

Teacher Professional Development and Student Learning Outcomes: A Multi-Country Evaluation of TeachUNITED's Coaching Model in Latin America and East Africa, 2023-2025

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Abstract

This manuscript reports findings from a quasi-experimental evaluation of TeachUNITED's coaching-based teacher professional development model in Costa Rica, Mexico, Kenya, and Tanzania. The evaluation examined whether students in TeachUNITED-supported schools demonstrated stronger growth in foundational literacy and numeracy than students in matched comparison schools in 2023, 2024, and 2025.

Student outcomes were measured with the Early Grade Reading Assessment (EGRA) and the International Common Assessment of Numeracy (ICAN). Analyses used Analysis of Covariance (ANCOVA) to adjust endline outcomes for baseline performance. Effect sizes were estimated with Cohen's d and interpreted, where appropriate, through the equivalent-years-of-schooling framework proposed by Evans and Yuan (2019).

Students in TeachUNITED-supported schools outperformed students in matched comparison schools across several literacy and numeracy measures. The strongest overall result was in cumulative mathematics performance, where the estimated effect corresponded to approximately 3.6 additional years of learning ($p < 0.0001$, $d = 0.76$). Students also gained approximately 2.3 additional years in oral reading fluency ($p = 0.0011$, $d = 0.49$) and 2.2 additional years in non-word decoding ($p = 0.0007$, $d = 0.46$). Results for female students were especially large in mathematics ($p < 0.0001$, $d = 0.90$), corresponding to approximately 4.3 additional years of learning.

The findings should be interpreted with consideration of the study's quasi-experimental design and internal evaluation context. Even so, the pattern of results provides meaningful evidence that sustained, locally adapted coaching may help strengthen foundational learning in resource-constrained school systems.

Keywords: teacher professional development; instructional coaching; foundational literacy; foundational numeracy; low-resource schools; Latin America; East Africa; quasi-experimental evaluation

Statement on Evaluation Context

This evaluation was conducted internally by the TeachUNITED Global Research & Evaluation Team using data collected through the organization's monitoring and evaluation framework. The manuscript is intended to support scholarly review, program learning, and decision-making among education practitioners, policymakers, nonprofit leaders, and funding partners. All claims are framed within the limits of the evaluation design: the study used matched comparison schools and statistical adjustment for baseline performance but did not randomly assign schools to treatment and comparison conditions.

Introduction

The global education agenda has made real gains in access. Enrollment has expanded in many countries; more children enter school than in previous generations (UNESCO, 2026). Yet access has not guaranteed learning. The World Bank defines “learning poverty” as being unable to read and

understand a simple text by age 10 and estimates that roughly 7 in 10 children in low- and middle-income countries experience learning poverty (World Bank et al., 2022). In too many classrooms, children advance through the early grades without becoming confident readers, fluent problem solvers, or independent learners. The result is a less visible crisis than non-enrollment, but no less consequential. Students are in school, while foundational learning remains out of reach.

Foundational literacy and numeracy matter because they carry forward. A child who cannot read with comprehension or manipulate basic numbers faces increasing difficulty as curricula become more complex (World Bank, 2021). These early gaps are associated with lower secondary completion, weaker labor-market readiness, and reduced economic mobility. For governments, they translate into lost human capital (Hanushek & Woessmann, 2008). For families, they narrow the set of opportunities a child can realistically pursue.

Instructional quality sits near the center of this problem. Teacher effectiveness is not the only factor shaping learning, but it is one of the most important school-level levers available to education systems. The challenge is especially sharp in rural and under-resourced settings, where teachers often work with limited materials, few opportunities for professional growth, and little sustained feedback on classroom practice (World Bank, n.d.). Geographic isolation can compound these constraints. So can teacher turnover, multilingual learning environments, and uneven administrative support.

Professional development is an obvious response, but the evidence of its effectiveness is mixed. Short workshops are easy to organize and count. They are much harder to translate into durable classroom change. Research has repeatedly shown that teachers are more likely to change practice when professional learning is sustained, practical, connected to their curriculum, and reinforced through coaching or peer collaboration (Darling-Hammond et al., 2017; Kraft et al., 2018). Coaching, in particular, offers something that workshops rarely provide: repeated feedback in relation to actual classroom practice.

TeachUNITED's professional development model was built around that premise. Across partner schools in Africa, Latin America, and the rural United States, the organization combines instructional coaching, collaborative professional learning, data-informed instruction, and local adaptation. The model is not designed as a single event or workshop. It is a school-based improvement strategy that works through teachers, school leaders, peer mentors, and locally embedded coaching structures.

This manuscript examines whether participation in TeachUNITED-supported schools was associated with stronger student learning outcomes between 2023 and 2025. The evaluation focuses on foundational literacy and numeracy, measured through internationally recognized assessment tools, and compares student growth in TeachUNITED-supported schools with growth in matched comparison schools. Particular attention is given to the magnitude of learning gains and to gender-differentiated results, given the persistent educational barriers faced by girls in many low-resource contexts.

Research Questions

The evaluation addressed three questions:

1. Is participation in the TeachUNITED professional development model associated with improvements in foundational literacy and numeracy outcomes?
2. Do female students in TeachUNITED-supported classrooms demonstrate different learning gains than female students in comparison schools?
3. How large are the observed learning gains relative to matched comparison schools across participating contexts?

The TeachUNITED Professional Development Model

TeachUNITED's model is designed to strengthen classroom instruction by working directly with educators over time. Its central claim is simple: teachers are more likely to improve practice when professional learning is continuous, grounded in the realities of their classrooms, and reinforced through feedback, peer learning, and mentor teacher support.

The model combines four related forms of support: individualized instructional coaching, collaborative professional learning, data-informed lesson planning, and school-based mentor development. These components are meant to operate together. Coaching helps teachers refine practice. Peer collaboration normalizes shared problem-solving. Data use directs attention to specific student needs. Teacher mentor development gives the work a better chance of lasting beyond the initial implementation period.

Although the core structure remained consistent across countries, implementation was adapted to local conditions. Materials, coaching examples, and professional learning activities were tailored to national curricula, school routines, available resources, and instructional language. In Kenya and Tanzania, programming included Swahili and English. In Mexico, Spanish and indigenous Mayan languages were incorporated where appropriate, while programming in Costa Rica was delivered in Spanish. This adaptation was not an incidental feature; it was central to the model's theory of action.

Theory of Change

The theory of change links teacher support to student learning through a chain of instructional improvements. Ongoing coaching is expected to help teachers use clearer routines, more responsive questioning, stronger pacing, and more targeted small-group work. Data-informed planning should make learning gaps visible earlier. Collaborative professional learning should give teachers a forum to test, adapt, and refine strategies rather than working in isolation.

Over time, these shifts are expected to create more organized classrooms, greater student participation, and more instructional time spent on key skills. The model also assumes that local instructional leadership matters. When experienced educators become peer mentors or school-based coaches, professional learning becomes less dependent on outside staff and more embedded in the daily life of the school.

Theory of Change: TeachUNITED Coaching Model

Stage	Core activities/outputs	Primary mechanism of change	Expected outcomes	Indicators
1. Inputs & enabling conditions	Trained TeachUNITED coaches, calibrated annually; instructional resources; school readiness assessment; leadership commitment; protected time; assessment tools	Creates the organizational conditions and resources required for implementation	Coaches increase facilitation skills, coaching competence, and confidence; Schools are prepared to participate; implementation barriers are identified early	Training completion; competency rubrics; school readiness; leadership commitment; time/resources allocated
2. Champion Educator capacity building	Champion educators and school leaders complete training; modeling, coached practice, and feedback	Knowledge building + behavioral change + feedback	Champions increase pedagogical knowledge, facilitation skills, coaching competence, and confidence	Training & capstone project completion; self-assessments; facilitation/coaching quality check
3. Champion-led educator development	Champions facilitate learning for participating educators; ongoing coaching, observation, feedback, and reflection	Job-embedded learning + self-efficacy + repeated practice	Educators increase instructional knowledge, confidence, data use, and ability to implement student-centered strategies	Pre/post surveys; self-assessments; coaching logs; classroom observations
4. School-based professional learning & diffusion	Champions establish/facilitate PLCs; educators share resources, examine data, solve problems of practice, and support peers	Social learning + collective efficacy + distributed leadership	Effective practices spread beyond initially trained educators; instructional leadership and school capacity strengthen	PLC frequency/quality; peer-coaching reach; instructional leadership; data-use measures
5. Changes in classroom practice	Educators apply and adapt student-centered, personalized, metacognitive, and data-informed strategies	Practice–feedback–reflection cycle + adaptive improvement	Higher-quality instruction; greater use of target strategies; instruction becomes more responsive to student needs	Classroom observations; strategy-use frequency; instructional quality/fidelity measures
6. Student & system-level impact	Students experience stronger instruction while schools sustain locally led coaching and professional development	Improved learning opportunities + institutionalization/local ownership	Increased student engagement and academic learning; sustained local professional-learning capacity; scalable improvement with reduced dependence on external delivery	Student assessments; engagement/attendance; locally led PD/coaching; sustained fidelity

Core Components

Instructional coaching and professional learning

Teachers participate in coaching cycles that include feedback, reflection, and follow-up support. The emphasis is not on compliance with a fixed script, but on improving classroom decisions: how to group students, how to respond when students struggle, how to use assessment evidence, and how to sustain routines that keep students engaged.

Data-informed instruction

The model trains educators to use student performance data to identify learning gaps and adjust instruction. In practice, this means moving from broad impressions of student progress toward more specific decisions about who needs additional support, which skills require reteaching, and how lessons should be paced.

Differentiated instruction

Teachers are supported to use small-group instruction, tiered activities, and individual support strategies. These practices are particularly important in classrooms where students enter with varied skill levels, where repetition alone is insufficient, and where advanced learners also need appropriate challenge.

Classroom environment and student engagement

Professional learning also addresses classroom routines, relationships, and student participation. Predictable routines protect learning time. Strong relationships reduce disengagement. Collaborative problem-solving and persistence are treated as classroom habits that can be taught and reinforced, not as abstract dispositions.

Localization and Sustainability

Implementation varied by context, as it should in a multi-country model. Schools differed in language, infrastructure, curricula, educator experience, and available support. TeachUNITED maintained a shared instructional framework while allowing local teams to adapt delivery to the conditions teachers actually faced.

The sustainability strategy relies on distributed capacity. At the beginning of implementation, external coaching support is more intensive. Over time, experienced educators are prepared to serve as peer mentors, instructional facilitators, and school-based coaches. The goal is not simply to improve individual classrooms during the evaluation period, but to leave schools with stronger internal systems for professional learning.

Evaluation Methodology and Statistical Framework

Evaluation Design

The evaluation used a quasi-experimental matched-comparison design that pooled three annual cohorts from 2023, 2024, and 2025. For each cohort, student growth was measured from the beginning to the end of the corresponding academic year using repeated measures of foundational literacy and numeracy performance, and results were then combined to compare outcomes between TeachUNITED-supported schools and matched comparison schools across Costa Rica, Mexico, Kenya, and Tanzania.

Random assignment was not feasible in the implementation setting. Instead, comparison schools were selected to provide a reasonable counterfactual for examining student learning trajectories in schools not participating in the TeachUNITED model. The analysis focused on students who completed both baseline and endline assessments, allowing the evaluation to examine growth over time rather than relying on one-time cross-sectional comparisons.

Because the study was not randomized, the findings should be interpreted as evidence of association rather than definitive causal proof. That distinction matters. The design is stronger than a simple pre-post study, but it does not eliminate every possible source of selection bias or contextual difference.

Study Context and Sample

The study included partner schools in four countries: Costa Rica, Mexico, Kenya, and Tanzania. Participating schools included rural, semi-urban, and under-resourced contexts with varying levels of instructional infrastructure and access to ongoing teacher support.

Two analytic samples were used. The literacy sample included 190 students assessed with EGRA: 132 in TeachUNITED-supported schools and 58 in matched comparison schools. The numeracy sample included 208 students assessed with ICAN: 143 in TeachUNITED-supported schools and 65 in comparison schools. In both cases, the sample was limited to students with matched baseline and endline data.

Assessment Instruments

Early Grade Reading Assessment

The Early Grade Reading Assessment (EGRA) was used to measure foundational literacy. EGRA captures multiple early reading skills, including letter-sound knowledge, decoding, oral reading fluency, and comprehension. In this evaluation, the principal literacy outcomes included reading fluency and non-word decoding, the latter serving as an indicator of phonics-related skill rather than memorized word recognition.

International Common Assessment of Numeracy

The International Common Assessment of Numeracy (ICAN) was used to measure foundational and applied numeracy. The assessment includes number identification, arithmetic operations, multi-step reasoning, and real-world problem solving. The evaluation examined cumulative mathematics performance as well as advanced operations and applied problem-solving outcomes.

Comparison Group Selection

Comparison schools were selected using deliberate matching procedures. Matching criteria included school size, geographic setting, socioeconomic and infrastructural conditions, and grade-level configuration. This process was intended to reduce major differences between participating and non-participating schools that could otherwise confound interpretation of student outcomes. In some cases, a single comparison school was matched to more than one treatment school. This decision reflected practical constraints associated with collecting data in non-participating schools and was intended to preserve the strongest available matches on the selection criteria.

Matching improves comparability; it does not guarantee equivalence. Unmeasured differences between schools may remain. The analysis therefore pairs matched comparison groups with baseline statistical adjustment, while avoiding claims that exceed the design.

Statistical Analysis

Post-intervention outcomes were analyzed using Analysis of Covariance (ANCOVA), with baseline assessment scores included as covariates. This approach adjusts endline comparisons for initial differences in student performance and provides a clearer estimate of group differences at the end of the evaluation period.

Statistical significance was evaluated using p-values, and the magnitude of group differences was estimated with Cohen's d. The report treats statistical and practical significance separately: a result may be statistically reliable, educationally meaningful, or both. Where effect sizes are translated into additional years of learning, the conversion follows Evans and Yuan's (2019) framework, in which $d = 0.21$ is used as an approximate benchmark for one year of typical learning growth. These estimates should be understood as interpretive approximations rather than literal measures of instructional time.

Methodological Considerations

Four considerations frame interpretation of the results. First, the study used a quasi-experimental design, not randomized assignment. Second, implementation took place across countries with different languages, curricula, resources, and school conditions. Third, the analytic sample includes students with both baseline and endline data, leaving open the possibility of attrition effects. Fourth, the evaluation was conducted internally by TeachUNITED, which makes transparency about methods and cautious interpretation important.

These limitations do not negate the findings. They define their proper use. The evaluation provides meaningful evidence on the relationship between participation in TeachUNITED-supported schools

and student learning outcomes, while also pointing to the value of independent replication and longer-term follow-up.

Results

Across countries and assessment domains, students in TeachUNITED-supported schools showed stronger growth than students in matched comparison schools. Differences were statistically significant across several literacy and numeracy indicators, with effect sizes ranging from moderate to large.

Summary of Primary Outcomes

Domain	Outcome	Estimated equivalent learning gain	Statistical results
EGRA Reading	Oral reading fluency	+2.3 additional years	$p = 0.0011$; $d = 0.49$
EGRA Reading	Non-word decoding	+2.2 additional years	$p = 0.0007$; $d = 0.46$
ICAN Mathematics	Cumulative mathematics performance	+3.6 additional years	$p < 0.0001$; $d = 0.76$
ICAN Mathematics	Advanced operations	+2.1 additional years	$p = 0.0013$; $d = 0.45$
ICAN Mathematics	Applied problem solving	+2.2 additional years	$p = 0.0011$; $d = 0.46$

Literacy Outcomes

Students in TeachUNITED-supported schools made stronger gains in oral reading fluency than students in comparison schools. On the primary fluency indicator, the estimated difference corresponded to approximately 2.3 additional years of learning ($p = 0.0011$, $d = 0.49$). A related aggregate fluency measure showed a comparable pattern ($p = 0.0004$, $d = 0.48$).

The evaluation also found significant gains in non-word decoding, a measure that matters because it captures students' ability to apply phonics knowledge to unfamiliar words. Students in TeachUNITED-supported schools gained approximately 2.2 additional years relative to comparison students on this measure ($p = 0.0007$, $d = 0.46$). The result points to growth in underlying decoding skill, not merely in recognition of familiar text.

Numeracy Outcomes

The largest effect sizes appeared in mathematics. Students in TeachUNITED-supported schools gained approximately 3.6 additional years in cumulative mathematics performance relative to students in matched comparison schools ($p < 0.0001$, $d = 0.76$). In education intervention research, an effect of this size is large enough to merit careful attention, even when interpreted conservatively.

Mathematics gains were not confined to basic operations. Students also made significant progress on advanced operations, with an estimated gain of 2.1 additional years ($p = 0.0013$, $d = 0.45$), and on applied problem-solving tasks, with an estimated gain of 2.2 additional years ($p = 0.0011$, $d = 0.46$). These outcomes suggest that the difference extended into multi-step reasoning and application, areas often harder to shift through routine instruction alone.

Gender-Differentiated Outcomes

The gender-differentiated findings are also important results in the evaluation. Female students in TeachUNITED-supported schools posted larger gains than female students in comparison schools across several domains, with the largest effect in mathematics.

In reading fluency, girls in TeachUNITED-supported schools gained approximately 2.7 additional years relative to female students in comparison schools ($p = 0.0032$, $d = 0.57$). In cumulative mathematics performance, the estimated gain was approximately 4.3 additional years ($p < 0.0001$, $d = 0.90$). Male students also improved, with estimated gains of approximately 2.0 additional years in reading fluency and 3.0 additional years in mathematics. The larger estimated gains among female students suggest that the model may be especially relevant in contexts where girls face structural or classroom-level barriers to full participation.

These findings should not be read as a complete explanation of gender equity effects. The evaluation was not designed to isolate the mechanisms behind the gender results. Still, the pattern is strong enough to warrant further investigation, particularly into the role of classroom routines, differentiated instruction, teacher attention, and participation norms.

Discussion

The results offer a coherent pattern: students in TeachUNITED-supported schools grew more than students in matched comparison schools, and the gains were visible in both literacy and mathematics. The magnitude of the mathematics findings, their consistency across multiple subdomains, and the observed gender-differentiated patterns suggest that the results are not only statistically significant but also practically meaningful for educators, policymakers, and implementation partners.

The findings align with a broader body of research on effective professional development. Teachers are more likely to change practice when support is sustained, practical, collaborative, and tied to classroom evidence. TeachUNITED's model includes those features. It also adds an important implementation dimension: local adaptation. In multilingual, resource-constrained settings, professional development that ignores context is unlikely to be successfully translated into classroom practice.

The study does not identify which component of the model mattered most. Coaching, peer collaboration, data use, differentiated instruction, and peer leadership were implemented as a package. That limits component-level causal claims. It also reflects the way school improvement often works in practice. Instructional change rarely comes from a single lever. It emerges from a set of reinforcing routines, relationships, and decisions.

Implications for Instructional Coaching

The findings strengthen the case for coaching-based professional development in low-resource settings. Workshop-only models may raise awareness, but awareness is not implementation. Coaching creates opportunities to practice, receive feedback, adjust, and try again. That cycle is

particularly valuable when teachers are learning to differentiate instruction, interpret student data, or manage classrooms with wide variation in readiness.

Implications for Sustainability

The train-the-trainer structure is also important. External coaching can introduce new practices, but long-term improvement depends on whether schools develop their own capacity to sustain them. By preparing teachers and school leaders to serve as mentors and instructional facilitators, TeachUNITED aims to move professional learning from a project activity into a school habit. The durability of that shift will depend on leadership continuity, teacher retention, and the resources available to schools after direct implementation support decreases.

Implications for Gender Equity

The results for female students deserve particular attention. Structured routines, targeted support, and more responsive teaching may create classrooms where girls participate more consistently and receive more timely help. In settings where gender norms or classroom dynamics suppress participation, improvements in instructional practice can become equity interventions, even when the program is not designed solely around gender.

Policy and Implementation Considerations

For ministries, funders, and nonprofit implementers, the findings point toward a practical conclusion: professional development should be designed as an instructional system, not an event. Recurring coaching, classroom-based feedback, peer learning, and data use require more planning than a workshop calendar, but they are better aligned with how teaching actually changes.

The findings also caution against simple replication. A model that works across four countries does not become context-free. Its promise lies partly in its ability to preserve a core instructional approach while adapting delivery to local languages, curricula, and school conditions. Scaling should therefore protect both elements: fidelity to the model's instructional logic and flexibility in its implementation.

Conclusion and Recommendations

This evaluation examined the relationship between TeachUNITED's professional development model and student learning outcomes across four countries over a three-year period. Students in TeachUNITED-supported schools demonstrated stronger growth than students in matched comparison schools across foundational literacy and numeracy measures. The results were largest in mathematics and especially notable among female students.

The study's design warrants caution. It was quasi-experimental, internally conducted, and implemented across diverse contexts where unmeasured differences may remain. Still, the combination of repeated measures student data, matched comparison schools, standardized assessment tools, ANCOVA adjustment, and effect-size interpretation provides a meaningful evidentiary basis for continued investment and study.

Recommendations

1. Prioritize sustained professional learning over isolated workshops. Professional development should include recurring coaching, feedback, peer collaboration, and opportunities to practice new instructional strategies in real classrooms.
2. Build instructional leadership inside schools. Models that prepare teachers and school leaders to serve as peer coaches are more likely to continue after external support declines.
3. Adapt implementation to local language and curriculum. Shared instructional principles are important, but delivery must fit the linguistic, cultural, and institutional realities of participating schools.
4. Support independent replication. External evaluation, expanded samples, and mixed-methods designs would strengthen the evidence base and clarify how the model works across different educational systems.

Future Research

Future studies should examine implementation fidelity, teacher practice change, student engagement, and school-level leadership conditions. Randomized or mixed-methods designs would help isolate mechanisms. Independent replication would also strengthen confidence in the findings and clarify the conditions under which the model is most effective.

The evidence presented here does not claim that coaching alone can solve the learning crisis. It does show that sustained investment in teacher capacity can be associated with meaningful improvements in student learning. For education systems searching for practical ways to improve foundational outcomes, that is a finding worth taking seriously.

Appendix: Key Statistical and Evaluation Terms

- **p-value (p):** A statistical measure used to estimate the probability that a result as large as the one observed could occur by chance under the assumptions of the model.
- **Cohen's d:** A standardized effect-size measure. It expresses the magnitude of the difference between groups in standard deviation units, allowing results from different measures to be compared more easily.
- **ANCOVA:** Analysis of Covariance. A statistical approach used here to compare endline outcomes after adjusting for baseline student performance.
- **Matched-comparison design:** A quasi-experimental design in which comparison schools are selected because they resemble participating schools on key observable characteristics.
- **Additional years of learning:** An interpretive translation of effect sizes into approximate learning terms. In this report, the conversion follows Evans and Yuan (2019), using $d = 0.21$ as an approximate benchmark for one year of typical learning growth.
- **Quasi-experimental evaluation:** An evaluation design that compares groups without random assignment. Such designs can provide useful evidence but require careful interpretation because unmeasured differences between groups may remain.

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