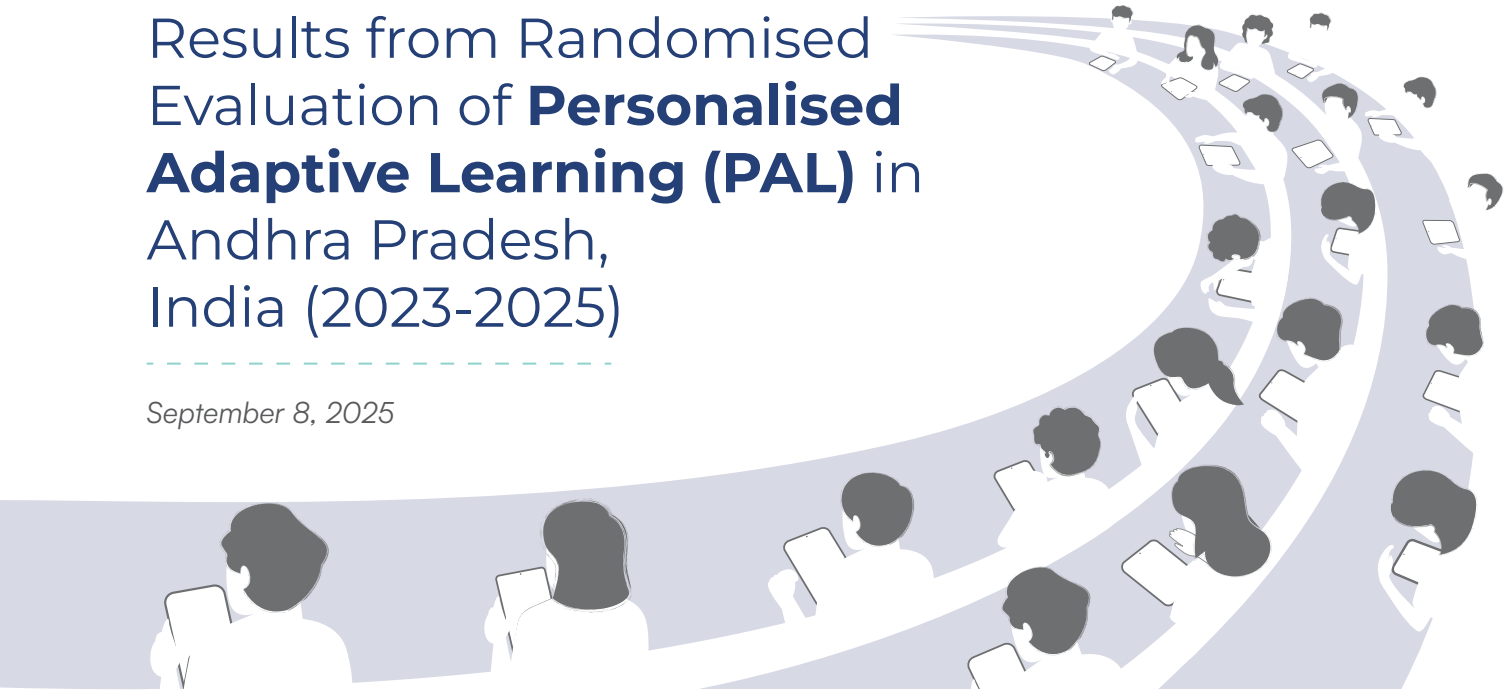
THE UNIVERSITY OF CHICAGO DEVELOPMENT INNOVATION LAB | India

ConveGenius.AI

CENTRAL SQUARE FOUNDATION

Results from Randomised Evaluation of **Personalised Adaptive Learning (PAL)** in Andhra Pradesh, India (2023-2025)

September 8, 2025



WHY PAL?

Large learning gaps in foundational literacy and numeracy persist across low-income and middle-income countries, including India, despite rising enrolment and expanded access to schooling. Many students fall behind grade-level expectations, with gaps widening over time, while wide variation in classroom learning levels makes it difficult for teachers to meet every student's needs.[1] Personalised Adaptive Learning offers a promising solution to address these challenges at scale.

WHAT IS PAL?

PAL software is a technological tool that adapts educational content to each student's learning level. It continuously diagnoses performance and learning levels of the student and adjusts instructional content and practice questions to address gaps or provide advanced content. In doing so, PAL helps bridge learning deficits in classrooms with wide variation in student ability. Evidence from India and internationally shows that PAL can significantly improve learning outcomes, particularly for students who are several grade levels behind.[2]

PAL IN ANDHRA PRADESH

The Government of Andhra Pradesh (GoAP) adopted Personalised Adaptive Learning in 2019 for students in Grades 6 to 9 in Mathematics, English, and Telugu. To implement this initiative, GoAP partnered with ConveGenius.AI (CG), whose CG PAL software was deployed across government schools. This was among the first large-scale deployments of adaptive learning technology in Indian public schools and is now active in over 1,000 schools in the state. GoAP is the sole funder of the program, covering costs of vendor contracts, lab setup, and device procurement.

[1]Nationally representative assessments show that ~55% of Grade 8 students are unable to solve a simple division problem (Annual Status of Education Report, 2024)

[2]de Barros and Ganimian 2023; Muralidharan, Singh, and Ganimian 2019; Escueta et al. 2020; Banerjee et al. 2017; Muralidharan and Singh 2022

EVALUATION OF IMPACT

In 2023, the Development Innovation Lab (University of Chicago) partnered with Samagra Shiksha, Department of School Education (GoAP), and Central Square Foundation to evaluate PAL's impact on Math learning through a Randomised Control Trial (RCT).

Study Design

120 schools across eight districts in Andhra Pradesh randomly assigned to treatment and control groups (60 schools in each group).

Implementation and Monitoring

Students from Grades 6 to 9 in treatment schools used ConveGenius' CG PAL software for Mathematics between 2023—2025. Each school had 30 tablets in a dedicated PAL lab, with two 40-minute math sessions scheduled weekly during school hours. ConveGenius field staff supported schools by setting up labs, ensuring student access, addressing usage issues, and providing troubleshooting assistance. They also shared usage reports with headmasters, which complemented the monitoring conducted by Samagra Shiksha at the school, district, and state levels through regular reviews of the dashboards.

Usage of PAL

PAL usage, on average, by students in Grades 7 to 9 who received the PAL program over two academic years (roughly 17 months) was 35.3 hours per student. In AY 2023—24, the usage was 17.5 hours and in AY 2024—25, it was 17.8 hours per student on average.

Measuring Learning Outcomes

Student outcomes were assessed 17 months after the introduction of PAL through a tablet-based Math assessment. It was designed to measure learning outcomes across a wide range of ability levels, with validated items spanning Grade 2 up to each student's current grade.

KEY FINDINGS

The students in treatment schools achieved cumulative learning gains that are ~2.3 times higher than students in control school.

Improved learning outcomes

Students in treatment schools scored 0.43 standard deviations (95% CI: 0.29 - 0.56 SD) higher than control school students. This corresponds to a gain of 1.9 equivalent years of schooling (95% CI: 1.3 to 2.5).

Learning gains observed across all subgroups

Larger gains observed for students in younger grades and girls (see Figure 2).

Access and Usage Matter

Students in smaller classes had greater access to tablets and used PAL more (42.3 vs. 30.6 hours). Each additional hour of usage corresponds to gains of 0.06 equivalent years of schooling (95% CI: 0.02 - 0.11).

Cost-effectiveness

With an estimated implementation cost of ₹1,682 ($20) per student annually—including hardware, software, monitoring and implementation support from field teams—the PAL program yields an estimated impact of about 1.895 Learning Adjusted Years of Schooling per $100. [3] Even at a conservative unit cost of US$25 per student that reflects steady-state conditions —accounting for inflation, strengthened monitoring, variation in delivery models, and cross-vendor pricing— **the program remains cost-effective.**

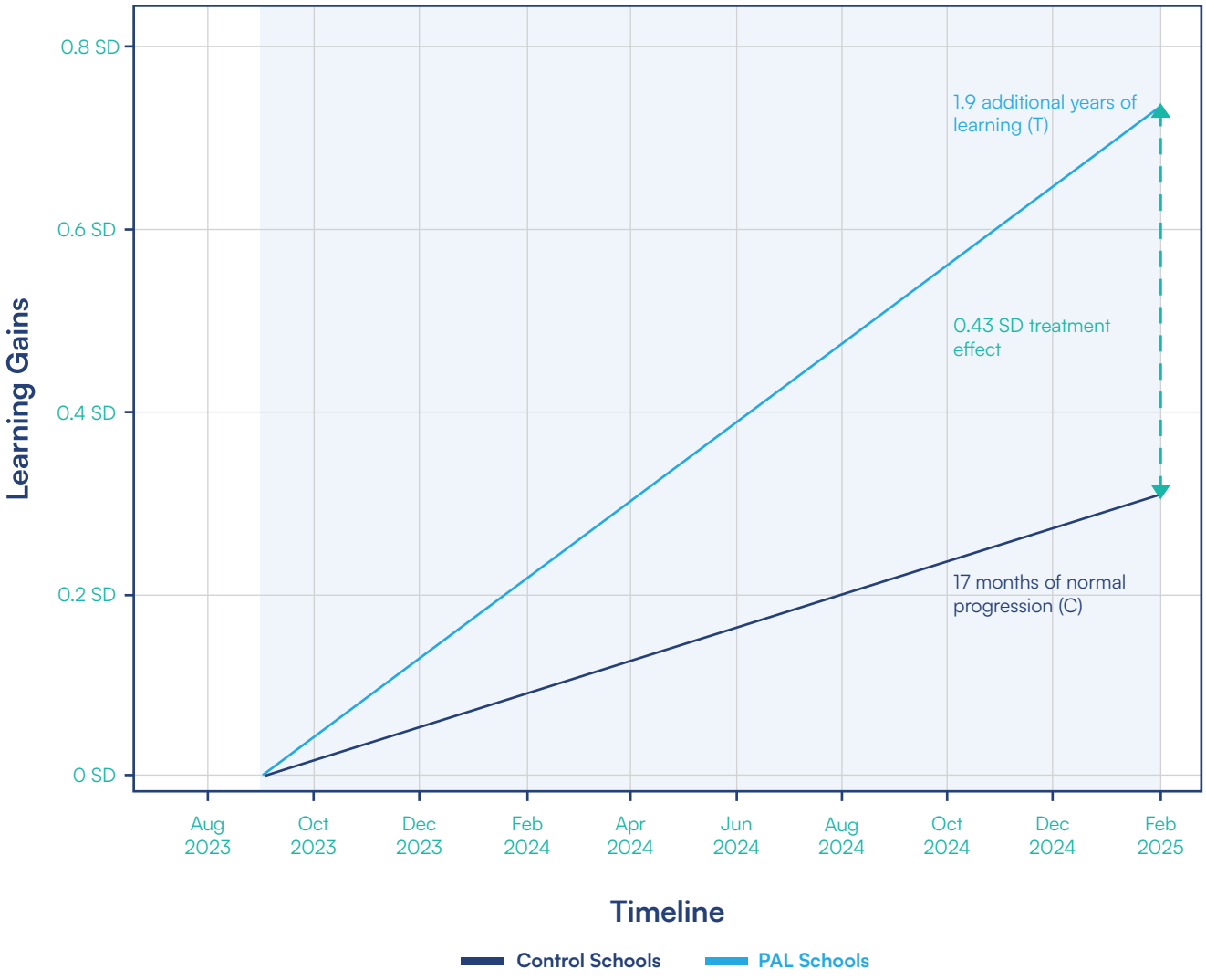
According to The World Bank's Global Education Evidence Advisory Panel (GEEAP) benchmarks, this places PAL's cost-effectiveness on par with other interventions classified as a "good buy," such as parent-directed early childhood development programs, quality pre-primary education, deworming, cash transfers, and reduced travel time to school.

[3]Learning Adjusted Years of Schooling (LAYS) represent the number of years of schooling a child receives, adjusted for the quality of learning, benchmarked against a high-performing education system.

SCALING FOR SUCCESS

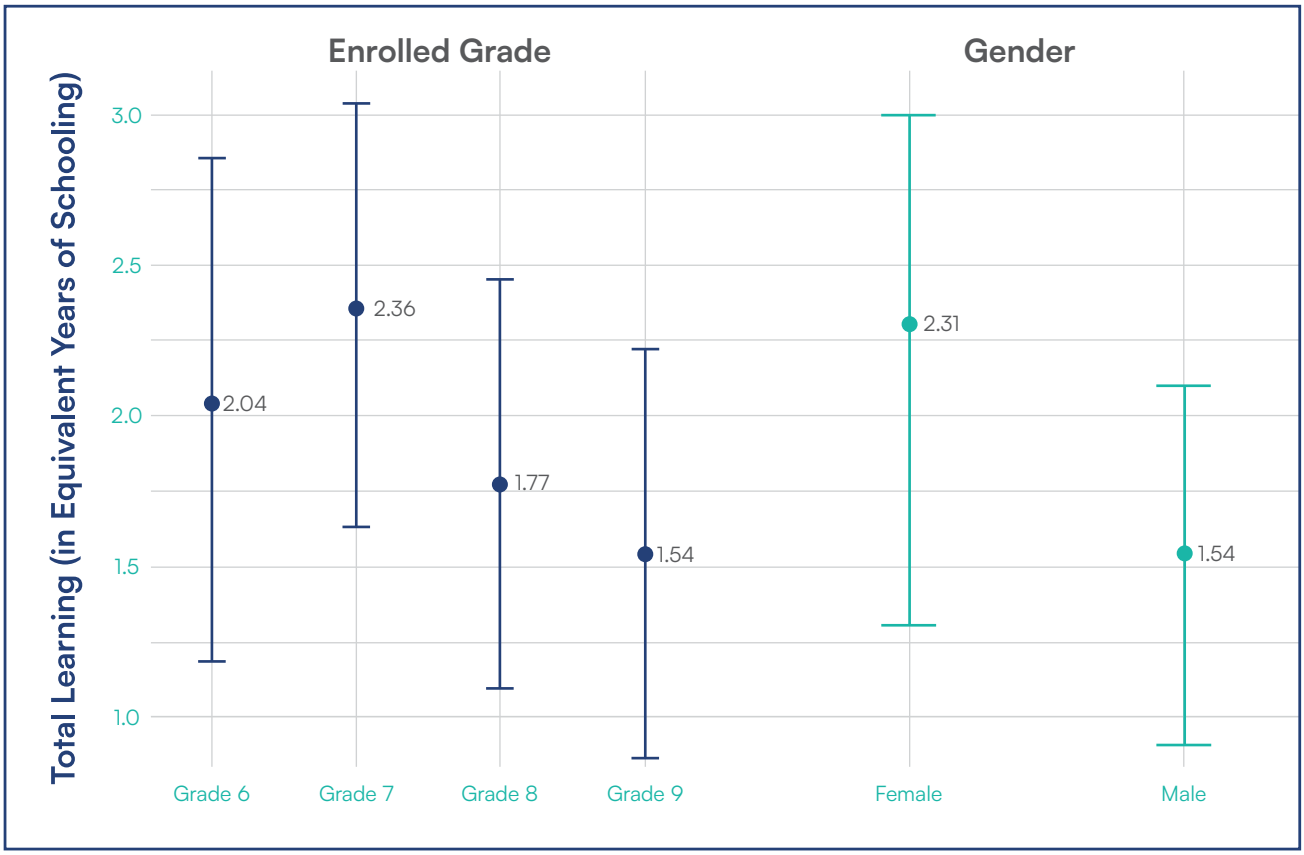
The PAL program demonstrates that personalised adaptive learning can deliver large, cost-effective learning gains when implemented effectively, relying on the software, on-ground implementation, and government monitoring. Sustaining and scaling impact will require continued efforts to strengthen monitoring, implementation and student engagement, since longer and higher-quality usage is linked to better learning. Simple, cost-effective approaches—like enhanced teacher monitoring, student incentives, and gamified features—may help promote consistent use and maximize PAL's potential at scale.

FIGURE 1: PAL accelerated learning gains for students



Note: The shaded area marks the PAL implementation period of 17 months over two academic years: 2023-24 and 2024-25. Learning gains are measured in standard deviations
(0.22 SD = one year of typical learning for non-PAL students).

FIGURE 2: Learning Gains from PAL: By Grade and Gender



Note: Markers represent estimated learning levels (in equivalent years of schooling) for PAL students. Grade 6 students used PAL for one academic year (2023—24), while students in Grades 7 to 9 used the software over two years (2023—25). Estimates are not adjusted for gains in non-PAL schools. Vertical lines show 95% confidence intervals.

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