

TALEEMABAD

Private School Impact Evaluation 2022–2024

Difference-in-Differences Analysis of Student Learning
in Taleemabad Smart Schools across Punjab & KP

At a glance

STUDY PURPOSE

Measuring learning gains in Taleemabad schools

This two-year evaluation measures the impact of Taleemabad's digitally-enabled interventions — structured lesson plans, teacher training videos, and administrative support tools — on student literacy and numeracy outcomes in private schools across Punjab and Khyber Pakhtunkhwa.

THE THEORY OF CHANGE

Better lesson plans + trained teachers = better learning

Standardized lesson plans ensure all important concepts are covered and reduce heterogeneity in content quality. Teacher training videos improve pedagogical skills and reduce variance due to different training backgrounds. Together, these inputs improve teaching quality and student engagement.

DESIGN

Difference-in-differences across 4 data waves

Four waves of ASER assessments across two academic years (2022-23 and 2023-24), comparing Taleemabad treatment schools against control schools matched by geography, fee structure, and student catchment. DID estimates are clustered at the district level.

KEY NUMBERS

0.31

Learning-Adjusted Years of Schooling (average across all subjects)

66

schools at baseline (40 control + 26 treatment)

4

waves of data collection across 2 academic years

3

subjects assessed: English, Urdu, and Mathematics

Study Design & Data

Estimation Model (Difference-in-Differences)

$$y_{ip} = \beta_0 + \beta_1 \times \text{treatment}_i + \beta_2 \times \text{post}_{ip} + \beta_3 \times \text{post}_{ip} \times \text{treatment}_i + \varepsilon_{ip}$$

Where y is a binary outcome (student cleared subject-specific ASER benchmarks). DID estimates are clustered at the district level and expressed in standard deviations.

Sample Across Waves

| Wave | Control Students | Treatment Students | Control Schools | Treatment Schools |
|--------------|------------------|--------------------|-----------------|-------------------|
| 0 (Baseline) | 1,841 | 1,524 | 40 | 26 |
| 1 | 2,544 | 1,756 | 48 | 28 |
| 2 | 1,182 | 869 | 22 | 17 |
| 3 | 480 | 1,221 | 11 | 27 |

Attrition rate: 19% for control schools, 22% for treatment schools. No evidence of differential attrition. Schools that left were replaced with similar schools matched on fee structure, location, and student catchment.

Key Design Considerations

Selection Bias

Schools self-selected into Taleemabad through targeted advertising. The authors explicitly note: "our impact estimates do not amount to causal evidence." Results should be interpreted as associational.

Cross-Sectional Design

Data consists of 4 waves of cross-sections, not a panel tracking individual students. Students were resampled at each wave (12 per classroom, probability proportional to school size).

Parallel Trends: The assumption was validated for English using data between the end of 2022-23 and start of 2023-24, where no instruction occurred (summer vacation). Treatment and control schools followed parallel trends during this period.

Treatment Effects (ASER)

DID estimates across three time periods, disaggregated by subject and grade level. All estimates are statistically significant at the 5% level unless marked with †.

DID Estimates in Standard Deviations

| Subject | Grade | 2022-23 | 2023-24 | Overall (2022-24) |
|---------------------|------------|--------------|-------------|-------------------|
| English | 1-3 | 0.51 | -0.28 | 0.40 |
| English | 4-5 | 0.26 | 0.94 | 0.60 |
| English | All | 0.22 | 0.17 | 0.35 |
| Math | 1-3 | -0.14 | -0.21 | 0.16 |
| Math | 4-5 | -0.46 | 0.08 | -0.29 |
| Math | All | -0.28 | -0.05 | <0.01† |
| Urdu | 1-3 | 0.48 | -0.03 | 0.67 |
| Urdu | 4-5 | 0.10 | 0.72 | 0.55 |
| Urdu | All | 0.24 | 0.18 | 0.50 |
| All Subjects | All | -0.24 | 0.67 | 0.16† |

† Not statistically significant at the 5% level. All other estimates significant at 5%.

Literacy Gains Are Strong

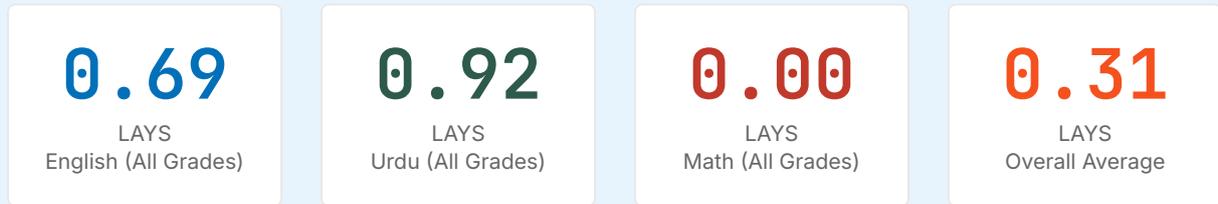
English (0.35 SD) and Urdu (0.50 SD) show statistically significant treatment effects across all grades in the overall 2022-24 analysis. Gains concentrated in lower grades (1-3) during 2022-23 and upper grades (4-5) during 2023-24 as the programme matured.

Math Shows No Impact

Mathematics DID estimates are not statistically significant overall. The report transparently presents this finding. Further investigation into math pedagogy and curriculum alignment is needed.

Learning-Adjusted Years of Schooling

DID treatment effects converted to Learning-Adjusted Years of Schooling (LAYS) for the overall 2022-2024 period.

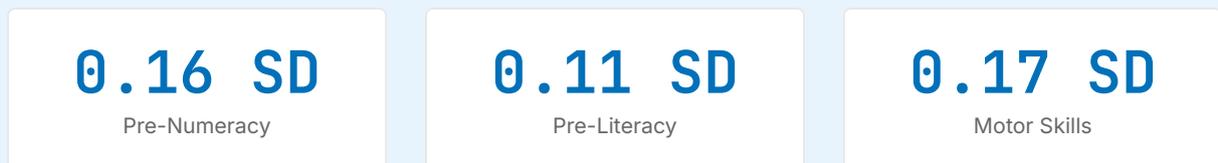


LAYS by Subject and Grade (Overall 2022-2024)

| Subject | Grades 1-3 (LAYS) | Grades 4-5 (LAYS) | All Grades (LAYS) |
|---------------------|-------------------|-------------------|-------------------|
| English | 0.73 | 0.77 | 0.69 |
| Math | 0.27 | -0.50 | -0.00 |
| Urdu | 1.31 | 0.38 | 0.92 |
| All Subjects | | | 0.31 |

MELQO Results (Pre-K, 2022-23)

For pre-kindergarten assessment using MELQO, Taleemabad schools outperformed control schools at endline across all three domains. Results are statistically significant at the 5% level.



MELQO analysis limited to 2022-23 due to insufficient sample size in 2023-24 caused by control school refusals in wave 3.

Engagement, Limitations & Conclusions

Does Engagement Predict Learning?

Appendix analysis examined correlations between school-level platform engagement and student learning outcomes.

Length of Time with Taleemabad

Positively correlated with meeting learning thresholds ($r = 0.40-0.41$, significant at 10%). Longer programme exposure is moderately associated with better outcomes.

Total Teacher Training

Positively correlated with meeting at least 1 subject threshold (significant at 10%). Teacher human capital accumulates over the academic year.

Honest Limitations

- **Not causal evidence.** Schools self-selected into Taleemabad through advertising. Three levels of selection bias: (1) who responded, (2) who was eligible, (3) who consented to data collection.
- **Cross-sectional, not panel.** Students were resampled each wave, so individual learning trajectories cannot be tracked.
- **Attrition challenges.** Control schools were harder to retain, especially in 2023-24 (wave 2: only 22 control schools remained from 40).
- **Implementation fidelity unknown.** Teacher platform usage cannot be linked to specific students' grades due to multiple teachers per grade.

Conclusions

Strong Literacy Results

Taleemabad's programme shows meaningful gains in English (~0.7 LAYS, 0.35 SD) and Urdu (~0.9 LAYS, 0.50 SD) across all grades over the two-year period. Gains in lower grades during Year 1 translated into upper-grade gains in Year 2.

Math Remains a Challenge

No statistically significant impact on Mathematics. This is sustained across both academic years and all grade levels. Further investigation needed.

Next Steps

Collecting definitive causal evidence is ongoing. The key open question is implementation fidelity — whether activating all pathways in the theory of change translates to impact. Current measurement methods need refinement. Future data collection will focus on public sector schools.

Taleemabad

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student learning system.

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