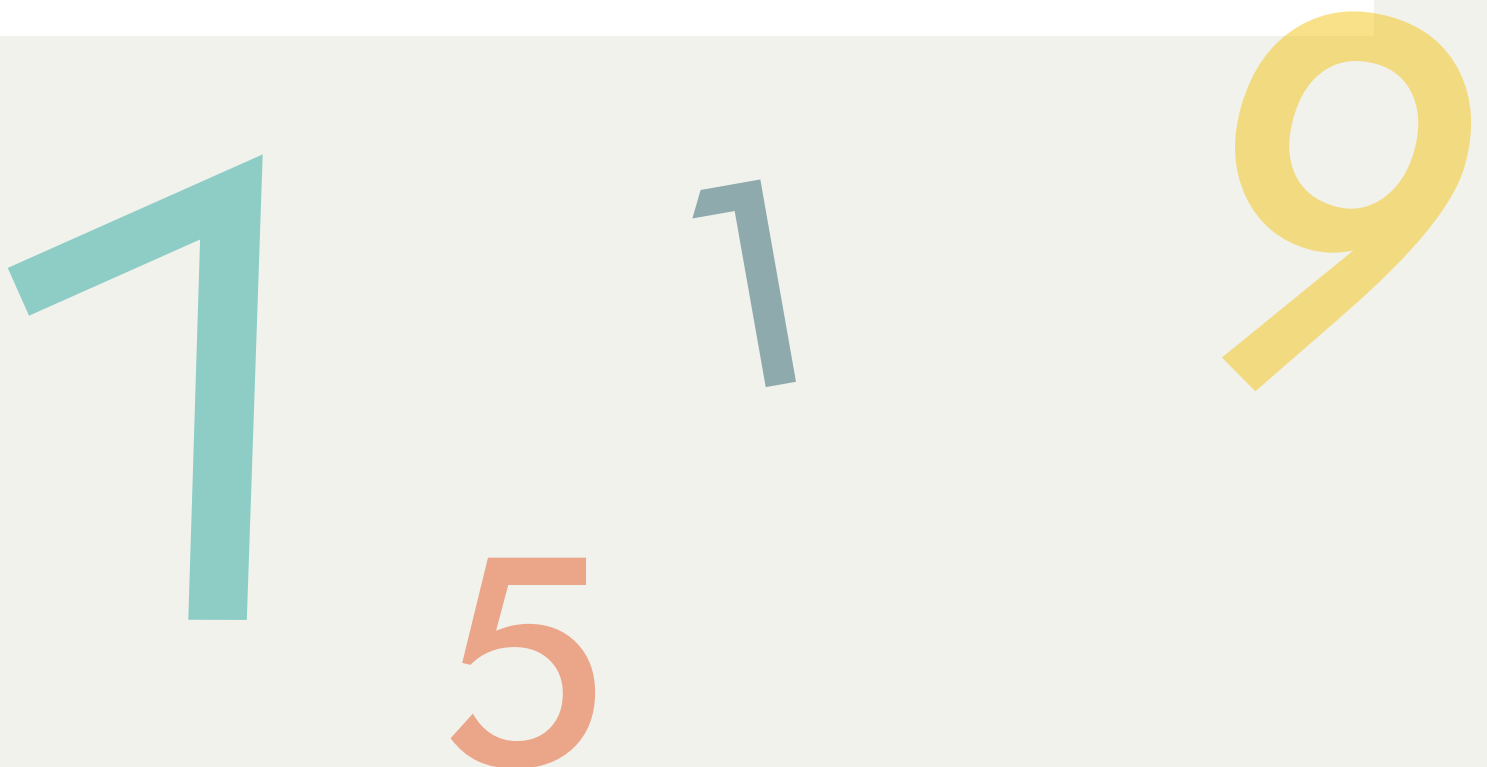




## INTRO

# ORIENTATION TO THE GUIDE

This guide is intended to orient different audiences – including **policymakers, implementers, and funders** – to the **Every Child Counts** curriculum. It will detail the research conducted on it, the specific math games themselves, how they can fit within a classroom and education system, and early lessons learned on how to pilot and scale it in appropriate contexts.



# ORIENTATION TO THE GUIDE

## INTENDED AUDIENCES FOR THIS GUIDE:



### "EXPLORERS"

Organizations and people who are looking for new programs to implement and want to learn more about Every Child Counts to see if it is relevant to their context and goals. Examples include:

- Senior government officials who make strategic decisions
- Think tanks, researchers, consultants and others who help governments/donors/NGOs select programs to implement
- NGOs looking to expand their programming
- Donors

*We recommend Explorers begin by reading the Executive Summary, Context, and the Key Takeaways section at the end of each chapter.*



### "PROGRAM OWNERS"

Potential strategic partners who will lead the Every Child Counts program (including raising funds, building government partnerships, managing implementation organizations, etc.) in their geographies.

*We recommend Program Owners be sure to read the Learning Outcomes section at the beginning of each chapter.*



### "PROGRAM IMPLEMENTERS"

Implementation organizations that will implement Every Child Counts, in collaboration with strategic partners. Examples include:

- Field level/operational government officials
- Implementation and monitoring & evaluation NGOs
- Researchers, consultants and other intermediary organizations that could support with implementation

*We recommend Program Implementers be sure to read the Learning Outcomes section at the beginning of each chapter.*





Photo credit: Matthew Edmundson, J-PAL

As you read and have additional questions or you would like to reach out to J-PAL South Asia to learn more about Every Child Counts, please see the “Contact” session at the beginning of this guide.

On a count of

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Let's dive in!





Photo credit: Vatsala Sharma, J-PAL

## SECTION 1

# WHAT IS THE *EVERY CHILD COUNTS* CURRICULUM?

1.1 Background

1.2 Why *Every Child Counts* now?

1.3 Overview of *Every Child Counts* Curriculum

1.4 Research: Evaluations and Findings

1.5 Theory of Change



## LEARNING OUTCOMES

This section gives you an overview of what Every Child Counts is all about - its origins, why it works, and why it matters right now, especially with growing challenges in foundational learning.

Depending on your role, here's what you'll get out of it:

### EXPLORERS AND PROGRAM OWNERS

As a potential strategic partner, this section will help you:

- See how Every Child Counts fits into broader efforts to improve foundational numeracy.
- Understand the theory and evidence behind the program and why it works.
- Start thinking about how Every Child Counts can fit into your context and scale within your region.

### PROGRAM IMPLEMENTERS

If you're preparing to implement Every Child Counts on the ground, this section will help you:

- Understand the theory of change behind the Every Child Counts curriculum.
- Learn why it's effective in improving foundational learning, and what's needed to deliver it well.

# 1. WHAT IS THE EVERY CHILD COUNTS CURRICULUM?

## 1.1 Background

**Every Child Counts** is an evidence-based curriculum designed for preschool and early primary students (ages 4–6). At the heart of the program are interactive **math games** that help children build on their innate understanding of math and connect it to formal, symbolic math taught in school.

In three randomized evaluations led by J-PAL affiliated researchers in India, children who participated in Every Child Counts showed immediate and lasting improvements in both **symbolic math** and **non-symbolic math**. These improvements continued up to a year after the program ended.

From 2019 to 2025, the curriculum was tested and piloted with children in government schools across nine Indian states (including Delhi, Tamil Nadu, Maharashtra, Andhra Pradesh, Himachal Pradesh, Punjab, and Karnataka) reaching over 33,000 children in 1,300 schools. This effort was made possible through a close partnership between J-PAL South Asia and NGO partners, including Pratham Education Foundation and the Key Education Foundation.

With generous support from ASPIRE<sup>1</sup> and USAID Development Innovation Ventures, J-PAL South Asia launched an NGO cascade model in 2023 to further expand the reach of Every Child Counts. Through this model, J-PAL partners with local NGOs, trains them to deliver the curriculum within their own programs, and supports them in scaling it further. Read more about J-PAL's NGO cascade model [here](http://www.j-p.al/NGO-cascade-model) (www.j-p.al/NGO-cascade-model).

### SYMBOLIC & NON-SYMBOLIC MATH

Symbolic math is typically what is taught in school, involving the use of numerals (i.e. 1, 2, 3) and operational symbols (i.e. +, −, ÷, ×)

On the other hand, non-symbolic math is based on the intuition that this many apples:



is more than this many apples...



It is based on our innate abilities to perceive sizes and quantities.

<sup>1</sup> The Alliance for Scaling Policy Impact through Research and Evidence (ASPIRE) is a coalition of governments, philanthropic organizations, civil society groups, and research institutions hosted by J-PAL South Asia. ASPIRE is working to scale up effective programs that address some of India's biggest development challenges.

## 1.2 Why Every Child Counts Now?

Foundational literacy and numeracy (FLN) forms the bedrock of all future learning. Evidence consistently shows early mastery of these skills has a powerful impact on educational outcomes by shaping cognitive development and enabling children to tackle more complex concepts as they grow.<sup>2</sup> Children who achieve FLN by the end of primary school are more likely to thrive in later grades and stay in school longer, improving their overall educational attainment.<sup>3</sup> These skills also empower individuals to fully participate in society and access better jobs. In short, FLN isn't just an education goal, it's a key driver of economic growth and social equity.

Yet despite widespread consensus of its importance, the world is facing a growing FLN crisis, worsened by the COVID-19 pandemic. In low- and middle-income countries, the share of 10-year-olds unable to read and understand a simple text rose from 57% in 2019 to 70% in 2022. In sub-Saharan Africa, that number is even higher at 89%.<sup>4</sup> Basic numeracy is also a major challenge: UNESCO estimates that 617 million children and adolescents are not reaching minimum proficiency in reading and math. Tackling this crisis requires urgent, coordinated action. Governments and education partners must invest in evidence-based solutions that support foundational learning.<sup>5</sup>

### THE INDIAN LEARNING CRISIS

The Annual Status of Education Report (ASER) is a nationwide, citizen-led survey that provides reliable data on children's schooling and learning levels in rural India. It tracks enrollment for children aged 3–16 and assesses basic reading and arithmetic skills for those aged 5–16.

The 2022 ASER report reveals alarming statistics: 74% of Grade 3 and Grade 5 students struggled to recognize numbers and perform basic arithmetic. These figures highlight the urgent need for early interventions in foundational learning.

The impact of the COVID-19 pandemic has only made things worse. In 2018, 37% of Grade 3 children could solve simple subtraction problems. By 2024, that number had dropped to 33%.<sup>6</sup>

Organizations worldwide are stepping up to tackle the FLN crisis through programs that improve education quality, train teachers, and expand access to learning materials. Governments are also taking action by rolling out early-grade reading programs, reforming curricula, and launching targeted interventions for underserved communities. Together, these efforts are helping to close learning gaps and boost outcomes for children everywhere.

In this broader movement, J-PAL South Asia has been working since 2020 to scale the Every Child Counts program by building partnerships with governments and nonprofit organizations across India. As we'll show, in certain contexts Every Child Counts can be an important, cost-effective contribution to improve children's pre-numeracy (and later, foundational numeracy).

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2 World Bank. (2021). "Literacy and Numeracy: Skills for Life." Retrieved from: <https://www.worldbank.org>.

3 UNESCO. (2020). "Global Education Monitoring Report." Retrieved from: <https://unesdoc.unesco.org/ark:/48223/pf0000373718>.

4 UNESCO. (2023). *The State of the Global Education Crisis: A Path to Recovery*. Retrieved from: <https://www.unesco.org/en/articles/state-global-education-crisis-path-recovery>

5 UNICEF. (2022). *Where are we on Education Recovery*. Retrieved from: <https://www.unicef.org/reports/where-are-we-education-recovery>

6 ASER Centre. (2024). Annual Status of Education Report (Rural) 2024. Retrieved from: <https://asercentre.org/asr-2024/>



## 1.3 Overview of Every Child Counts Curriculum

The Every Child Counts curriculum was developed by Professor Elizabeth Spelke, a cognitive psychologist at Harvard's Laboratory for Developmental Studies, in collaboration with J-PAL South Asia. It draws on research in cognitive and developmental psychology and is built around three core principles:

1. Early childhood experiences have the potential to affect children's lifelong abilities.
2. Young children have an innate understanding of non-symbolic mathematics, and these abilities are closely linked to later math outcomes. When nurtured well, interventions to improve innate abilities can improve children's performance in school.
3. Young children in low-resource and low-literate settings do not access the same opportunities as their high-income counterparts to develop their natural mathematical skills.

The curriculum comprises four games, each intended to strengthen different pre-numeracy skills. The games are implemented or played in "rounds," and each round consists of two games. The four games are shown in the figure below.

### BRIEF OVERVIEW OF THE CURRICULUM'S GAMES

#### Number Comparison

Sort cards into bins based on which number is larger.

*Targets skills of sorting, approximation, and estimation.*

#### Find Shape

Find out which one of the red/blue shape is similar to array of black shapes.

*Targets geometric knowledge of properties of shapes (eg. number/length of sides, angles).*

#### Find and Move

Identify numbers, learn to add, subtract & count by tens.

*Targets one-to-one correspondence, number recognition and exact addition skills.*

#### Reading Maps

Identify representational dot on board.

*Targets the identification of shapes and geometric properties, and enhances spatial sensitivities.*

Where Every Child Counts has been piloted, the math games have **complemented the existing curriculum**, with **45-minute sessions** held **three times a week** as per a set timetable. The full module includes 36 sessions for kindergarten classrooms and 38 sessions for Grade 1 classrooms. The math games are designed for small-group learning, and are played independently by children seated in groups of four to five. When implemented as intended, this approach helps young learners build the strong foundational math skills they need to succeed.

In *Section 2: Inside the Classroom*, you will learn more about how the math games are played, as well as the various roles teachers play in the process.

## 1.4. Research: Evaluations and Findings

The Every Child Counts curriculum was evaluated through three randomized evaluations led by J-PAL-affiliated researchers, including Nobel laureate Esther Duflo, alongside Joshua Dean, Elizabeth Spelke, Moira Dillon, and Harini Kannan, in partnership with the NGO Pratham Education Foundation. These studies took place between 2013 and 2019, first in Pratham-run preschools and later in government schools in Delhi, India.

### WHAT IS A RANDOMIZED EVALUATION?

Randomized evaluations are a type of **impact evaluation method**, where participants are randomly assigned to either receive a program (**treatment group**) or not (**comparison group**). Researchers then measure and compare outcomes to see what changes can be **directly attributed** to the program.

Randomized evaluations allow researchers and policymakers to answer specific questions about the effectiveness of a program and its underlying theory of change.

Read more [here](https://www.j-pal.org/ecc-intro-randomized-eval) (j-p.al/ecc-intro-randomized-eval).

### Randomized evaluation to test proof of concept

**The curriculum improved intuitive math, but not formal math:** The [first evaluation](https://www.j-pal.org/ecc-cognitive-science-preschool) (www.j-p.al/ecc-cognitive-science-preschool) found that playing an early prototype of math games helped children improve their non-symbolic (intuitive) math skills over the long term. However, it did not lead to lasting improvements in the symbolic (formal) math skills taught in school. Based on this, researchers hypothesized that the games could be more effective if they better connected children's non-symbolic math abilities with symbols and language used in school.

### Randomized evaluation to test the modified curriculum

**The updated curriculum strengthened both intuitive and formal math:** Building on the first study, the second evaluation tested a modified version of the games that connected children's non-symbolic math skills with the symbols and language used in school. These “transition games” showed strong results - students improved in both non-symbolic and symbolic math right after the program, and those gains lasted even a year later. The study showed that combining non-symbolic and symbolic math concepts can lead to lasting improvements in both non-symbolic and symbolic math.

### Randomized evaluation to test implementation in government classrooms

**The updated curriculum worked well when integrated into government classrooms:** In 2018–19, the updated version of the curriculum was tested in regular government classrooms, where class sizes were larger. It was used in both kindergarten and Grade 1. The results showed that the curriculum still worked well in this more typical school setting, mirroring large scale implementation, and led to strong improvements in students' symbolic math skills.

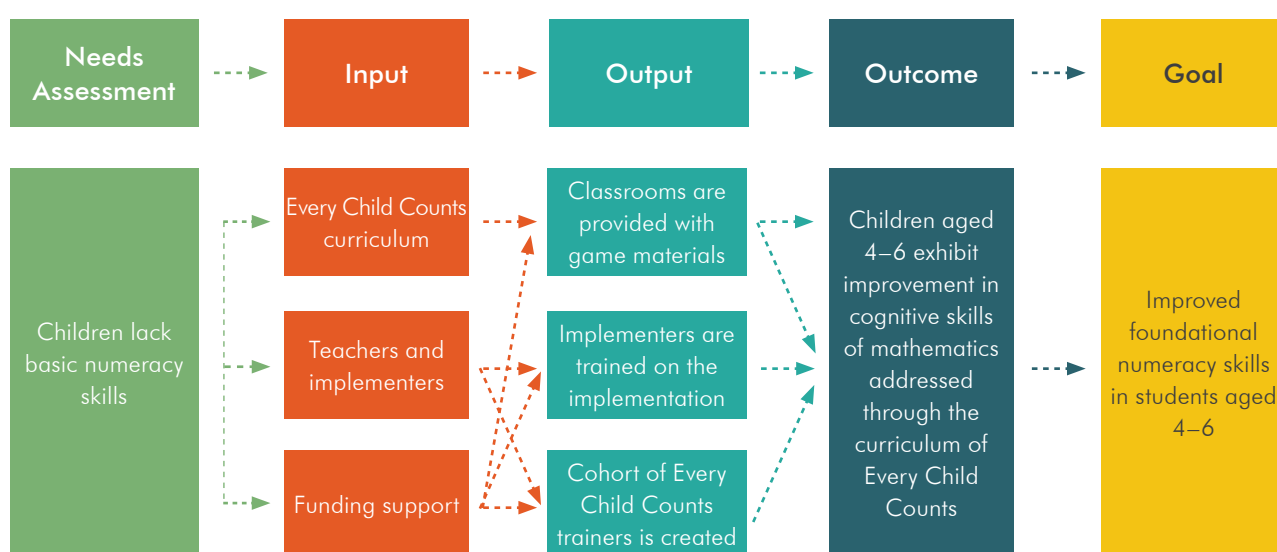
For more details on all three randomized evaluations please contact the team at J-PAL South Asia. Contact details are available in the Contacts section at the beginning of this toolkit.



## 1.5. Theory of Change

To scale a program effectively while staying true to its core design, it's important to start with a clear theory of change. The Every Child Counts theory of change outlines how the program is expected to achieve its goals and shows the step-by-step path from inputs, to activities, to outcomes.

**Here's how it works:** If teachers are trained in the Every Child Counts curriculum and given the right materials, they'll be able to deliver the program effectively in their classrooms, with support from monitors. When the games are run well, students engage actively, play thoughtfully, and collaborate with their peers. This leads to stronger math skills related to the games, ultimately improving their performance in formal school mathematics.



Evidence from randomized evaluations in Delhi shows that when implemented well, the Every Child Counts program improves young children's formal math learning. As the program expands through partnerships with governments and other organizations, it's essential to track progress at every stage, i.e. inputs, activities, and outcomes, through a strong process evaluation. This helps ensure the program stays aligned with its proven, evidence-based model.



WHAT IS THE EVERY CHILD COUNTS CURRICULUM?

## KEY TAKEAWAYS

1. Every Child Counts helps young children build formal math skills by tapping into their intuitive mathematical abilities, that is, how they naturally understand numbers and shapes.
2. The curriculum fits into regular classroom routines and uses fun, structured games to support early math learning.
3. The program has been rigorously evaluated in schools, including government classrooms, and has shown improvements in children's formal math skills.
4. To get the best results, it's important to align the program closely to the evidence, with trained teachers, the right materials, and regular check-ins.
5. Every Child Count's success in India shows how it can be adapted and scaled in other places with the right partners.





## SECTION 2

# INSIDE THE CLASSROOM

2.1 Deep Dive into the Four Math Games

2.2 Role of Teachers



## LEARNING OUTCOMES

This section gives you a clear picture of how Every Child Counts works in real classrooms - from how the games are played to what teachers do to support learning.

## EXPLORERS AND PROGRAM OWNERS

As a potential strategic partner, this section will help you:

- Understand how the program is built for low-resource classrooms.
- Get a sense of the materials and teacher roles needed to make it work.

## PROGRAM IMPLEMENTERS

If you're preparing to implement Every Child Counts, this section will help you:

- Learn what each of the four core math games is about and how they are played.
- Understand what teachers do before, during, and after each session to guide students.
- Get practical tips on classroom setup, materials, and how to track student progress.

## 2. INSIDE THE CLASSROOM

The Every Child Counts curriculum is designed for children **aged 4 to 6, typically in preschool and Grade 1**. It's especially suited for low-resource settings, such as government and low-cost private schools serving children from low-income communities.

The program uses fun, interactive math games that **complement the existing school curriculum**. These games are meant to be led by the **classroom math teacher** during regular class time, ideally **three times a week**, with each session lasting about **45 minutes**. The full program includes **36 sessions for kindergarten and 38 sessions for Grade 1**.

Below are the four math games along with the essential materials required for each:

| # | GAME                     | CLASSROOM MATERIALS                             | TEACHER MATERIALS | STUDENT MATERIALS (PER GROUP OF 4) |
|---|--------------------------|---|-------------------|------------------------------------|
| 1 | <b>Number Comparison</b> | 2 posters depicting quantities                  | Practice cards    | 8 decks                            |
| 2 | <b>Find Shape</b>        | 2 posters depicting shapes and their properties | Practice cards    | 8 decks                            |
| 3 | <b>Find and Move</b>     | Number board                                    | Practice cards    | 4 decks                            |
| 4 | <b>Reading maps</b>      | Shapes board                                    | Practice cards    | 8 decks                            |

The following sections will take a closer look at the objectives of each math game and how they are played, as well as the various roles teachers play, including preparing students before each session, setting up and running the games, and guiding follow-up activities afterward.



### See math games in action

Scan the QR code to watch videos of school children playing the individual games.

[www.j-p.al/ecc-videos-children-classrooms](http://www.j-p.al/ecc-videos-children-classrooms)



## 2.1 Deep Dive into the Four Math Games

### GAME 1: NUMBER COMPARISON

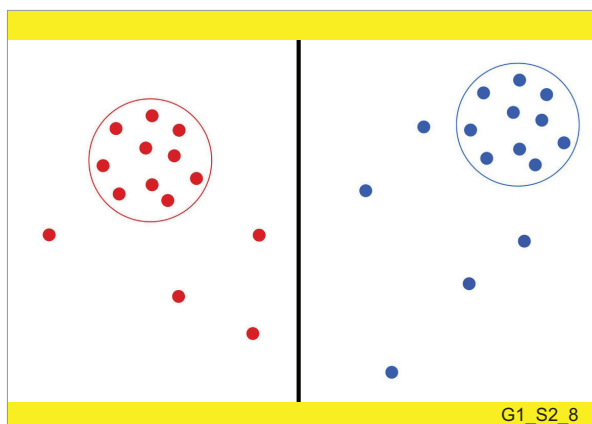
#### Objective:

- Number Comparison is designed to strengthen children's intuitive number approximation skills by engaging them in sorting tasks.
- Each card features a symbolic number on one side and a matching non-symbolic dot array on the other. This dual format helps build connections between symbolic and non-symbolic number systems.

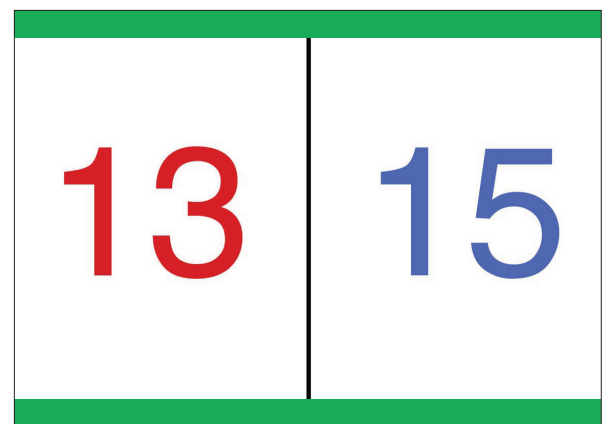
#### Gameplay:

- Children look at a card showing two numbers, one in blue and one in red, and place the card into the bin that matches the color of the larger number. They can play using either the symbolic number side or the dot array side. However, to support the transition from non-symbolic to symbolic understanding, some cards display only symbolic numbers.
- The level of difficulty is adjusted for preschool and Grade 1 children
  - For preschool children: Numbers go up to 20
  - For Grade 1 children: Numbers go up to 100

Figure 1. Number Comparison game: Depiction of cards



Non-symbolic card



Symbolic card

## GAME 2: FIND SHAPE

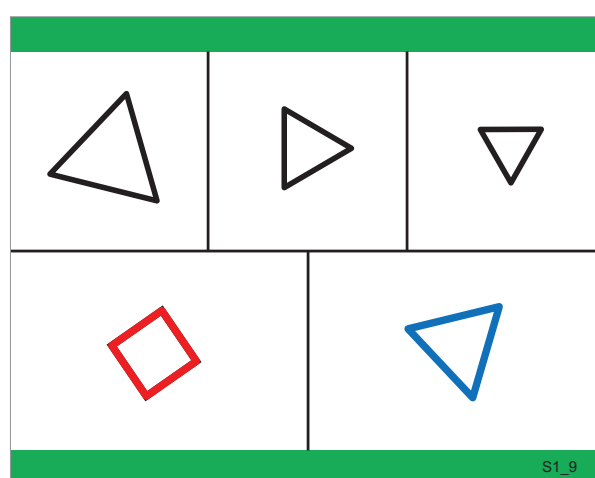
### Objective:

- Find Shape is a sorting game designed to improve children's ability to recognize shapes, understand their properties, and distinguish shapes on the basis of their properties such as number of sides, lengths of sides, number of angles, and types of angles.

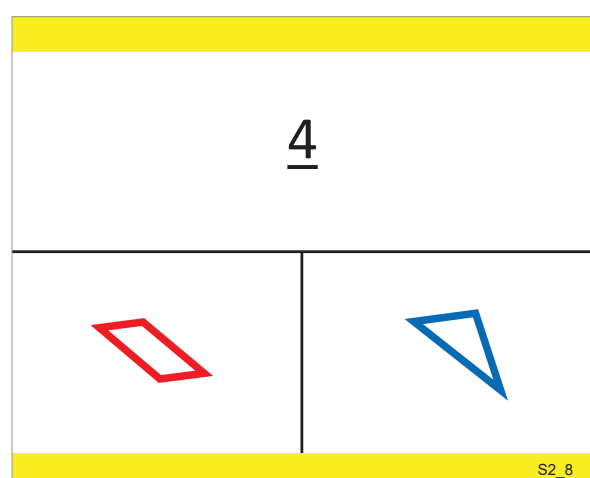
### Gameplay:

- The game uses two types of cards: 'All Pictures' and 'Hint' cards.
  - All Pictures Cards: Each card displays five figures – three in black, one in blue, and one in red. Children must decide whether the black figures are more similar to the blue figure or the red figure, and then place the card into the bin that matches the color of the more similar figure.
  - Hint Cards: These cards include a hint (such as a number of sides, number/type of angles, etc. ) and two figures – one in blue and one in red. Children interpret the hint and decide which figure it refers to, then place the card in the corresponding colored bin. Each level of the game focuses on a specific shape property, such as: number of sides, length of sides, corners and angles, symmetry.
- For Find Shape, the level of difficulty does not vary across the kindergarten and Grade 1 level.

Figure 2. Find Shape game: Depiction of cards



Non-symbolic card



Symbolic card

### GAME 3: FIND AND MOVE

#### Objective:

- Find and Move is designed to strengthen one-to-one correspondence, number recognition, and basic addition skills.

#### Gameplay:

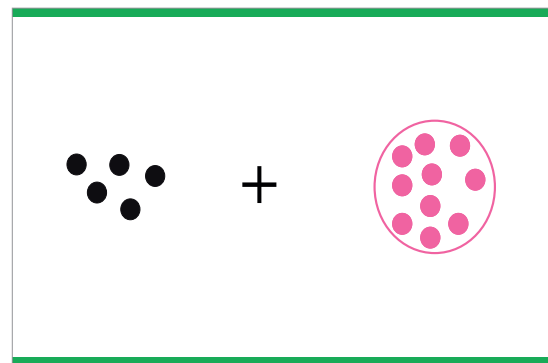
- Each card presents an addition problem using two numbers:
  - The first number, shown in black, is the number children must find on the board. This first number is always represented non-symbolically.
  - The second number, shown in pink, tells them how many steps to move forward from the black number.
  - After moving the correct number of steps, children mark the final number with an X. Each student uses a different colored crayon to mark their answers, allowing for easy tracking.
- The level of difficulty is adjusted for preschool and Grade 1 children:
  - For preschool children: Early levels focus mainly on number recognition. Addition problems are presented using both symbolic numbers and non-symbolic dot arrays. Numbers are limited to a range of up to 20.
  - For Grade 1 children: The number range extends up to 50, allowing for more advanced addition practice.

Figure 3. Find and Move game: Depiction of number board and cards

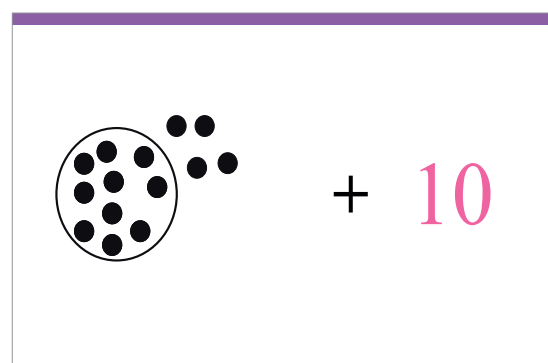
|    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|
| 6  | 8  | 7  | 9  | 5  | 4  | 3  | 2  | 1  | 0  |
| 16 | 18 | 17 | 19 | 15 | 14 | 13 | 12 | 11 | 10 |
| 26 | 28 | 27 | 29 | 25 | 24 | 23 | 22 | 21 | 20 |

|    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|
| 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 0  | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  |

Number board



Non-symbolic card



Symbolic card



## GAME 4: READING MAPS

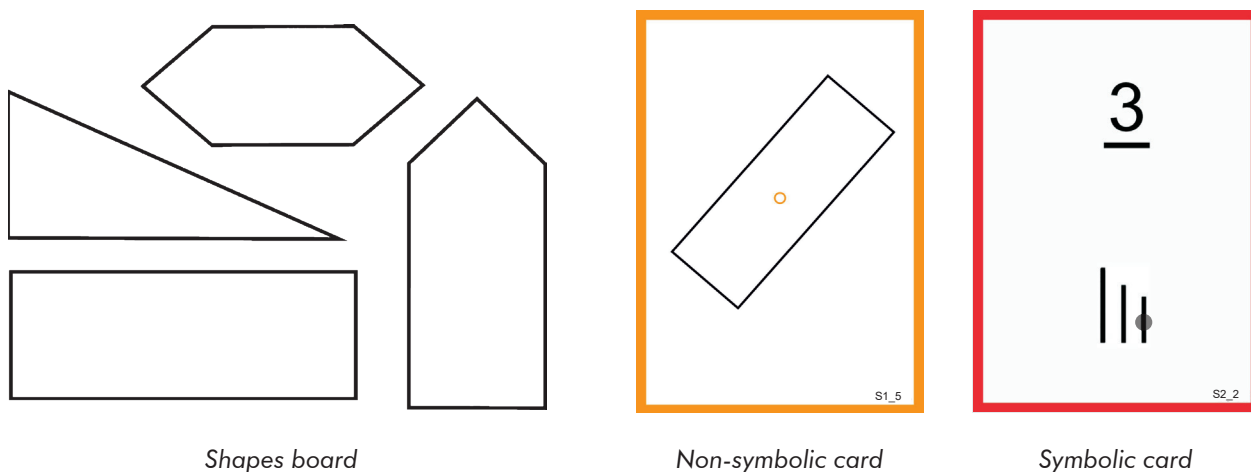
### Objective:

- Reading Maps is designed to develop children's spatial awareness and sensitivity.

### Gameplay:

- This game uses a board and two types of cards: 'All Pictures' and 'Hint' cards. Both types rely on the board which consists of various shapes, each marked with dots in different positions.
  - All Pictures Cards: Each card shows a single shape with a dot placed either on the side, at a corner, or in the center. Children examine the card and mark the corresponding location on the board that matches the dot's position.
  - Hint Cards: These cards provide two clues - the first clue identifies which shape to mark, and the second clue indicates where on the shape the dot should be placed. Children interpret both clues and mark the correct location on the board.
- Each level of the game focuses on a specific geometric property to identify the target shape and location, such as: number of sides; length of sides; corners and angles.
- The levels increase in difficulty, starting with closed shapes and progressing to angles. This progression is consistent for both preschool and Grade 1 students.

Figure 4. Reading Maps game: Depiction of shapes board and cards



## 2.2 Role of Teachers

Teachers play a central role in making the Every Child Counts curriculum effective. Their responsibilities include preparing students before each session, setting up and running the games, and guiding follow-up activities afterward.



### Game set-up

The math games set up follow a 5-step process:

Pre-training > Introduction >  
Demonstration > Guided practice  
> Group play



### During game-play

To enable peer learning, students are split into groups based on the game being played. Teachers monitor groups to facilitate engagement as needed.



### After game-play

Teachers check student answers to assess understanding and track progress by recording correct responses. Teachers are encouraged to connect with peers for support.

## GAME SET-UP

To help children understand and play independently, each math games session follows a 5-step teaching routine:

**1. Pre-training (2–5 mins):** Pre-training is typically conducted when math games are first introduced (as laid out in the session plan in *Annexure 5*). Its goal is to introduce the key math concepts that the games will explore. It involves using visual aids such as posters and cards to help students become familiar with the ideas and visuals they will encounter in the games.

- a. For example, in Number Comparison, pre-training focuses on recognizing and counting numbers. In Find Shape and Reading Maps, it introduces shape names, their properties, and how to identify positions relative to shapes. In Find and Move, pre-training involves a walkthrough of the game boards.

**2. Introduction — Teacher Introduces the Game (2–3 mins):** The teacher begins by introducing the game materials and clearly explaining the rules to the whole class.

**3. I Do — Teacher Demonstrates (3–4 mins):**

Using practice cards, the teacher models how to play the game by walking through the first card step-by-step. This helps children see exactly how the game works.

**4. We Do — Guided Practice with Students (5–7 mins):**

Next, the teacher invites a few students to help complete the remaining practice cards. The teacher leads the activity, gives immediate feedback, and explains the correct answers. The rest of the class watches and learns from this interaction.

**5. You Do — Independent Group Play (7–12 mins):**

Finally, the class is divided into small groups of 4–5 students (depending on the game, see below). Children play the game together with minimal teacher support. To ensure a smooth session, teachers should have all materials ready before class begins.

### DURING GAME PLAY

After the “We Do” practice round, the teacher should divide students into groups based on the type of game being played:

#### Number Comparison

**Group size:** up to 5 children

**Materials:** 1 red bin, 1 blue bin, and the main deck per group

#### Find Shape

**Group size:** up to 5 children

**Materials:** 1 red bin, 1 blue bin, and the main deck per group

#### Reading Maps

**Group size:** up to 4 children

**Materials:** 1 game board, 1 set of 4 crayons, and the main deck per group

#### Find and Move

**Group size:** up to 5 children

**Materials:** 1 game board, 1 set of 5 crayons, and the main deck per group

During the session, the teacher should actively monitor each group to ensure they’re following the game rules. Since **peer learning is a key goal**, teachers are encouraged to prompt students to discuss their answers and collaborate as they play. Visual aids from the pre-training (like posters) should be clearly displayed and easy for all students to see. Teachers should also remind children to refer to these resources whenever they need help or want to double-check their answers.

### AFTER GAME PLAY

**Checking Cards:** In classrooms with multiple groups, teachers can check a random sample of answers after each deck is played. However, by the end of the session, every group’s answers should be reviewed to get a clear picture of student understanding. Teachers are provided with answer keys to help quickly and accurately check responses.

**Tracking Children’s Progress:** Each teacher receives a session-wise tracking sheet to record how many answers each group got right. After gameplay, teachers should use the answer key to correct responses and fill in the sheet accurately. This helps track each student’s learning progress over time.

**Teacher to teacher learning:** To strengthen implementation, we recommend teachers stay connected with peers (such as through a shared WhatsApp group) to exchange tips, ask questions, and support one another in running the games effectively.



## KEEPING STUDENTS ENGAGED DURING THE GAMES

**Smooth transitions between activities are critical for keeping students engaged.** If time permits, teachers can replay games by reshuffling the cards, as this adds variety and gives students fresh exposure to problems. Grouping students by mixed abilities can be especially effective, as faster learners support their peers while reinforcing their own understanding.

When students struggle, it's useful for teachers to revisit the "I do, We do, You do" steps or re-explain the game decks before moving forward. For those who finish early, reshuffling cards, checking answers, or reviewing classmates' work keeps them engaged and encourages peer-to-peer learning. While it's fine to assist individual students when they're stuck, if many are struggling, it's better for teachers to repeat the setup for everyone.

**With a bit of flexibility and peer support, game transitions can stay interactive, inclusive, and fun for all learners.**

### INSIDE THE CLASSROOM

## KEY TAKEAWAYS

1. Every Child Counts is designed for children aged 4–6 and is suited for use in low-resource classrooms.
2. The program includes four structured games: Number Comparison, Find Shape, Find and Move, and Reading Maps.
3. Each session follows a simple four-step model: Introduction, I Do, We Do, and You Do, helping students move from guided to independent play.
4. Teachers lead short warm-up activities before each game, set up materials, guide group play, and encourage students to learn from each other.



## LEARNING OUTCOMES

This section helps you figure out if Every Child Counts is a good match for your setting. It highlights what needs to be in place for the program to work well, and when it might not be the best fit.

### EXPLORERS AND PROGRAM OWNERS

As a potential strategic partner, this section will help you:

- Decide if your context has the right conditions for Every Child Counts to succeed, and spot any signs that the program might not be the right fit.

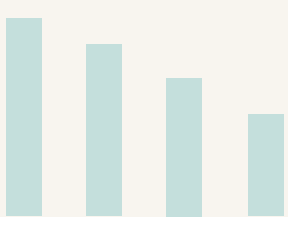

### PROGRAM IMPLEMENTERS

If you're preparing to implement Every Child Counts, this section will help you:

- Know what needs to be in place for the program to work in your context and classrooms.
- Learn how to adapt materials, train teachers, and monitor progress while staying true to the model.
- Understand when the program might not be suitable and what challenges to watch out for.



### 3. IS EVERY CHILD COUNTS RIGHT FOR YOU?



When deciding whether an education program will work in your setting, it's important to consider the local context. This section will help you assess if the Every Child Counts curriculum is a good fit for your context. Drawing on J-PAL's [generalizability framework](http://www.j-pal.org/ecc-generalizability-framework) ([www.j-pal.org/ecc-generalizability-framework](http://www.j-pal.org/ecc-generalizability-framework)), we'll highlight the key conditions that support successful implementation, as well as where the program may be less effective. By understanding what's necessary and what's good to have you'll be better equipped to decide if this program aligns with your goals and meets the needs of the communities you serve.

#### 3.1 Assess your Context

*Every Child Counts may be right for you if there is...*

- 1. Alignment with local educational needs:** Every Child Counts focuses on foundational numeracy skills, such as counting, number recognition, and understanding shapes, which are essential for children aged 4-6. If many students are struggling with these basic concepts, then Every Child Counts could be highly relevant and beneficial. It's also important to consider whether the state's education priorities include a focus on foundational learning and support for play-based pedagogies.
- 2. Adequate infrastructure and resources:** While the Every Child Counts curriculum is an inexpensive curriculum designed for resource-constrained environments, there are still necessary components for successful implementation. The school system or implementer must have the infrastructure to train teachers, procure, distribute, and store materials, and provide enough physical space in the classroom for students to successfully participate in the math games. These requirements are detailed further below.

## Where Every Child Counts may not achieve intended outcomes...

- 1. Misalignment with curriculum:** If the existing curriculum does not prioritize the development of numeracy skills or play-based pedagogies, such as number recognition and spatial abilities, then Every Child Counts may not be relevant. In such cases, students might not benefit from the program, as it does not align with their learning objectives.
- 2. Older children and advanced levels:** Every Child Counts is tailored for young children in kindergarten and Grade 1. It may not be suitable for older children who require different educational approaches.
- 3. Irregular attendance:** Consistent participation is crucial for the effectiveness of the curriculum. In contexts where large numbers of children are absent from school, the program may not achieve its intended outcomes and may not be suitable until attendance becomes more regular.

## 3.2 How to Implement Every Child Counts with Fidelity

### CONDITIONS FOR SUCCESS



#### Necessary conditions

- Gameplay requirements
- Time allocation
- Localization and adaptation
- Training (including practice)
- Packaging materials
- Monitoring
- Feedback to students



#### Good-to-have conditions

- Staggering the teacher training
- Enabling environment
- Timetable
- Tracking sheets

### Necessary Conditions for Success

#### 1. Gameplay Requirements:

**Order of gameplay:** The four games must be played in a specific sequence to align with their learning goals, especially ensuring Number Comparison precedes Find and Move (See *Annexure 2*). Pre-training must be completed before any game, regardless of the starting point.

**Order of decks:** The decks within each game must be played in the prescribed order to preserve the integrity and impact observed in the original evaluation. Decks increase in difficulty, so skipping or introducing them in the wrong order can lead to sub-optimal take-up. Randomizing or skipping decks is discouraged as it may compromise learning outcomes.

**Frequency of gameplay:** If the implementer decides to reduce the number of game materials, teachers must double the frequency of play to maintain the same impact as the original model. Any reduction in materials should be done systematically - for instance, it is not recommended to remove an entire deck, however, the number of similar cards within a deck can be reduced. Overall, children's exposure to the materials must remain consistent.

- 2. Time allocation:** Every Child Counts requires dedicated time for each game play and the decks associated with it. Ideally, games should be played for 45 minutes three times a week in a given classroom with sufficient time for group play and interaction. If the classroom schedule does not allow sufficient time for these activities, the program's effectiveness could be compromised, making it less appropriate in such situations.
- 3. Localization and adaptation:** Adapt the games to reflect local culture and curriculum so that children find the content relatable and engaging, which will bolster their learning. Partners may adapt materials within set guidelines noted above, but must not alter the core game model or remove essential elements to preserve educational integrity.
- 4. Training (including practice):** Teachers need comprehensive training from expert trainers to understand both how to facilitate the games and the educational reasoning behind them. This includes learning how to deliver pre-training exercises, posters, boards, and practice cards with fidelity. Training sessions should include structured opportunities for teachers to practice gameplay elements, particularly pre-training routines and poster usage. These practice sessions must be supervised by master trainers to ensure accurate understanding and delivery.
- 5. Packaging materials:** All materials — such as decks, manuals, and posters — should be printed, organized by deck, and packaged for easy classroom use. A custom gameplay box or package may be used to keep everything accessible and well-arranged for teachers.
- 6. Monitoring:** Partners should establish monitoring mechanisms to assess the fidelity and effectiveness of game implementation in classrooms. This may include classroom observations, teacher self-reports, or periodic review meetings to track progress and identify areas for support.
- 7. Feedback to students:** Teachers should check the answers of at least two groups per session, ensuring that students receive accurate feedback rather than relying on peer correction.

#### **“Good-to-have” Conditions for Success:**

- 1. Staggering the teacher training:** Teacher training may be conducted in two phases, covering two games in each round to allow for better absorption and practice. Partners are encouraged to supplement this with refresher workshops to reinforce learning and support long-term retention.
- 2. Enabling environment:** Support systems such as regular check-ins, peer learning groups, or a dedicated helpdesk should be set up to assist teachers with implementation challenges. These mechanisms help ensure timely resolution of issues and continuous improvement in delivery.
- 3. Timetable:** A detailed implementation plan should be developed, outlining the schedule for when each game will be introduced and in what sequence. This timetable should align with the academic calendar and allow sufficient time for pre-training and gameplay.
- 4. Tracking sheets:** Teachers should complete tracking sheets after each gameplay session to document progress and identify any deviations from the planned implementation. These records support monitoring, reflection, and data-driven decision-making throughout the intervention.

Details on common errors during implementation can be found in *Annexure 2*.



IS EVERY CHILD COUNTS RIGHT FOR YOU?

## KEY TAKEAWAYS

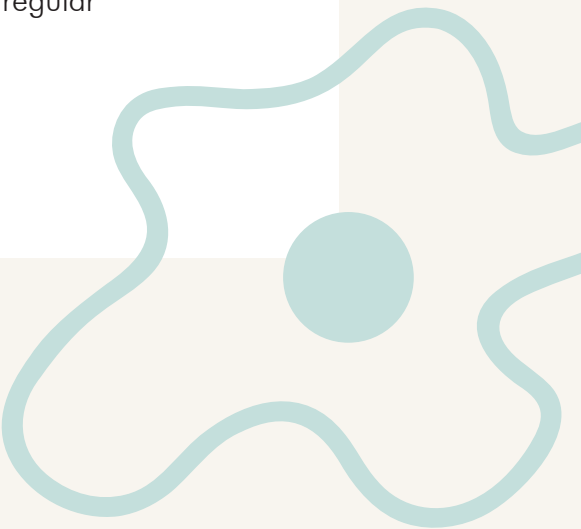
1. The success of Every Child Counts depends on local conditions. It works best where foundational numeracy is a priority, play-based learning is supported, and young children are struggling with basic math skills.
  2. While designed for low-resource settings, the program still requires basic infrastructure, like trained teachers, classroom space for group play, and systems to manage and store materials.
  3. The program is most effective when implemented as designed: 45-minute sessions, three times a week, with games played in a specific sequence and order. Skipping or rearranging elements can reduce its impact.
  4. Teachers need strong training to deliver the games effectively and understand the learning goals behind them.
  5. Localizing content to reflect cultural context is encouraged, but the core structure of the games must remain intact to preserve their educational value. Feedback to students and regular monitoring are also essential for success.
- 





Photo credit: Vatsala Sharma, J-PAL

## SECTION 4

# SCALING UP *EVERY CHILD COUNTS*

- 4.1 Pathways to Scale: Case Study of J-PAL South Asia's Journey in Expanding *Every Child Counts* across India
- 4.2 Core Elements for Successful Implementation at Scale
- 4.3. Key Cost Drivers for Scaling *Every Child Counts*

## LEARNING OUTCOMES

This section walks you through how to scale Every Child Counts through governments and NGOs, starting from small pilots to full-scale adoption. It draws on real-world lessons from across India to help you plan, adapt, and implement the program effectively at scale.

## EXPLORERS AND PROGRAM OWNERS

As a potential strategic partner, this section will help you:

- Draw on insights from J-PAL South Asia's experience in scaling Every Child Counts through governments and NGOs to:
  - Learn what it takes to move Every Child Counts from pilot to scale, and how to build government ownership along the way.
  - Identify key stakeholders and understand their roles in implementation.
- Understand the core elements that drive successful scale-up (such as teacher training, material procurement, and monitoring) and how to advocate for them.
- Plan for major cost areas and start thinking about how to embed Every Child Counts into government budgets and systems.

## PROGRAM IMPLEMENTERS

If you're preparing to implement Every Child Counts, this section will help you:

- Draw on insights from J-PAL South Asia's experience in scaling Every Child Counts through governments and NGOs to:
  - Learn how to design and run pilots that are contextually relevant and integrated with government systems.
  - Navigate roles and responsibilities across stakeholders to ensure coordinated delivery and accountability.
- Deliver hands-on, practice-based teacher training that builds confidence and classroom ownership.
- Gain insights into procurement timelines and how to ensure high-quality materials.
- Develop and implement monitoring systems using tools for observing teacher training and classrooms, as well as assessing teacher knowledge and student progress.
- Plan for and manage key implementation costs, including materials, training, and monitoring.



## 4. SCALING UP EVERY CHILD COUNTS

Before engaging with government stakeholders to pilot and scale up Every Child Counts, it's critical to first understand your context's policy priorities and education landscape. This includes analyzing enrollment trends and learning outcomes at the state, regional, district, or national level. You can find more details on how to assess whether Every Child Counts is the right fit for your context in *Section 3: Is Every Child Counts Right for You?*.

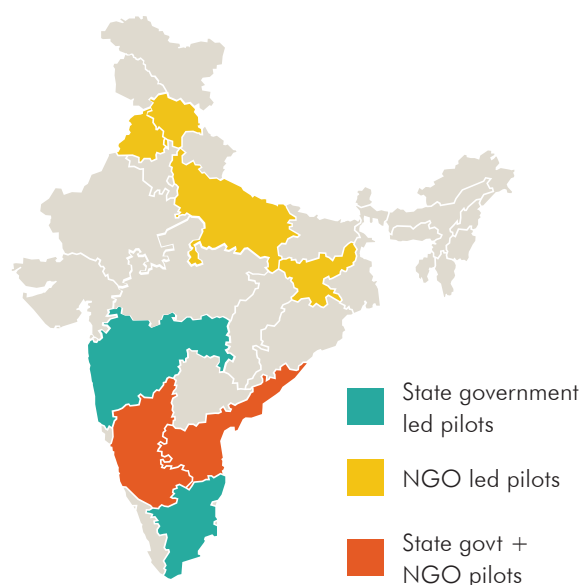
The section will walk you through how J-PAL South Asia piloted, tested, and scaled Every Child Counts in India through both government and NGO partnerships. Their pathways to scale will illustrate the importance of coordinating between partners, piloting before scaling, and defining clear roles for each stakeholder.

This will be followed by a deep dive into the core elements that drive success, and finally a breakdown of key cost drivers needed for implementation.

### 4.1. Pathways to Scale: Case Study of J-PAL South Asia's Journey in Expanding Every Child Counts across India

Between 2022 and 2025, J-PAL South Asia, in collaboration with state governments and four NGO partners, ran more than twelve pilots across nine Indian states to explore different pathways to scale Every Child Counts.

These pilots were closely monitored, capturing real-time data on training delivery, teacher feedback, curriculum integration, and classroom practices. This data directly shaped decisions on how to embed Every Child Counts into existing curriculums and refine teaching methods. J-PAL also brought together implementation partners and researchers to ensure that strategy stayed aligned with evidence.



These efforts have led to full-scale adoption in two states, with strong interest from three more. From 2025 to 2027, Every Child Counts is on track to reach nearly 40,000 schools and 500,000 students annually across Himachal Pradesh, Maharashtra, Andhra Pradesh, and Karnataka.

## CLEAR ROLES DRIVE COORDINATED SCALE-UP

When any program scales, defining responsibilities across key partners—J-PAL, NGOs, and the government—promotes efficiency, enforces accountability, and builds momentum. All these are ingredients for a sustainable scale-up. The graphic below offers a flexible framework to guide role alignment on the journey to scale.

| GOVERNMENT  | GOVERNMENT/NGO  | NGO/REGIONAL J-PAL<br>REGIONAL OFFICE   |
|---|---|---|
| <b>Implementation</b> <ul style="list-style-type: none"> <li>• Organisation of trainings for master trainers and master trainers to teachers</li> <li>• Budget allocation, printing &amp; distribution of materials</li> <li>• Internal monitoring</li> </ul> | <b>Curriculum &amp; Training</b> <ul style="list-style-type: none"> <li>• Training integration</li> <li>• Review systems and feedback</li> <li>• Capacity building</li> <li>• Program management support</li> <li>• Curriculum integration support</li> </ul> | <b>Monitoring &amp; Evaluation</b> <ul style="list-style-type: none"> <li>• External process monitoring &amp; pre-post evaluation</li> <li>• Knowledge transfer of M&amp;E frameworks and tools for systems integration</li> <li>• Continued support as a knowledge &amp; learning partner</li> </ul> |

There have been three distinct pathways to scale:

### 1. Large-Scale NGO-Led Implementation:

One pathway for scaling Every Child Counts is through **large scale NGOs**, that either have the capacity to implement at scale or have established government partnerships to do so. This approach is well-suited when the following **preconditions** exist:

- The NGO operates at scale and has a proven track record in implementing early childhood education programs.
- Institutionalized partnerships exist between the NGO and state governments.
- The NGO has funding mechanisms in place to support program implementation.
- The NGO has the capacity to embed new programs into existing curriculum and systems.

In this model, **J-PAL SA partnered with the Pratham Education Foundation to pilot Every Child Counts in Delhi, Punjab, and Himachal Pradesh**. Pratham has long-standing engagements with state governments in these regions, with a history of supporting early childhood education through curriculum design, teacher training, and on-the-ground implementation. Pratham leveraged these partnerships and embedded Every Child Counts into existing training systems and curriculums, while collecting feedback from field staff and district officials to refine the approach.



**Over three rounds of pilots, J-PAL SA worked closely with Pratham to gradually transfer program knowledge.** Each phase was carefully monitored to ensure fidelity to the evidence, while steadily increasing Pratham's ownership.

Looking ahead to the 2025-2026 academic year, Pratham is set to roll out the integrated program state-wide in Himachal Pradesh and Punjab, while continuing to explore opportunities in Delhi.

### A WELL-DESIGNED PILOT IS YOUR LAUNCHPAD!

Pilots show what's possible, builds trust, and sets the stage for scale. We recommend a multi-stage approach:

#### ROADMAP: FROM PILOT TO SCALE

##### First stage pilot

**Goal:** Demonstrate how program works by integrating with existing government systems. Monitor process rigorously!

**Outcome:** Adaptation to local contexts and integration into government systems.

##### Second stage pilot

**Goal:** Enable government stakeholders to deliver program independently by transferring knowledge and ownership, and embedding processes for monitoring.

**Outcome:** State-sustained program delivery and monitoring.

##### Scale up

**Goal:** Drawing on learnings from pilot phases, program can be scaled and integrated into classrooms, state-level structures, and national policies.

**Outcome:** Contextually-relevant integration and scaling.

- The first-stage pilot demonstrates proof of concept. It allows for meaningful adaptation to local contexts and integration with government systems, laying the groundwork for funding and long-term adoption. Rigorous monitoring during this phase builds trust and buy-in from key stakeholders.
- The second-stage pilot enables government ownership. With the transfer of knowledge, provision of continued support, and embedding of monitoring systems, this phase ensures the program can be delivered independently and sustained with fidelity. Continuous iteration and adaptation (e.g., using monitoring data, A/B testing) are key to ensuring that impact can be sustained while scaling.
- Drawing on insights and stakeholder engagement from both pilot phases, the program can be scaled more broadly. Ongoing internal and external monitoring is essential to preserving fidelity throughout the scale-up.

## 2. Government-Led Implementation:

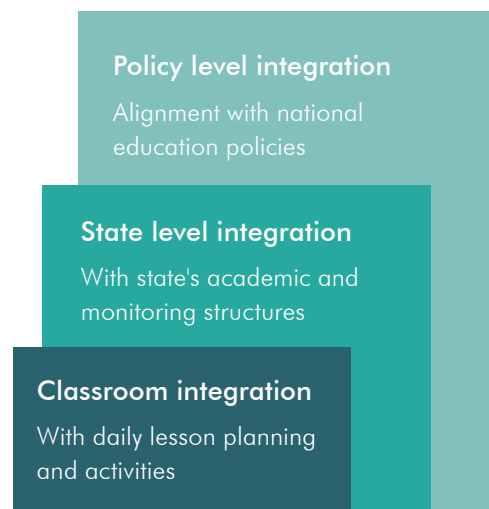
Another pathway for scaling Every Child Counts is through **government-led implementation**. This approach is particularly effective when the following **preconditions exist**:

- The program aligns closely with the state's policy priorities on foundational learning.
- Institutionalized government partnerships exist or can be established, supported by policy champions with decision making power who can advocate for and advance the program.
- Government stakeholders are willing to commit financial and human resources to support implementation.
- There is a strong commitment from the government to build internal capacity, integrate the program into existing systems, and gradually take full ownership of implementation.

In this model **J-PAL SA developed direct partnerships with state governments in Maharashtra and Andhra Pradesh**. In these states, J-PAL SA worked with government bodies to pilot the program, transfer knowledge, and build internal capacity for long-term ownership.

**In Maharashtra**, J-PAL SA collaborated with the M-SCERT, the state's curriculum and training authority. Since 2022, M-SCERT has piloted the program in 400 schools across six districts, adapting it to the local curriculum and training systems. As M-SCERT's capacity grew, J-PAL SA's role shifted into that of a knowledge partner. In 2025, M-SCERT plans to scale the program to 1,500 schools using government funding. During this scale-up, J-PAL SA will focus on strengthening state capacity and embedding monitoring and evaluation frameworks into existing government systems.

**In Andhra Pradesh**, the partnership has expanded to include Pratham, which leads teacher training across the state through the World Bank-funded SALT (Supporting Andhra's Learning Transformation) program. Every Child Counts training will be delivered through SALT, while J-PAL SA continues to advocate to provide Every Child Counts materials to all Grade 1 classrooms. This work is currently supported by ASPIRE.



## SCALING REQUIRES STRATEGIC RELATIONSHIP-BUILDING

Success hinges on engaging a wide range of stakeholders during the piloting phase to align priorities and secure long-term support. The table below maps key actors and focus areas to help implementation teams navigate complexity and drive coordinated scale-up.

### KEY STAKEHOLDERS AND SUGGESTED PRIORITIES

| STAKEHOLDER   | PRIORITIES  | ANTICIPATED CHALLENGES   | POTENTIAL SOLUTIONS TO CHALLENGES   |
|---|---|--|---|
| <b>Senior Policy Maker</b><br>(Decision maker)                            | Aligning with policy goals  | Balancing multiple priorities  | Share evidence and monitoring results to show impact  |
| <b>Nodal Point of Contact</b><br>(Convener & Coordinator)                 | Timely execution and delivering results to senior policymakers  | Managing multiple projects across subjects and grades  | Provide program management support  |
| <b>Curriculum Body</b><br>(Content experts & classroom integration leads) | Alignment with national and state level curricular frameworks—building a continuum of education across grades | Every Child Counts curriculum could challenge traditional learning goals for Grade 1   | Exposure to examples of integrations, case studies, learning outcomes targeted by Every Child Counts                  |
| <b>Master Trainers</b><br>(Pedagogical mentors)                           | Pedagogical alignment   | Shift of a teacher’s role from traditional teaching to facilitation may feel unfamiliar  | Include hands-on practice in trainings, explain the “why” behind the approach, and share relevant pedagogy literature |
| <b>Teachers</b><br>(Frontline implementers)                               | Improve student learning  | Initial resistance to adapting to a gameplay-based approach; Balancing administrative tasks with classroom demands; taking a facilitator based approach as opposed to traditional teacher led classrooms | Offer practical tools—manuals, videos, and mentor support—to support implementation                                   |
| <b>Monitors</b><br>(In-field support)                                     | Collecting timely, accurate data and providing support  | Existing systems focus on inputs, not learning outcomes  | Build capacity and integrate outcome-based monitoring into existing systems   |

### 3. Empowering Regional NGOs to Lead Implementation:

The final pathway focuses on **empowering regional NGOs** to implement Every Child Counts within their own contexts by **building their capacity** and supporting them in **establishing relationships with state governments**. Unlike the first pathway, where a large NGO leads implementation, this approach is better suited for a coalition of smaller organizations that require additional support. This approach can be leveraged when:

- NGOs are seeking to expand their programming to include foundational numeracy;
- There are emerging NGOs with regional expertise, that require support in government engagement and fundraising;
- There is a broader need to strengthen the ecosystem of implementers to ensure wider reach of the program

As a part of this approach, J-PAL South Asia is conducting **certificate courses with strategically selected regional NGOs** across India. As part of the first cohort, J-PAL partnered with TiTLi (Jharkhand), Centre for Learning Resources (Uttar Pradesh), and Key Education Foundation (Karnataka), to pilot Every Child Counts in thirty government schools and Anganwadi (rural child care centers) classrooms.

The insights from this experience are available in this [report](http://www.j-pal.org/NGO-cascade-model) (www.j-pal.org/NGO-cascade-model), which outlines the development of the certification course, the activities carried out during the first cohort, and key learnings from the implementation pilots led by the three organizations.

If you are interested in implementing Every Child Counts, or if you would like to empower other organizations to do so, we invite you to partner with J-PAL South Asia.

Contact details are available in the Contacts section at the beginning of this toolkit.



## 4.2. Core Elements for Successful Implementation at Scale

Across all pathways of scaling Every Child Counts, scaling the curriculum with fidelity requires a strong **focus on core elements** like hands-on teacher training, timely procurement of high quality materials, and setting up robust systems to monitor teachers and students. As briefly outlined in *Section 3: Is Every Child Counts Right for You*, this section takes a closer look at what it takes to get these essentials right.



Photo credit: Harini Kannan, J-PAL

### 1. Hands-On Teacher Trainings

Unlike many foundational numeracy programs that simply hand out learning kits, **Every Child Counts places teacher training at the center of its approach**. While educational kits and manipulatives are common, what sets the program apart is its **mandatory, hands-on training** that equips teachers not just with tools, but with purpose.

During trainings, teachers learn what to do and why it works. They're introduced to the games and the cognitive science behind them, grounded in research on how children learn through play. This understanding helps teachers use the games not just as fun activities, but as **intentional tools** for improving learning outcomes.

The training is **practice-based and interactive**. Teachers play the games, reflect on their use, and build confidence in facilitation techniques. This approach fosters a sense of ownership and keeps sessions lively and engaging. To support long-term impact, we recommend supplementing the training with **short instructional videos in local languages**. These serve as quick refreshers that teachers can revisit anytime for tips and guidance.

Beyond building familiarity with the program and pedagogy, teacher training should also **lay the groundwork for a strong community of practice**. Teachers can be encouraged to stay connected through WhatsApp groups or similar platforms, to celebrate classroom successes, reflect on challenges, and share practical tips, encouraging ongoing learning. This also builds ownership and helps ensure that implementation stays collaborative.

A sample training agenda has been included in *Annexure 4* of this toolkit. Instructional videos tailored to the Indian classroom context (in Hindi) are available upon request to J-PAL South Asia. Please refer to the Contacts section at the beginning of this toolkit.

## 2. Timely Procurement of High-Quality Materials and Supplies

To ensure a smooth classroom launch, **material procurement should begin at least two months before implementation**. This allows enough time for printing, packaging, distribution, and classroom setup. It's important to start this process before training teachers to avoid long gaps between the training and classroom use, as such delays can slow momentum and reduce program impact.

Paying close attention to the **quality of materials**, from paper thickness to packaging, also helps maintain program fidelity and ensures the materials last across multiple academic cycles. The cards themselves must not be resized to avoid distorting geometric shapes.

J-PAL South Asia is developing an online repository of game materials, which will be accessible upon request to J-PAL South Asia. Please refer to the Contacts section at the beginning of this toolkit.

## 3. Setting Up Robust Monitoring Systems

Successful implementation relies on the availability of **timely, actionable, and high quality data**. To make sure Every Child Counts is **working as intended** and **improving over time**, program implementers should carry out a series of monitoring activities during both the pilot and scale-up phases.

### Teacher-Training Observation Tool

- **Goal:** Ensure high-quality delivery of teacher training
- **What it measures:** Effectiveness and quality of training content and delivery

### Post Teacher-Training Assessments

- **Goal:** Ensure teachers have understood and retained training content
- **What it measures:** Content knowledge and application-based questions

### Classroom Observation Tool

- **Goal:** Ensure Every Child Counts curriculum is delivered as intended
- **What it measures:** Classroom dynamics including game facilitation, use of materials, student engagement, and feedback practices

### Student Assessments

- **Goal:** Track learning outcomes
- **What it measures:** Symbolic and non-symbolic numeracy skills

This data serves **two key purposes**:

- It helps teams **adapt** the program to local needs through continuous learning.
- It supports **advocacy** with senior government officials, building momentum and buy-in for scale.

The following sections highlight the key tools used to monitor implementation and assess learning outcomes. These tools can be accessed upon request to J-PAL South Asia - they can be used by implementers directly, or adapted to best suit the specific context.

## Teacher-Training Observation Tool

**Purpose:** To ensure high-quality delivery of teacher training.

**Why it matters:** The observation tool helps ensure that the teacher training is not only delivered as planned but also continuously improved based on real-time feedback.

**When is it used:** During teacher, master trainer, and DIET staff<sup>7</sup> training sessions conducted by government and NGO partners.

**What it measures:** The tool captures a range of training dimensions, including the quality and delivery of the training content, facilitation techniques used, and logistics (e.g., availability of sound systems, projectors etc.). The questionnaire is organized into ten sections, each focused on a specific math game.

**Who administers it:** Trained observers fill out the tool during live training sessions. Consent is obtained from trainers before observations begin.

## Post Teacher-Training Assessment

**Purpose:** To measure how well the training was understood and retained by teachers.

**Why it matters:** The assessment results can help identify areas that need strengthening in future training cycles.

**When is it used:** The assessment is administered to teachers, DIET staff, Key Resource Persons, District Resource Persons, and Master Trainers who received training either directly from J-PAL South Asia or through NGO/government partners. Ideally, it should be conducted on-site at the end of the training. If that's not feasible, it can be administered online within 3–5 days.

**What it measures:** The assessment includes a mix of content-based and application-oriented questions, divided into four sections: i) Administrative Questions, ii) General Education Questions, iii) Math Games-Specific Questions, iv) Participant Feedback.

**Who administers it:** The assessment is a self-reported form filled out by trainees. It is distributed either by the training organizers or by trained observers.

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<sup>7</sup> DIET - District Institutes of Education and Training

## Classroom Observation Tool

**Purpose:** To ensure the Every Child Counts curriculum is delivered as intended.

**Why it matters:** Classroom observations provide a comprehensive picture of program implementation by identifying trends, highlighting successes, and flagging areas for improvement.

**When is it used:** The tool is used during classroom sessions to track how well the program is being implemented. Monitors observe the session without interacting with teachers or students. Instead, they quietly record what they see using a structured questionnaire.

**What it measures:** The tool is divided into twelve sections, each focused on a specific component of the curriculum. It captures a range of classroom dynamics, including: game facilitation and material usage by teachers, student engagement, and feedback mechanisms in place.

**Who administers it:** Monitoring officials (who are trained on the curriculum) complete the classroom observation tool during their visits.

## Student Assessments

**Goal:** To track student learning outcomes effectively.

**Why it matters:** Learning outcomes play a crucial role in evaluating program impact and informing policy decisions.

**When is it used:** Student assessments are conducted at both the baseline and endline stages of the program to measure progress over time.

**What it measures:** The program uses a mix of symbolic and non-symbolic assessments to evaluate key numeracy skills, including number sense, vocabulary, spatial reasoning, and mental math. Standardized tools such as Panamath, Point-to-Number, and Geometric Intruder help measure progress consistently across different phases. Assessments should be adapted to the local context to ensure they are accurate and accessible.

**Who administers it:** Teachers or monitoring officials (who are trained on the curriculum and assessments) conduct one-on-one assessments with students.



### 4.3. Key Cost Drivers for Scaling Every Child Counts

Scaling Every Child Counts requires clear **budget alignment with government partners**. The **key cost drivers** are outlined in the table below. It's important to agree early on the details of these cost drivers (like unit costs, quantities, and how funds will flow) and document them during the planning phase. Over time, the goal is to **embed these costs into existing government budgets** to ensure long-term sustainability and reduce reliance on external funding.

| KEY COST DRIVERS OF SCALING EVERY CHILD COUNTS   |   |   |   |
|--|---|---|---|
| Cost driver                                      | Details   | Key expenses  | Frequency of incurring costs  |
| <b>1. Printing and Distributing Materials</b>    | Cost of kits with math games cards, game boards, visual aids, and teacher tracking sheets           | Classroom level kits for students, teachers, and kits for master trainers | Kits can be used for at least three years   |
| <b>2. Training Master Trainers</b>               | Costs to conduct a 4 day in-person training for master trainers                                     | Travel allowances and daily stipends for master trainers                  | One time cost—annual refresher trainings can be conducted online/using videos         |
| <b>3. Classroom Practice for Master Trainers</b> | Costs for master trainers to practice the games in classrooms to gain hands-on experience           | Travel allowances and daily stipends for master trainers                  | One time cost   |
| <b>4. Cascade Teacher Trainings</b>              | Costs for a 4-day in-person cascade training. Each master trainer can train over 20 teachers        | Travel allowances and daily stipends for master trainers and teachers     | One time cost—annual refresher trainings can be conducted online/using videos         |
| <b>5. Program Monitoring</b>                     | Covers costs for monitoring officials to visit classrooms, observe implementation, and collect data | Travel allowances and daily stipends for monitoring officials             | Recurring cost—can be integrated into existing monitoring systems to reduce over time |

Every Child Counts has been piloted in government school classrooms across nine Indian states and is now beginning to scale in several of them. As the program has expanded in India, material costs have also declined. **Game materials can cost as little as USD 1.81 per student per year, making the program highly cost-effective.**

Below is an **indicative cost breakdown** for math game materials required in one classroom, **based on a scale of 50 schools (requiring 50 kits) in New Delhi, India**. A detailed breakdown in both USD and Indian Rupees is available in *Annexure 3*.

Please note that costs may vary depending on the local context, and implementers are encouraged to conduct a context-specific cost assessment.

| MATH GAMES MATERIALS   |                                      |                     |                        |
|--|--------------------------------------|---------------------|------------------------|
| Category   | Type of materials                    | Costs per classroom |                        |
|  |                                      | INR                 | USD<br>\$1 USD: 84 INR |
| <b>1. Student Kit</b><br><br><i>Assuming 32 students per class</i>                                     | Student game cards                   | 10,048              | 119.62                 |
|  | Student game board                   | 96                  | 1.14                   |
|  | <b>Total cost of the student kit</b> | <b>10,144</b>       | <b>120.76</b>          |
| <b>2. Teacher Kit</b><br><br><i>Assuming 1 teacher kit required per classroom</i>                      | Teacher Practice cards               | 1,200               | 14.29                  |
|  | Teacher Practice boards              | 120                 | 1.43                   |
|  | Class posters                        | 904                 | 10.76                  |
|  | Pre-training cards                   | 160                 | 1.90                   |
|  | Teacher Manuals and Tracking Sheets  | 190                 | 2.26                   |
|  | <b>Total cost of the teacher kit</b> | <b>2,574</b>        | <b>30.64</b>           |
| <b>3. Stationery</b>   | <b>Total cost of stationery</b>      | <b>1,840</b>        | <b>21.90</b>           |
| <b>Total cost per classroom</b>  |                                      | <b>14,558</b>       | <b>173.31</b>          |
| <b>Per Student Cost</b><br><br><i>Assuming the kit is used for 3 years, with 32 students each year</i> |                                      | <b>152</b>          | <b>1.81</b>            |

#### SCALING UP EVERY CHILD COUNTS

## KEY TAKEAWAYS

1. In India, Every Child Counts has been scaled through large-scale NGOs and state governments. J-PAL South Asia is also strengthening the ecosystem of implementers by conducting certification courses with strategically selected regional NGOs.
2. Starting with small pilots helps adapt the program to local needs and build trust with stakeholders. In the next phase, ownership should be transferred to government partners, followed by scale-up with continued support and monitoring.
3. Clearly defined roles and responsibilities help keep implementation coordinated and accountable. Use stakeholder mapping to identify key actors across government and NGO systems.
4. Focusing on the core elements that make the program effective is critical: hands-on teacher training, timely procurement of high-quality materials, and strong monitoring systems that track both delivery and learning outcomes.
5. It is also important to plan early for key costs such as materials, training, and monitoring. Collaborate with government partners to embed these costs into existing budgets to support long-term sustainability.
6. Game materials for the curriculum can cost as little as USD 1.81 per student, making the program highly cost-effective.

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NOTES

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## SECTION 5

# ANNEXES

5.1 Annexure 1: Evidence from Randomised Evaluations of Every Child Counts

5.2 Annexure 2: Common Errors During the Implementation of Math Games

5.3 Annexure 3: Detailed Implementation Costs

5.4 Annexure 4: Sample Training Agenda

5.5 Annexure 5: Session Plan



## ANNEXURE 1: EVIDENCE FROM RANDOMISED EVALUATIONS OF EVERY CHILD COUNTS

| 1. RANDOMIZED EVALUATION TO TEST PROOF OF CONCEPT   |   |                  |                |                  |           |          |          |           |          |       |           |          |       |         |                |                  |           |          |       |           |       |       |           |      |      |
|---|---|------------------|----------------|------------------|-----------|----------|----------|-----------|----------|-------|-----------|----------|-------|---------|----------------|------------------|-----------|----------|-------|-----------|-------|-------|-----------|------|------|
| Year  | 2013-15   |                  |                |                  |           |          |          |           |          |       |           |          |       |         |                |                  |           |          |       |           |       |       |           |      |      |
| Hypothesis  | <ul style="list-style-type: none"><li>Children in low-resource settings - living with caregivers who lack formal schooling and without access to learning materials like books or board games - may benefit from playing games that build their intuitive numeracy skills.</li><li>When played in groups with support from trained teachers, the games can help children better understand numeracy concepts and prepare them for formal math learning in school.</li></ul> |                  |                |                  |           |          |          |           |          |       |           |          |       |         |                |                  |           |          |       |           |       |       |           |      |      |
| Study details   | <ul style="list-style-type: none"><li>The randomized evaluation tested the Every Child Counts curriculum with 1,200 children across 71 Pratham preschools.</li><li>Another 71 preschools received a different curriculum focused on social cognitive abilities.</li><li>72 preschools were part of a comparison group that did not receive either curriculum.</li></ul>   |                  |                |                  |           |          |          |           |          |       |           |          |       |         |                |                  |           |          |       |           |       |       |           |      |      |
| Results   | <ul style="list-style-type: none"><li>Children who played non-symbolic math games (focused on intuitive skills, without using numbers) showed clear and lasting improvements in their intuitive math skills compared to those who didn't play any games.</li><li>However, the effect of these games on symbolic math skills (formal math that is typically taught in schools) were only seen right after the games ended and didn't last over time.</li></ul>               |                  |                |                  |           |          |          |           |          |       |           |          |       |         |                |                  |           |          |       |           |       |       |           |      |      |
| <div><div><h3>Z-Scores of Non-Symbolic Composite</h3><table><thead><tr><th>Endline</th><th>Math treatment</th><th>Social treatment</th></tr></thead><tbody><tr><td>Endline 1</td><td>0.415***</td><td>0.164***</td></tr><tr><td>Endline 2</td><td>0.287***</td><td>0.023</td></tr><tr><td>Endline 3</td><td>0.322***</td><td>0.075</td></tr></tbody></table></div><div><h3>Z-Scores of Symbolic Composite</h3><table><thead><tr><th>Endline</th><th>Math treatment</th><th>Social treatment</th></tr></thead><tbody><tr><td>Endline 1</td><td>0.132***</td><td>0.044</td></tr><tr><td>Endline 2</td><td>0.025</td><td>0.005</td></tr><tr><td>Endline 3</td><td>0.04</td><td>0.05</td></tr></tbody></table></div></div> <p>Error bars represent 95% confidence intervals. Statistically significant difference relative to the comparison group is noted at the 1% (***), 5% (**), or 10% (*) level.</p> <p>Source: Dillon, Moira R., Harini Kannan, Joshua T. Dean, Elizabeth S. Spelke, and Esther Duflo. "Cognitive Science in the Field: A Preschool Intervention Durably Enhances Intuitive but Not Formal Mathematics." <i>Science</i> 357, no. 6346 (July 7, 2017): 47–55. <a href="https://doi.org/10.1126/science.aal4724">https://doi.org/10.1126/science.aal4724</a>.</p> |   | Endline          | Math treatment | Social treatment | Endline 1 | 0.415*** | 0.164*** | Endline 2 | 0.287*** | 0.023 | Endline 3 | 0.322*** | 0.075 | Endline | Math treatment | Social treatment | Endline 1 | 0.132*** | 0.044 | Endline 2 | 0.025 | 0.005 | Endline 3 | 0.04 | 0.05 |
| Endline   | Math treatment  | Social treatment |                |                  |           |          |          |           |          |       |           |          |       |         |                |                  |           |          |       |           |       |       |           |      |      |
| Endline 1   | 0.415***  | 0.164***         |                |                  |           |          |          |           |          |       |           |          |       |         |                |                  |           |          |       |           |       |       |           |      |      |
| Endline 2   | 0.287***  | 0.023            |                |                  |           |          |          |           |          |       |           |          |       |         |                |                  |           |          |       |           |       |       |           |      |      |
| Endline 3   | 0.322***  | 0.075            |                |                  |           |          |          |           |          |       |           |          |       |         |                |                  |           |          |       |           |       |       |           |      |      |
| Endline   | Math treatment  | Social treatment |                |                  |           |          |          |           |          |       |           |          |       |         |                |                  |           |          |       |           |       |       |           |      |      |
| Endline 1   | 0.132***  | 0.044            |                |                  |           |          |          |           |          |       |           |          |       |         |                |                  |           |          |       |           |       |       |           |      |      |
| Endline 2   | 0.025   | 0.005            |                |                  |           |          |          |           |          |       |           |          |       |         |                |                  |           |          |       |           |       |       |           |      |      |
| Endline 3   | 0.04  | 0.05             |                |                  |           |          |          |           |          |       |           |          |       |         |                |                  |           |          |       |           |       |       |           |      |      |
| Learnings   | <ul style="list-style-type: none"><li>Playing games that focused on non-symbolic (intuitive) math abilities, had a lasting impact on these skills. However, they didn't improve symbolic (formal) math abilities.</li><li>Researchers took into account that the games could be more effective if they better connected children's non-symbolic (intuitive) math abilities with symbols and language used in school.</li></ul>  |                  |                |                  |           |          |          |           |          |       |           |          |       |         |                |                  |           |          |       |           |       |       |           |      |      |

## 2. RANDOMIZED EVALUATION TO TEST THE MODIFIED CURRICULUM

| Year   | 2015-17  |                    |                       |                    |                 |           |          |          |          |           |         |        |       |           |       |         |         |
|--|--|--------------------|-----------------------|--------------------|-----------------|-----------|----------|----------|----------|-----------|---------|--------|-------|-----------|-------|---------|---------|
| Hypothesis   | <ul style="list-style-type: none"><li>When played in groups with trained teachers, transition games designed to connect non-symbolic (intuitive) math skills with the symbols and language used in school may build children’s numeracy skills. This, in turn, supports later learning of formal math in school.</li></ul> |                    |                       |                    |                 |           |          |          |          |           |         |        |       |           |       |         |         |
| Study details  | <ul style="list-style-type: none"><li>In 2015–16, the modified curriculum with transition games included in one of three treatment arms was tested in 174 Pratham preschools in Delhi, reaching 1,500 children.</li><li>57 preschools were part of a comparison group that did not receive any curriculum.</li></ul>       |                    |                       |                    |                 |           |          |          |          |           |         |        |       |           |       |         |         |
| Results  | <ul style="list-style-type: none"><li>Transition games had a strong impact on both non-symbolic (intuitive) and symbolic (formal) math skills immediately after the program was implemented. More importantly, the improvements strengthened and persisted one year after the program ended.</li></ul>                     |                    |                       |                    |                 |           |          |          |          |           |         |        |       |           |       |         |         |
| <div><p><b>Z-Scores of Symbolic Composite</b></p><table><thead><tr><th>Time Point</th><th>Nonsymbolic treatment</th><th>Symbolic treatment</th><th>Mixed treatment</th></tr></thead><tbody><tr><td>Endline 1</td><td>0.155***</td><td>0.193***</td><td>0.189***</td></tr><tr><td>Endline 2</td><td>0.095**</td><td>0.087*</td><td>0.057</td></tr><tr><td>Endline 3</td><td>0.048</td><td>0.093**</td><td>0.085**</td></tr></tbody></table><p>■ Nonsymbolic treatment   ■ Symbolic treatment   ■ Mixed treatment</p></div> <p>Error bars represent 95% confidence intervals. Statistically significant difference relative to the comparison group is noted at the 1% (***), 5% (**), or 10% (*) level.</p> <p>Please reach out to J-PAL SA for additional information.</p> |  | Time Point         | Nonsymbolic treatment | Symbolic treatment | Mixed treatment | Endline 1 | 0.155*** | 0.193*** | 0.189*** | Endline 2 | 0.095** | 0.087* | 0.057 | Endline 3 | 0.048 | 0.093** | 0.085** |
| Time Point   | Nonsymbolic treatment  | Symbolic treatment | Mixed treatment       |                    |                 |           |          |          |          |           |         |        |       |           |       |         |         |
| Endline 1  | 0.155***   | 0.193***           | 0.189***              |                    |                 |           |          |          |          |           |         |        |       |           |       |         |         |
| Endline 2  | 0.095**  | 0.087*             | 0.057                 |                    |                 |           |          |          |          |           |         |        |       |           |       |         |         |
| Endline 3  | 0.048  | 0.093**            | 0.085**               |                    |                 |           |          |          |          |           |         |        |       |           |       |         |         |
| Learnings  | <ul style="list-style-type: none"><li>The study showed that transition games combining non-symbolic (intuitive) and symbolic (formal) math content can lead to lasting gains in symbolic (formal) math.</li></ul>  |                    |                       |                    |                 |           |          |          |          |           |         |        |       |           |       |         |         |

### 3. RANDOMIZED EVALUATION TO TEST IMPLEMENTATION IN GOVERNMENT CLASSROOMS

| <b>Year</b>  | 2015-17   |          |       |                    |          |                        |          |                            |       |          |       |                    |          |                        |          |                            |         |
|--|---|----------|-------|--------------------|----------|------------------------|----------|----------------------------|-------|----------|-------|--------------------|----------|------------------------|----------|----------------------------|---------|
| <b>Hypothesis</b>  | <ul style="list-style-type: none"> <li>When implemented in government school classrooms with larger class sizes, the modified curriculum will maintain its impact on both non-symbolic (intuitive) and symbolic (formal) math skills.</li> </ul>  |          |       |                    |          |                        |          |                            |       |          |       |                    |          |                        |          |                            |         |
| <b>Study details</b>   | <ul style="list-style-type: none"> <li>After the first two RCTs showed proof of concept, a final version of the curriculum was tested in 2017–19. It was implemented in Kindergarten and Grade 1 classrooms across 71 government schools in Delhi, reaching around 1,200 children.</li> </ul> |          |       |                    |          |                        |          |                            |       |          |       |                    |          |                        |          |                            |         |
| <b>Results</b>   | <ul style="list-style-type: none"> <li>The games had a strong impact on symbolic (formal) math outcomes for both Kindergarten and Grade 1 students.</li> </ul>  |          |       |                    |          |                        |          |                            |       |          |       |                    |          |                        |          |                            |         |
| <div> <div> <h4>Kindergarten Scores</h4> <table border="1"> <thead> <tr> <th>Category</th> <th>Score</th> </tr> </thead> <tbody> <tr> <td>All math composite</td> <td>0.112***</td> </tr> <tr> <td>All symbolic composite</td> <td>0.125***</td> </tr> <tr> <td>All non-symbolic composite</td> <td>0.067</td> </tr> </tbody> </table> </div> <div> <h4>Grade 1 Scores</h4> <table border="1"> <thead> <tr> <th>Category</th> <th>Score</th> </tr> </thead> <tbody> <tr> <td>All math composite</td> <td>0.110***</td> </tr> <tr> <td>All symbolic composite</td> <td>0.107***</td> </tr> <tr> <td>All non-symbolic composite</td> <td>0.104**</td> </tr> </tbody> </table> </div> </div> <p>Error bars represent 95% confidence intervals. Statistically significant difference relative to the comparison group is noted at the 1% (***), 5% (**), or 10% (*) level.</p> <p>Please reach out to J-PAL SA for additional information.</p> |   | Category | Score | All math composite | 0.112*** | All symbolic composite | 0.125*** | All non-symbolic composite | 0.067 | Category | Score | All math composite | 0.110*** | All symbolic composite | 0.107*** | All non-symbolic composite | 0.104** |
| Category   | Score   |          |       |                    |          |                        |          |                            |       |          |       |                    |          |                        |          |                            |         |
| All math composite   | 0.112***  |          |       |                    |          |                        |          |                            |       |          |       |                    |          |                        |          |                            |         |
| All symbolic composite   | 0.125***  |          |       |                    |          |                        |          |                            |       |          |       |                    |          |                        |          |                            |         |
| All non-symbolic composite   | 0.067   |          |       |                    |          |                        |          |                            |       |          |       |                    |          |                        |          |                            |         |
| Category   | Score   |          |       |                    |          |                        |          |                            |       |          |       |                    |          |                        |          |                            |         |
| All math composite   | 0.110***  |          |       |                    |          |                        |          |                            |       |          |       |                    |          |                        |          |                            |         |
| All symbolic composite   | 0.107***  |          |       |                    |          |                        |          |                            |       |          |       |                    |          |                        |          |                            |         |
| All non-symbolic composite   | 0.104**   |          |       |                    |          |                        |          |                            |       |          |       |                    |          |                        |          |                            |         |
| <b>Learnings</b>   | <ul style="list-style-type: none"> <li>The study showed that the modified curriculum worked well even in regular government classrooms with larger class sizes, reflecting how it may perform at scale.</li> </ul>  |          |       |                    |          |                        |          |                            |       |          |       |                    |          |                        |          |                            |         |

These papers have not yet been publicly released, so there is no public source to link to. The name of the joint draft paper is: Joshua T. Dean, Dillon, Moira R., Esther Dufo, Harini Kannan, Elizabeth S. Spelke. "Cognitive Science at Scale: A playful mathematics curriculum pairing symbolic and intuitive training durably enhances poor children's learning of mathematics"



## ANNEXURE 2: COMMON ERRORS DURING THE IMPLEMENTATION OF MATH GAMES

### Errors to Avoid During the Game Set-Up

**Introduction** — This is where the teacher introduces the game to the students.

- Refrain from switching the order of the main decks during gameplay. They are designed to be used sequentially to ensure a gradual increase in difficulty.
- Avoid using only one type of material during the introduction.
- Avoid using cards from the main deck to introduce the game.

**“I do”** — This is where the teacher demonstrates the game to all the students.

- Use practice cards for the demonstration, not the main deck cards.
- Do not skip the demonstration when introducing the second round of main deck cards during a session.
- Avoid involving only one or a few students repeatedly. Ensure the demonstration engages the entire class.
- Present the demonstration in a way that is clearly visible to all students.

**“We do”** — This is the step where the teacher engages the entire class in a shared demonstration of the game.

- Use all the practice cards from the respective deck during this step. Avoid completing the demonstration with only one or a few cards.
- Ensure all students are actively involved. Do not limit participation to just one or a few students. This step helps students understand the game mechanics thoroughly before beginning gameplay.

**“You do”** — This is where the teacher distributes the materials and asks the children to play the games in groups of four.

- Do not mismatch practice cards and main deck cards. Teachers should demonstrate the exact deck to be played in the gameplay session.
- Do not use practice cards for gameplay. Students should only use the main deck cards during this step.
- Provide one full set of the main deck to each group. Do not distribute just one deck for the entire class.
- Each group should also receive their own set of materials (e.g., baskets, trays, game boards). Avoid sharing a single set across the class.
- Do not write or draw on the cards. Use the game boards for any markings.
- Organize students into groups of four and ensure all students participate, not just a few high performers.
- Teachers should provide constructive feedback to groups as they check answers. This helps students learn from their mistakes and improve.

## Errors to Avoid When Playing Each Game

### Number Comparison

- Do not ask students to focus on the lesser number.
- Avoid encouraging students to count the exact number of dots on the cards. This game is designed to promote approximate estimation, not precise counting.<sup>8</sup>
- Avoid comparing the quantities in the approximate additional decks by simply comparing the sum of the numbers in the tens place and ignoring the units place.

### Find Shape

- Do not ask students to identify the shape that does not match the three black shapes shown on the practice and main deck cards.
- Make sure students understand the hints provided on both the poster and the cards.

### Find and Move

- Do not swap the Find and Move quantities on the card. The black dots always refer to Find, and the colored numbers and dots always refer to Move.
- Avoid marking the tens step in Find for numbers larger than 10 or multiples of 10. Each card with a Move quantity should result in only two markings on the board. For example:
  - If the card says Find 25 and Move 34, the Find mark should be only on 25, not on 20 and then 5.
  - The Move mark should be on 59, not on 55 and then 59.

### Reading Maps

- Make sure the correct game board is used for the main deck being played.
- Ensure students understand the hints provided on the cards.

## Errors to Avoid in the Order of Game Play

**Number Comparison** and **Find and Move** are designed to build children's numerical skills, while **Find Shape** and **Reading Maps** focus on strengthening their innate understanding of geometry. Because each game targets specific learning goals, it's important to follow the recommended sequence to get the best educational outcomes.

**We strongly advise not starting with Find and Move before playing Number Comparison. However, Reading Maps can be played before Find Shape**—but only if all the pre-training and posters for both games are fully completed.

Regardless of which game teachers choose to begin with, they must conduct the required pre-training beforehand.

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<sup>8</sup> This skill involves making quick and reasonably accurate judgments about numerical quantities without the use of exact calculations.

## ANNEXURE 3: DETAILED IMPLEMENTATION COSTS

### Detailed Implementation Costs in Indian Rupees

| MATH GAMES GRADE 1 - MATERIAL LIST AND COSTS  |                        |                         |              |             |                                    |                       |                     |                |                      |             |                          |
|---|------------------------|-------------------------|--------------|-------------|------------------------------------|-----------------------|---------------------|----------------|----------------------|-------------|--------------------------|
| MATERIAL CATEGORY   | TYPE OF MATERIAL       | GAME NAME               | NO. OF DECKS | CARDS/ DECK | NO. OF UNITS (CARDS/PAGES) PER KIT | UNIT COST (IN RUPEES) | PER KIT (IN RUPEES) | NO. OF SCHOOLS | NO. OF KITS/ SCHOOLS | TOTAL UNITS | OVERALL COST (IN RUPEES) |
| Student materials need to be printed. One student set will be shared by 4 children. Assuming 32 students/class, 8 student sets will be required per classroom |                        |                         |              |             |                                    |                       |                     |                |                      |             |                          |
| Student kit   | Student game cards     | Number Comparison       | 8            | 24          | 192                                | 3                     | 480                 | 1              | 8                    | 8           | 3,840                    |
|   |                        | Find Shape              | 8            | 18          | 144                                | 3                     | 360                 | 1              | 8                    | 8           | 2,880                    |
|   |                        | Find and Move           | 4            | 20          | 80                                 | 2                     | 160                 | 1              | 8                    | 8           | 1,280                    |
|   | Reading Maps           | 8                       | 16           | 128         | 2                                  | 256                   | 1                   | 8              | 8                    | 2,048       |                          |
|   | Reading Maps           | -                       | -            | 8           | 1                                  | 8                     | 1                   | 8              | 8                    | 64          |                          |
|   | Student game board     | Find and Move           | -            | -           | 4                                  | 1                     | 4                   | 1              | 8                    | 8           | 32                       |
| COST OF THE STUDENT KIT   |                        |                         |              |             |                                    |                       |                     |                |                      |             | 10,144                   |
| Only 1 teacher kit is required per classroom  |                        |                         |              |             |                                    |                       |                     |                |                      |             |                          |
| Teacher kit   | Teacher practice cards | Number Comparison       | 8            | 4           | 32                                 | 10                    | 320                 | 1              | 1                    | 1           | 320                      |
|   |                        | Find Shape              | 8            | 5           | 40                                 | 10                    | 400                 | 1              | 1                    | 1           | 400                      |
|   |                        | Find and Move           | 4            | 4           | 16                                 | 10                    | 160                 | 1              | 1                    | 1           | 160                      |
|   | Reading Maps           | 8                       | 4            | 32          | 10                                 | 320                   | 1                   | 1              | 1                    | 320         |                          |
|   | Teacher practice       | Reading Maps            |              |             | 8                                  | 10                    | 80                  | 1              | 1                    | 1           | 80                       |
|   |                        | Find and Move           |              |             | 4                                  | 10                    | 40                  | 1              | 1                    | 1           | 40                       |
|   | Class posters          | Number Comparison       |              |             | 2                                  | 276                   | 552                 | 1              | 1                    | 1           | 552                      |
|   |                        | Find Shape              |              |             | 2                                  | 176                   | 352                 | 1              | 1                    | 1           | 352                      |
|   | Pre-training cards     | Number Comparison       |              |             | 8                                  | 10                    | 80                  | 1              | 1                    | 1           | 80                       |
|   |                        | Reading Maps            |              |             | 8                                  | 10                    | 80                  | 1              | 1                    | 1           | 80                       |
|   | Teacher materials      | Manual: Round 1         |              | 1           | 17                                 | 10                    | 85                  | 1              | 1                    | 1           | 85                       |
|   |                        | Manual: Round 2         |              | 1           | 17                                 | 10                    | 85                  | 1              | 1                    | 1           | 85                       |
|   |                        | Tracking sheet: Round 1 |              | 1           | 10                                 | 1                     | 10                  | 1              | 1                    | 1           | 10                       |
|   |                        | Tracking sheet: Round 2 |              | 1           | 10                                 | 1                     | 10                  | 1              | 1                    | 1           | 10                       |
| COST OF THE TEACHER KIT   |                        |                         |              |             |                                    |                       |                     |                |                      |             | 2,574                    |
| Some stationery or miscellaneous material is also a part of the kit per classroom   |                        |                         |              |             |                                    |                       |                     |                |                      |             |                          |
| Stationery/ Misc.   | Stationery items       | Red basket              |              |             | 1                                  | 50                    | 50                  | 8              | 8                    | 8           | 400                      |
|   |                        | Blue basket             |              |             | 1                                  | 50                    | 50                  | 8              | 8                    | 8           | 400                      |
|   |                        | Pencil colours          |              |             | 1                                  | 30                    | 30                  | 8              | 8                    | 8           | 240                      |
|   |                        | Materials storage box   |              |             | 2                                  | 400                   | 800                 | 1              | 1                    | 1           | 800                      |
|   | COST OF STATIONERY     |                         |              |             |                                    |                       |                     |                |                      |             |                          |
| TOTAL COST  |                        |                         |              |             |                                    |                       |                     |                |                      |             | 14,558                   |

## Detailed Implementation Costs in US Dollars

| MATH GAMES GRADE 1 - MATERIAL LIST AND COSTS  |                        |                         |              |             |                                    |                    |                  |                |                      |             |                       |
|---|------------------------|-------------------------|--------------|-------------|------------------------------------|--------------------|------------------|----------------|----------------------|-------------|-----------------------|
| MATERIAL CATEGORY   | TYPE OF MATERIAL       | GAME NAME               | NO. OF DECKS | CARDS/ DECK | NO. OF UNITS (CARDS/PAGES) PER KIT | UNIT COST (IN USD) | PER KIT (IN USD) | NO. OF SCHOOLS | NO. OF KITS/ SCHOOLS | TOTAL UNITS | OVERALL COST (IN USD) |
| Student materials need to be printed. One student set will be shared by 4 children. Assuming 32 students/class, 8 student sets will be required per classroom |                        |                         |              |             |                                    |                    |                  |                |                      |             |                       |
| Student kit   | Student game cards     | Number Comparison       | 8            | 24          | 192                                | 0.04               | 5.71             | 1              | 8                    | 8           | 45.71                 |
|   |                        | Find Shape              | 8            | 18          | 144                                | 0.04               | 4.29             | 1              | 8                    | 8           | 34.29                 |
|   |                        | Find and Move           | 4            | 20          | 80                                 | 0.02               | 1.90             | 1              | 8                    | 8           | 15.24                 |
|   | Student game board     | Reading Maps            | 8            | 16          | 128                                | 0.02               | 3.05             | 1              | 8                    | 8           | 24.38                 |
|   |                        | Reading Maps            | -            | -           | 8                                  | 0.01               | 0.10             | 1              | 8                    | 8           | 0.76                  |
|   |                        | Find and Move           | -            | -           | 4                                  | 0.01               | 0.05             | 1              | 8                    | 8           | 0.38                  |
| COST OF THE STUDENT KIT   |                        |                         |              |             |                                    |                    |                  |                |                      |             | 120.76                |
| Only 1 teacher kit is required per classroom  |                        |                         |              |             |                                    |                    |                  |                |                      |             |                       |
| Teacher kit   | Teacher practice cards | Number Comparison       | 8            | 4           | 32                                 | 0.12               | 3.81             | 1              | 1                    | 1           | 3.81                  |
|   |                        | Find Shape              | 8            | 5           | 40                                 | 0.12               | 4.76             | 1              | 1                    | 1           | 4.76                  |
|   |                        | Find and Move           | 4            | 4           | 16                                 | 0.12               | 1.90             | 1              | 1                    | 1           | 1.90                  |
|   | Teacher practice       | Reading Maps            | 8            | 4           | 32                                 | 0.12               | 3.81             | 1              | 1                    | 1           | 3.81                  |
|   |                        | Reading Maps            |              |             | 8                                  | 0.12               | 0.95             | 1              | 1                    | 1           | 0.95                  |
|   |                        | Find and Move           |              |             | 4                                  | 0.12               | 0.48             | 1              | 1                    | 1           | 0.48                  |
|   | Class posters          | Number Comparison       |              |             | 2                                  | 3.29               | 6.57             | 1              | 1                    | 1           | 6.57                  |
|   |                        | Find Shape              |              |             | 2                                  | 2.10               | 4.19             | 1              | 1                    | 1           | 4.19                  |
|   |                        | Number Comparison       |              |             | 8                                  | 0.12               | 0.95             | 1              | 1                    | 1           | 0.95                  |
|   | Pre-training cards     | Reading Maps            |              |             | 8                                  | 0.12               | 0.95             | 1              | 1                    | 1           | 0.95                  |
|   |                        | Manual: Round 1         |              | 1           | 17                                 | 0.12               | 1.01             | 1              | 1                    | 1           | 1.01                  |
|   |                        | Manual: Round 2         |              | 1           | 17                                 | 0.12               | 1.01             | 1              | 1                    | 1           | 1.01                  |
|   | Teacher materials      | Tracking sheet: Round 1 |              | 1           | 10                                 | 0.01               | 0.12             | 1              | 1                    | 1           | 0.12                  |
|   |                        | Tracking sheet: Round 2 |              | 1           | 10                                 | 0.01               | 0.12             | 1              | 1                    | 1           | 0.12                  |
| COST OF THE TEACHER KIT   |                        |                         |              |             |                                    |                    |                  |                |                      |             | 30.64                 |
| Some stationery <sup>2</sup> or miscellaneous material is also a part of the kit per classroom  |                        |                         |              |             |                                    |                    |                  |                |                      |             |                       |
| Stationery/ Misc.   | Stationery items       | Red basket              |              |             | 1                                  | 0.60               | 0.60             | 1              | 8                    | 8           | 4.76                  |
|   |                        | Blue basket             |              |             | 1                                  | 0.60               | 0.60             | 1              | 8                    | 8           | 4.76                  |
|   |                        | Pencil colours          |              |             | 1                                  | 0.36               | 0.36             | 1              | 8                    | 8           | 2.86                  |
|   |                        | Materials storage box   |              |             | 2                                  | 4.76               | 9.52             | 1              | 1                    | 1           | 9.52                  |
| COST OF STATIONERY  |                        |                         |              |             |                                    |                    |                  |                |                      |             | 21.90                 |
| TOTAL COST  |                        |                         |              |             |                                    |                    |                  |                |                      |             | 173.31                |



## ANNEXURE 4: SAMPLE TRAINING AGENDA

| DAY | AGENDA FOR MASTER TRAINERS   |
|-----|--|
| 1   | <ul style="list-style-type: none"> <li>• Introduction to the organisers and an overview of Every Child Counts</li> <li>• Special address by supporting government officials</li> <li>• Session on policy relevance of Every Child Counts and the research evidence</li> <li>• Game 1: Introduction to materials, decks, group practice of multiple decks by participants</li> <li>• Game 2: Introduction to materials, decks, group practice of multiple decks by participants</li> </ul> <p>*Ensure both games are either numeracy games or the geometric games</p> |
| 2   | <ul style="list-style-type: none"> <li>• Recap of Day 1</li> <li>• Game 3: Introduction to materials, decks, group practice of multiple decks by participants</li> <li>• Game 4: Introduction to materials, decks, group practice of multiple decks by participants</li> <li>• Conduct Post training assessment</li> </ul>   |
| 3   | <ul style="list-style-type: none"> <li>• Recap of all 4 games</li> <li>• General Q&amp;A for participants</li> <li>• Preparing for cascade training</li> <li>• Best practices for teacher training</li> <li>• Going through training materials</li> <li>• Session on monitoring and evaluation</li> <li>• Co-creation of teacher manual customized to local context</li> <li>• Conclusion</li> </ul>   |

## ANNEXURE 5: SESSION PLAN

| SESSION NUMBER | GAME NAME   | DECK   |
|----------------|---|--------|
| 1              | Number Comparison Pre-Training<br>(NCPT) Poster (0-40)+Pre- Training Cards (4, 7, 13, 19)           | 1, 2   |
|                | Number Comparison (NC)  |        |
| 2              | Number Comparison (NC)  | 3, 4   |
| 3              | Find Shape Pre-Training (FSPT) Poster 1 (Number / Length of sides)<br>Deck 1- (P1-P5) practice card |        |
| 4              | Find Shape Pre-Training (FSPT) Poster 1(Review)<br>Deck 1- (P6-P10) practice card                   | 1      |
|                | Find Shape (FS)   |        |
| 5              | Find Shape (FS)   | 2, 3   |
| 6              | Number Comparison Pre-Training<br>(NCPT) Poster (0-40) +Pre- Training Cards (25, 36)                | 5, 6   |
|                | Number Comparison (NC)  |        |
| 7              | Number Comparison (NC)  | 7, 8   |
| 8              | Find Shape Pre-Training (FSPT) Poster 1 (Number / Length of sides)                                  | 4      |
|                | Find Shape (FS)   |        |
| 9              | Find Shape (FS)   | 5, 6   |
| 10             | Number Comparison Pre-Training<br>(NCPT) Poster (0-100) +Pre- Training Cards (65, 87)               | 9, 10  |
|                | Number Comparison (NC)  |        |
| 11             | Find Shape Pre-Training (FSPT) Poster 1 (Number / Length of sides)                                  | 7      |
|                | Find Shape (FS)   |        |
| 12             | Find Shape (FS)   | 8, 9   |
| 13             | Number Comparison Pre-Training<br>(NCPT) Poster (0-100) +Pre- Training Cards (65, 87)               | 11, 12 |
|                | Number Comparison (NC)  |        |

| SESSION NUMBER | GAME NAME  | DECK       |
|----------------|--|------------|
| 14             | Find Shape Pre-Training (FSPT) Poster 1 (Number / Length of sides)                 | 10, 11, 12 |
|                | Find Shape (FS)  |            |
| 15             | Number Comparison Pre-Training (NCPT) Poster (0-100) +Pre- Training Cards (65, 87) | 13, 14     |
|                | Number Comparison (NC)   |            |
| 16             | Find Shape Pre-Training (FSPT) Poster 2 (Line & Angles)                            | 13         |
|                | Find Shape (FS)  |            |
| 17             | Find Shape (FS)  | 14, 15     |
| 18             | Number Comparison Pre-Training (NCPT) Poster (0-100)+Pre- Training Cards (65, 87)  | 15, 16     |
|                | Number Comparison (NC)   |            |
| 19             | Find Shape Pre-Training (FSPT) Poster 2 (Line & Angles)                            | 16         |
|                | Find Shape (FS)  |            |
| 20             | Find Shape (FS)  | 17, 18     |
| 21             | Find Shape (FS)  | 19, 20, 21 |
| 22             | Find Shape (FS)  | 22, 23, 24 |
| 23             | Find and Move Board (0-99)   | 1          |
|                | Find and Move  |            |
| 24             | Reading Maps Pre-Training Cards (1-4)  | 1, 2       |
|                | Reading Maps   |            |
| 25             | Find and Move Board (0-99)   | 2          |
|                | Find and Move  |            |
| 26             | Reading Maps   | 3, 4       |
| 27             | Find and Move Board (0-99)   | 3          |
|                | Find and Move  |            |
| 28             | Reading Maps   | 5, 6       |

| SESSION<br>NUMBER | GAME NAME                  | DECK   |
|-------------------|----------------------------|--------|
| 29                | Find and Move Board (0-99) | 4      |
|                   | Find and Move              |        |
| 30                | Reading Maps               | 7, 8   |
| 31                | Find and Move Board (0-99) | 5      |
|                   | Find and Move              |        |
| 32                | Reading Maps               | 9, 10  |
| 33                | Find and Move Board (0-99) | 6      |
|                   | Find and Move              |        |
| 34                | Reading Maps               | 11, 12 |
| 35                | Find and Move Board (0-99) | 7      |
|                   | Find and Move              |        |
| 36                | Reading Maps               | 13, 14 |
| 37                | Find and Move Board (0-99) | 8      |
|                   | Find and Move              |        |
| 38                | Reading Maps               | 15, 16 |



