

Teaching and Learning in Fragile Contexts (TLFC) Policy Brief



Effects of Play-Based and Joyful Accelerated Learning Programs on Academic and Behavioral Outcomes of Primary School Children in Post- Conflict Tigray, Ethiopia

Belay Hagos Hailu, PhD
Institute of Educational Research, Addis Ababa University
Tsegaye Hagos, PhD Candidate
Department of Psychology, Addis Ababa University

June 25, 2026



code | Promoting every
child's right to read

TLFC

In partnership with
Canada

Executive summary

Following the devastating conflict between 2020 and 2022, millions of children were left out of school, leading to significant learning poverty and trauma. The main purpose of this study was to evaluate the effectiveness of a play-based and joyful Accelerated Learning Program (ALP)—specifically the Luminos Method—on the academic achievement (literacy and numeracy) and behavioral outcomes (pro-social and difficult behavior) of primary school children in post-conflict Tigray, Ethiopia. Utilizing a mixed methods research design, quantitative data were collected from a sample of 1,836 Grade 4 students (506 in the Luminos group and 1,330 in the regular group) across 24 schools in three woredas: Atsbi, Endamohoni, and Seharti Samre along with key informant interviews with parents, teachers, and students.

Academic outcomes were measured across local language (Tigrigna literacy), English language literacy, and Mathematics after converting the raw scores of test results into standardized scores (T-scores) for comparison purposes. Behavioral outcomes were evaluated via the Strengths and Difficulties Questionnaire (SDQ) among 501 and 510 primary school children enrolled in the Luminos and Regular tracks respectively.

Results from independent samples t-tests revealed that children in the Luminos ALP performed significantly higher in Tigrigna ($M = 50.92$), English ($M = 50.93$), Mathematics ($M = 51.14$), and overall academic average ($M = 50.64$) compared to their peers in regular track, with respective mean scores of Tigrigna ($M=49.55$), English ($M=49.53$), Mathematics ($M=49.46$) and overall average ($M=49.57$).

Furthermore, the joyful pedagogy significantly mitigated behavioral difficulties, with 80% of children falling within the normal range, though peer relationship challenges remained a distinct concern. Gender analysis indicated that while boys generally outperformed girls in conventional settings, the gender gap was minimized within the Luminos program. Besides, significant regional variations were also observed, with Atsbi Woreda ($M=53.52$) showing the highest overall academic gains as compared to those in Endamohoni ($M=48.11$) and Seharti Samre ($M=48.04$).

The findings demonstrate that child-centered, activity-based and joyful pedagogies offer a highly effective mechanism for post-conflict educational recovery and psychological rehabilitation, providing a second chance to catch up on lost years of schooling.

Context

The total quantitative sample for the academic outcomes comprised of 1,836 Grade 4 students drawn from 24 primary schools distributed across three purposefully selected districts (i.e., local structure called Woredas) in the Tigray region: Atsbi, Endamohoni, and Seharti Samre. The sample was structurally stratified by program type, consisting of 506 students in the Luminos Group, all of whom had successfully completed the one-

year compressed ALP cycle and transitioned into formal Grade 4 and 1,330 students in the Regular Group, who had proceeded through the standard primary progression of Grades 1,2 and 3. The gender balance of the sample was almost perfectly symmetrical, with 916 males (49.89%) and 920 females (50.11%). On the other hand, the sample for the assessment of behavior (both pro-social and difficult behavior) was 1011, where the Luminos Group were 501 and the Regular track children were 510.

Research Methodology

In this study two groups with different pedagogical tracks were compared on academic and behavioral outcomes. *The Luminos Group* had the opportunity to learn using the Luminos Method, which was focusing on target groups of children who were out of school children age 9-14. As they were overage for their grades due to the missed opportunity during the COVID-19 followed by the war in Tigray which lasted about three years (2020-2022). The Accelerated Learning Program (ALP) was a condensed form of the regular curriculum, which reorganized and condensed the three year curriculum (i.e., for Grades 1-3) into one year, the successful completion leads students to directly join Grade 4, skipping Grades 2 & 3. The ALP which employed joyful, playful and activity based pedagogy by actively engaging children using games, music, stories, flash cards, and hand crafts while the teacher was a facilitator of their learning. *The Regular Group* learned using the government three year curriculum designed for Grades 1-3 and had to stay for three years before joining Grade 4. They were not overage for their grade levels. They were taught using the conventional pedagogies, in most cases teacher centered pedagogies.

Academic achievement scores were extracted from institutional records at the end of the Grade 4 term, capturing raw percentage scores across three core curricular domains: Local Language Literacy (Tigrigna), English Language Literacy, and Mathematics, alongside an Overall Average Score. Behavioral outcomes were measured using an adapted version of the Strengths and Difficulties Questionnaire (SDQ), a validated tool mapping developmental psychology attributes across explicit subscales of emotional symptoms, peer relation problems, conduct problems and hyperactivity, which add up to total difficulty score. Additionally, a distinct positive subscale measured Pro-social Behavior.

Key Findings

In post conflict Tigray, Ethiopia, out of school children supported by the activity based joyful accelerated learning program implemented by the Luminos group showed higher academic and behavioral outcomes than those children learning in the public primary school with regular track.

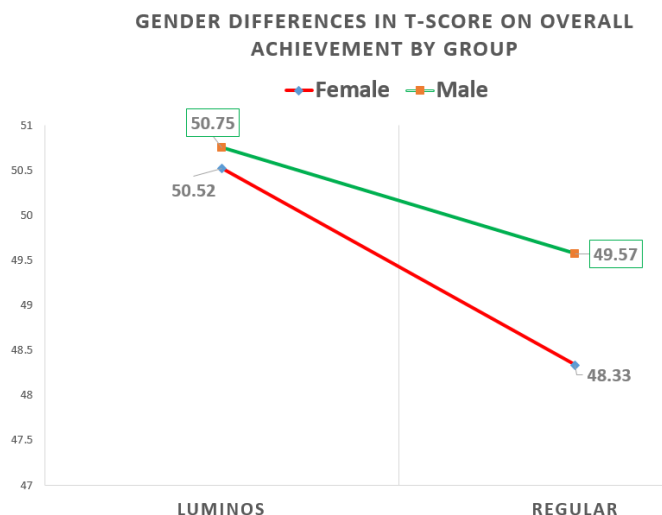


Figure 1. Gender gap on overall academic outcomes by type of intervention

Those learners supported by the Luminos Method showed less behavior difficulty and more pro-social behavior than those in the regular education program. Besides, there was no gender gap in academic achievement scores for those supported by the Luminos Method, unlike those attending in the regular track. Whereas the gender gap in academic achievement was very small for those learning through the Luminos Method, the gap was large and significant for those enrolled in the regular track, showing the Luminos Method was gender responsive.

"My daughter never misses a class the whole year. One day I wanted her to assist me in household chores, but she said no and went to school. I think this is due to the good lesson their teacher is teaching them." (Parent KII, Atsbi Woreda)

"When out of school children were given the opportunity to join accelerated learning program, they were eager to learn. Besides the teaching method was enjoyable and engaging" (Teacher KII, Endamohoni woreda)

Key informant interviews also confirmed that the joyful approach was effective in post conflict settings not only in improving academic outcomes but also in behavioral outcomes.

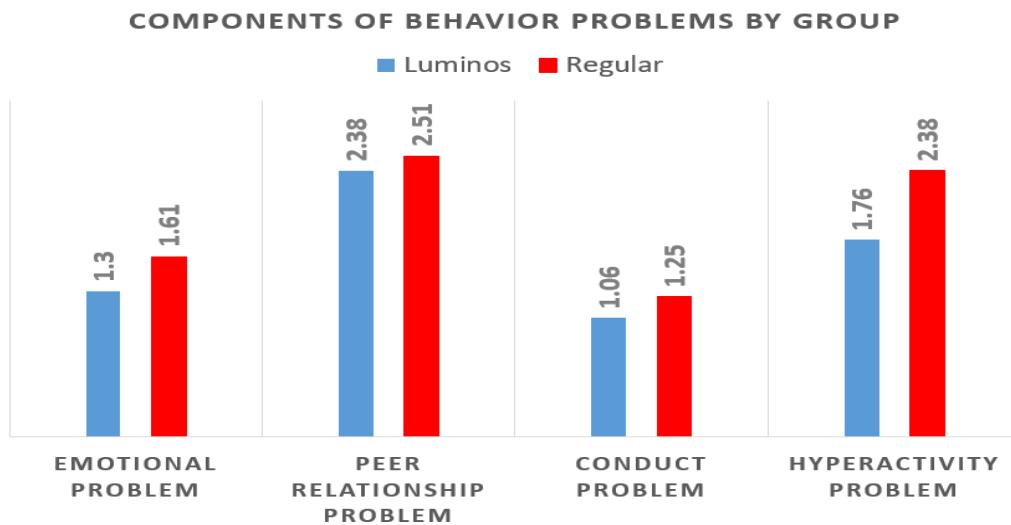


Figure 2. Components of Behavior Problems by Group

Behavior Difficulty

Students taught through the Luminos Method had less behavior problems in all four components: emotional, peer relationship, conduct and hyperactivity problems. Among the distinct behavioral problem components, peer relationship problems emerged as the most prominent deficit, reflecting the disruption of social fabric caused by years of conflict. Furthermore, cross-tabulations of district geographic locations showed that children from Seharti Samre Woreda exhibited significantly lower rates of difficult behavior problems compared to the other two districts, suggesting localized variance in post-war community coping mechanisms.

"I have children learning in the usual regular school and in the accelerated learning program. Their motivation to learning is unparalleled. The way the teachers teach in the accelerated learning program is enjoyable."
(Parent KII, Endamohoni Woreda)

"This program has introduced me with enjoyable learning, my teacher and classmates. It has brought good changes in my life. For example, during the war time, my thoughts were bad. When I joined the accelerated learning program, all these were changed." (Student1 participant, Atsbi Woreda)

Regarding Difficult Behaviors, 79.9% of the surveyed children presented scores within the normal baseline (0–13). However, exactly 10.0% of the students exhibited severe, clinically abnormal behavior profiles (scores 17–40), which indicates serious emotional or behavioral pathology stemming from post-war stress. An additional 10.1% fell into the borderline category (14–16).

PRO-SOCIAL BEHAVIOR BY GENDER & GROUP

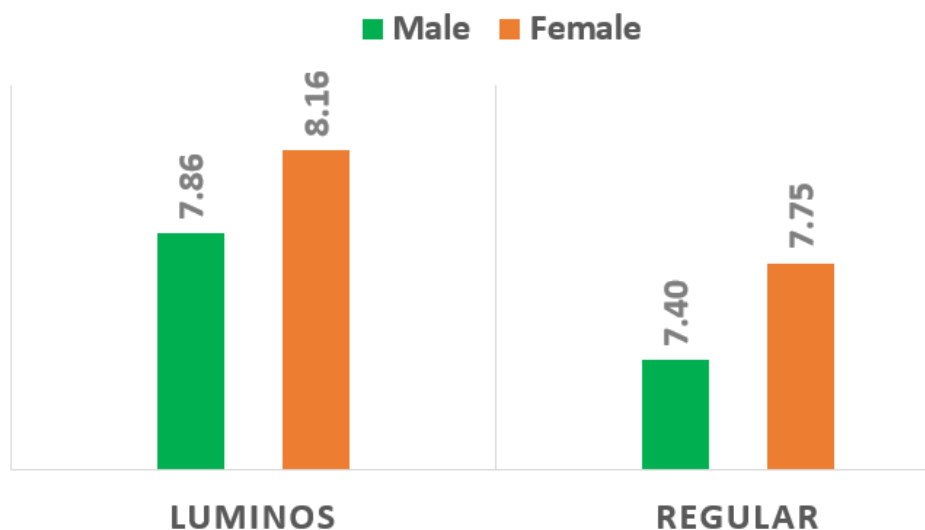


Figure XXX. Pro-social behavior by Gender and Group

Students enrolled in the Luminos Group demonstrated higher scores of pro-social behaviors than those enrolled in the Regular Track. In terms of the positive metric of Pro-social Behavior, the vast majority of the school children (81.8%) fell within the designated normal range (scores 6–10). This distribution was led by the Luminos group, where 84.0% of children demonstrated highly adaptive pro-social skills, compared to 79.6% in the Regular track.

"I am pleased to see our children changed their thoughts from war to education. I have seen improvements in my child's behavior." (Parent KII, Samre Woreda)

Conclusions

Catch up: Out of school children in Tigray supported by the Luminos Method got second chance education opportunity that enabled them to catch up with their peers.

Effectiveness on academic outcomes: Children enrolled in the Accelerated learning Program (ALP) performed better in literacy (Tigrigna), English, Mathematics and in the overall academic achievement than their peers enrolled in the regular programs.

Effectiveness on behavioral outcomes: The joyful pedagogy implemented by the Luminos Method not only enhanced academic skills but also improved behavioral outcome.

Key recommendations

Based on these empirical insights, the following policy recommendations are proposed:

- **Systemic Adoption and Expansion:** The Ministry of Education and regional education bureaus should systematically scale up the use of activity-based, accelerated learning frameworks paired with joyful pedagogies across all regions of Ethiopia affected by conflict, displacement, and environmental crises.
- **Institutionalized Teacher Professional Development:** Conventional primary school teachers should receive systematic training in joyful, child-centered instructional techniques. These methods should be formally integrated into pre-service and in-service national teacher training curricula.
- **Cross-Institutional Knowledge Sharing:** Regional education offices should establish formalized networks to enable regular public schools to learn from and adopt the successful pedagogical practices of effective ALP centers.
- **Integrated Psychosocial Screening and Support:** Because 10% of children exhibit severe, clinically abnormal behavioral difficulties, schools must combine academic instruction with systematic psychosocial screening and targeted counseling services to fully address post-war trauma.

Acknowledgements

We would like to acknowledge the Global Affairs Canada and CODE Canada for funding this study and Addis Ababa University for facilitating the study. Second, special thanks go to the Luminos Fund and Tigray Bureau of Education for allowing us to access the target schools in the three districts (Woredas) of Tigray. Third, we would like to express our gratitude to our respondent students, teachers, principals, parents and project coordinators. Finally, we would like to thank our data collectors for engaging in this endeavor.

Download the full research report at: <https://code.ngo/tlfcresearch/>.

© 2026 Belay Hagos Hailu.

This report was produced under the Teaching and Learning in Fragile Contexts project and published by CODE with permission from the grantee. This report is licensed under the Creative Commons Attribution-Noncommercial 4.0 International Licence (CC BY-NC 4.0). Users may share and adapt the report for non-commercial purposes, provided appropriate credit is given to the author(s), and CODE.

References

- Baron, C. (Ed.). (2022). The Luminos Method: The secret to unlocking the light of learning in every child. The Luminos Fund.
- Early Grade Reading Assessment (EGRA). (2018). National report on foundational literacy and numeracy performance in lower primary schools in Ethiopia. Ministry of Education.
- Luminos Fund. (2023). Assessing learning loss and pedagogical adaptation in post-conflict Tigray. Internal Research Monograph.
- Longden, K. (2013). Accelerated learning programs: What do we know about their effectiveness? *International Journal of Educational Development*, 33(2), 142–150.
- Shonkoff, J. P., & Garner, A. S. (2012). The lifelong effects of early childhood adversity and toxic stress. *Pediatrics*, 129(1), e232–e246.
- UNICEF. (2024). UNICEF annual report 2024: Protecting the rights of children in crisis configurations. United Nations Children's Fund.
- World Bank. (2022). State of global learning poverty: 2022 update. World Bank Group.