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Scaling Early Mathematics Education: A Low-Cost, Evidence-Based Model for Transforming Math Learning in Government Schools

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Abstract

This paper examines the scaling of Pratham Education Foundation's Math Games curriculum, developed in collaboration with J-PAL and Prof. Elizabeth Spelke, to enhance early mathematics skills in India. The initiative is grounded in over a decade of research which aims to improve children's understanding of numbers, shapes, and spatial concepts for ages 4 to 7. The scale-up process was executed in four phases from 2022 to 2025, began with internal learning and material adjustments, followed by expansion to 300 schools in three states. The Research tools and methodology used in this study were baseline and endline assessments after each intervention, teacher feedback surveys, and classroom monitoring to ensure program fidelity and iterate the approach and curriculum accordingly. By Phase 4, Math Games were integrated into state curricula, reaching over 60,000 government schools. Key strategies for scaling included "scaling out" to thousands of classrooms, "scaling deep" to transform math teaching, and "scaling down" to create a low-cost model. This approach reduced material costs by over 90%, simplifying resources while preserving core learning principles. The paper concludes that successful scaling in education requires a locally adaptable, evidence-informed, and system-aligned approach. Pratham's model demonstrates how research-based innovations can be integrated into public education systems by offering a replicable framework for large-scale curriculum reform and teacher training.

Keywords: Early Years Mathematics Education; Inquiry Based Pedagogy; Sustainable Scale up; Curriculum Design; Teacher Professional Development