THE LUMINOS FUND

GOVERNMENT ADOPTION WITH STRUCTURED PEDAGOGY IN ETHIOPIA:

2023-24 ENDLINE EVALUATION REPORT

OCTOBER 2024

Executive Summary

Ethiopia is home to the Luminos Fund's longest-standing and most advanced government partnership to date. Through years of support and advocacy from Luminos, the Ministry of Education (MOE) has embraced accelerated learning as a national strategy to reach out-of-school children and is adopting the Luminos program model in government schools across the country.

During the 2023-24 school year, in partnership with the Sidama Regional Education Bureau (REB), Luminos piloted a structured pedagogy approach in 40 government adoption classrooms in two districts of Sidama, Bona and Teticha, reaching 1,500 out-of-school children.

An external evaluation found that using structured pedagogy in government adoption classrooms led to an extraordinary impact on children's literacy and numeracy learning outcomes. **One month before the end of the 10-month program, students were able to read 32 correct words per minute (CWPM), an improvement of +28 CWPM over baseline, and their reading comprehension scores increased by 48 percentage points.**

Government Adoption with Structured Pedagogy Pilot (2023-24 school year)

1,500 students

40 government adoption classrooms

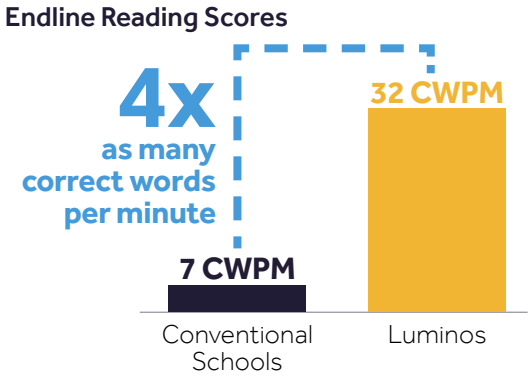
2 districts in the Sidama region

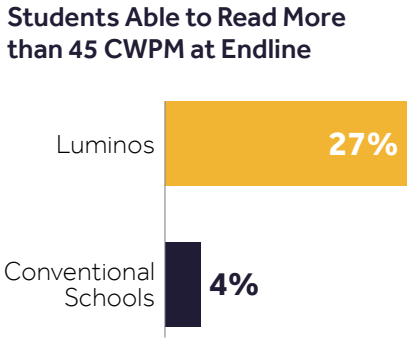
14 days of teacher training plus routine supervision and coaching

For comparison, students in the government adoption classrooms with structured pedagogy were able to read more than four times as many CWPM as Grade 2 Sidaamu Afoo speakers in conventional schools in Sidama, who read only 7 CWPM, according to the 2021 national Early Grade Reading Assessment (EGRA) in Ethiopia. In addition, 27% of students in the government adoption classes with structured pedagogy were able to read more than 45 CWPM at endline, an increase from 1% at baseline. In contrast, the 2023 national EGRA in Ethiopia found that only 4% of Grade 2 students in conventional classrooms in Sidama were able to read more than 45 CWPM.

Student Performance in Government Classrooms using Luminos Structured Pedagogy Versus Conventional Schools in Sidama, Ethiopia

- Students in **Luminos** structured pedagogy government adoption classrooms
- Students in Grade 2 at **conventional schools in Sidama, Ethiopia**





Background: Government Adoption in the Sidama Region

Sidama was an early supporter of the government adoption program, becoming the first region to adopt the model in all districts. The Sidama REB similarly embraced the opportunity to pilot a structured pedagogy approach within the government adoption program. In pilot classrooms, government teachers received a Teacher's Guide with daily lesson plans that prescribed topics and core learning objectives for each lesson of the day. The Guide also restructured instructional time to allocate more hours for foundational literacy (50% of

learning hours) and numeracy (30% of learning hours). Teachers in the structured pedagogy pilot also received a total of 14 days of training over the course of the program year, and routine supplemental supervision from dedicated program supervisors (classroom visits on a bi-weekly to monthly basis).

Evaluation Overview

The external evaluation aimed to demonstrate the impact of structured pedagogy on student literacy and numeracy outcomes during the 10-month 2023-24 school year. An Ethiopian firm, BEES Devlytics, used the Early Grade Reading Assessment (EGRA) and Early Grade Math Assessment (EGMA) instruments, translated into the Sidaamu Afoo language. The team digitized the instruments using Tangerine. Enumerators received five days of training at baseline and four days at endline. Both trainings consisted of classroom-based pilot sessions. The majority of enumerators had previous experience in EGRA/EGMA administration. BEES Devlytics conducted endline data collection one month before the end of the school year to avoid conflict with planned regional exams. Two enumerators simultaneously scored the first students assessed each day to ensure inter-rater reliability (for IRR, only submissions by the "primary assessor" were kept in the data set). The team analyzed the data using univariate, descriptive analysis disaggregated by gender and district. T-tests determined whether differences in endline scores between two groups are statistically significant for a p-value of 0.05 or lower.

In pilot classrooms, government teachers received daily lesson plans that prescribed topics and core learning objectives for each lesson of the day. (Photo by Michael Stulman/Luminos Fund)

Sample Description

The intended sample size at baseline was between 7-10 students selected from each of the 40 pilot project classes in the two districts of Bona and Teticha (final baseline sample size: n=397, 50% girls). At the time of the baseline, an even number of girls and boys were sampled. At endline, a total of 359 students were assessed (47% girls), of which 20 were replacement students (replacement students were selected if the number of students matched from baseline in a class was less than 5). At baseline, 29% of students could not identify a single letter, and 78% of students could not read a single word in a Grade 2 level reading passage.

Results

The results of the evaluation show that the Luminos pilot using structured pedagogy in government-adoption classrooms positively impacted student achievement in both reading and math. Endline results reflect learning levels in late May, one month before the official end of the program.

Literacy

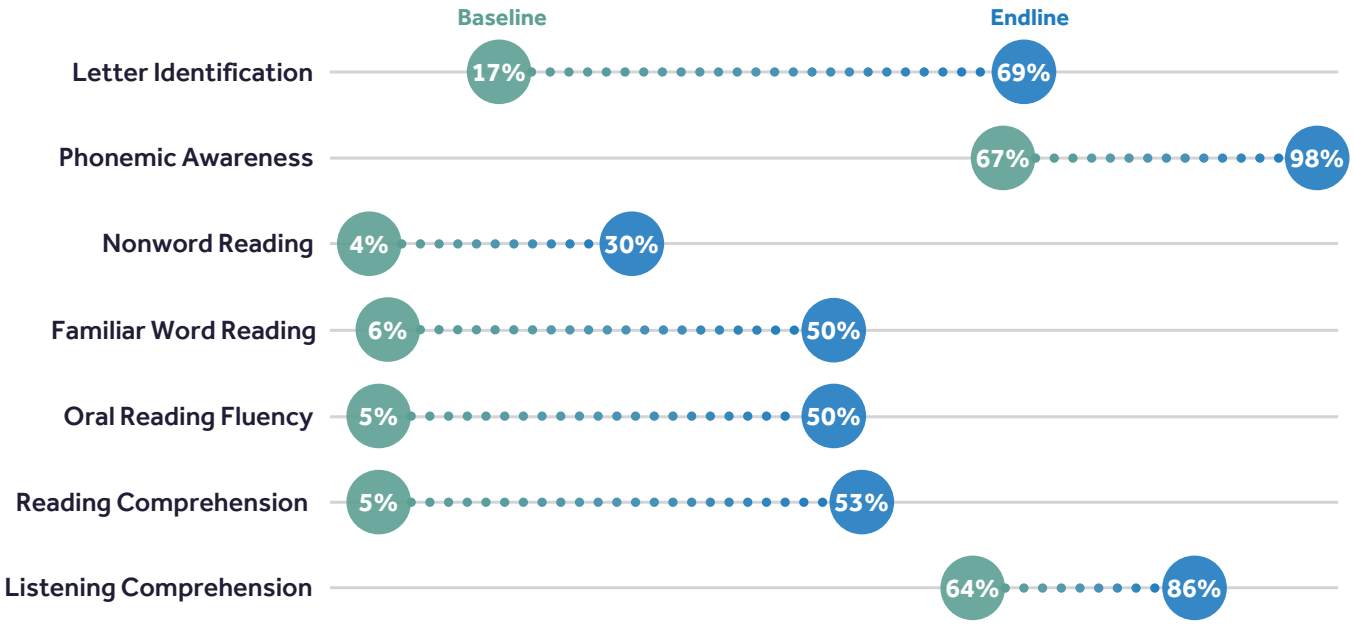
On reading, students made significant gains from baseline to endline across every EGRA subtask, including an average improvement of +52 percentage points on letter identification, +43 percentage points on familiar words, +44 percentage points on oral reading fluency (ORF), and +48 percentage points on reading comprehension. On the ORF subtask, students could read 32 correct words per minute (CWPM) at endline, an improvement of +28 CWPM over baseline. At the same time, the percentage of students receiving zero scores on subtasks – those unable to answer any items correctly – dropped dramatically. At endline, the percentage of students unable to read any words correctly on the Grade 2-level ORF subtask declined from 78% to only 8%, while the percentage of students unable to answer any comprehension questions about the passage declined from 88% to 15%. Please see Table 1 and Figure 1 for more details; for a full description of the EGRA subtasks see the Appendix on page 8.

Table 1: Luminos Ethiopia 2023-24 Structured Pedagogy Reading Results

EGRA subtasks	Max score	Mean Score			% Correct Score			Per Minute Score		
		BL	EL	DIFF	BL	EL	DIFF	BL	EL	DIFF
Letter Name Identification	100	17.2	68.9	+51.6	17%	69%	+52%	17.5	70.0	+52.5
Phonemic Awareness	5	3.4	4.9	+1.6	67%	98%	+31%			
Nonword Reading	50	2.0	15.2	+13.3	4%	30%	+27%	2.0	16.2	+14.2
Familiar Word Reading	50	3.2	24.9	+21.7	6%	50%	+43%	3.3	26.8	+23.6
Oral Reading Fluency	60	3.3	29.9	+26.6	5%	50%	+44%	3.3	31.7	+28.4
Reading Comprehension	5	0.3	2.6	+2.4	5%	53%	+48%			
Listening Comprehension	5	3.2	4.3	+1.1	64%	86%	+22%			

BL = Baseline, EL = Endline, DIFF = Difference between Baseline and Endline

Figure 1: Percent Correct Scores for Reading Subtasks



Luminos classrooms are inclusive, joyful, and activity-based, with a focus on making learning fun and empowering for all students. (Photo by Michael Stulman/Luminos Fund)

Numeracy

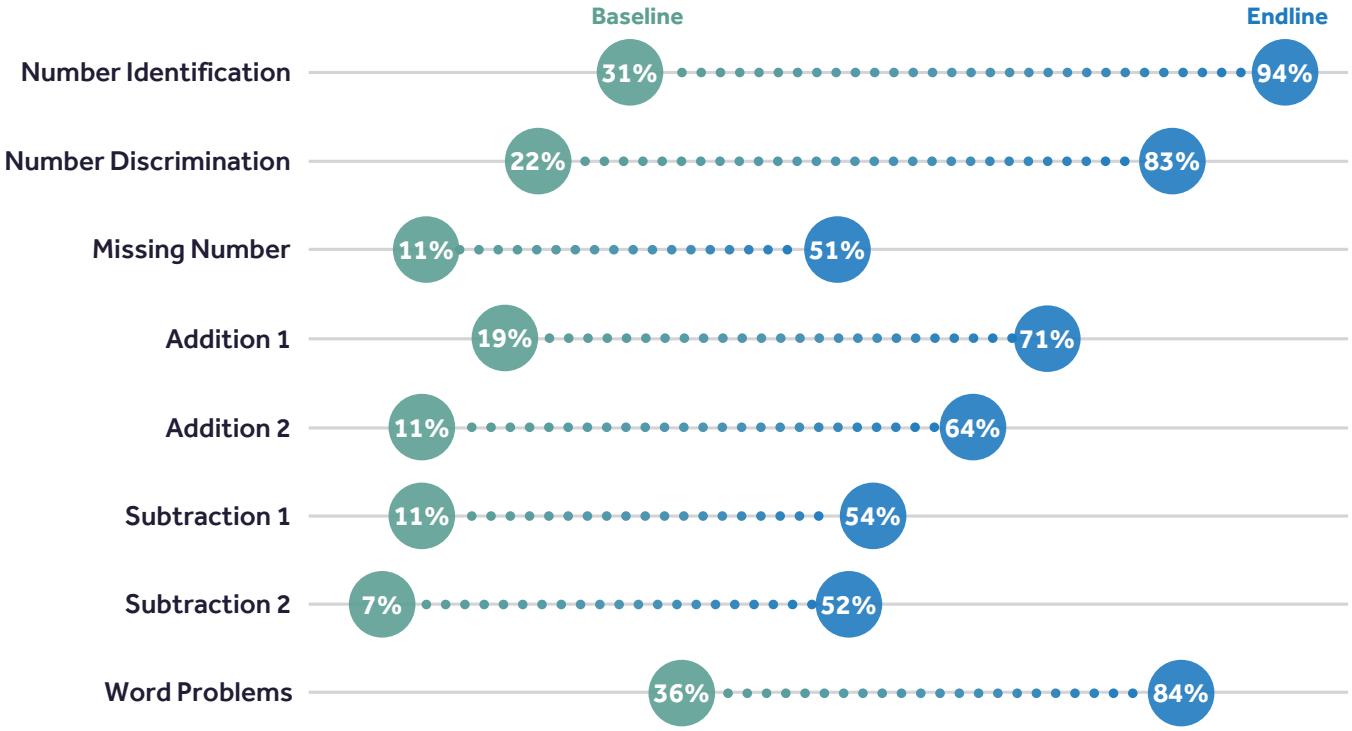
Students in classrooms with structured pedagogy also made significant gains in math, including an average improvement of +63 percentage points on number identification, +61 percentage points on number discrimination, +52 percentage points on addition Level 1, and +43 percentage points on subtraction Level 1. This increase in average scores was accompanied by a pronounced decrease in the percentage of students scoring zero on each subtask. For example, at endline, only 2% of students were not able to answer any addition Level 1 questions (down from 53% of students at baseline) and 6% of students received a zero score on subtraction Level 1 (down from 68% at baseline). These EGMA results are particularly notable as 30% of instructional time in structured pedagogy pilot classes is dedicated to numeracy compared to 50% of time to literacy. Please see Table 2 and Figure 2 for more details; for a full description of the EGMA subtasks see the Appendix on page 9.

Table 2: Luminos Ethiopia 2023-24 2023-24 Structured Pedagogy Math Results

EGRA subtasks	Max score	Mean Score			% Correct Score			Per Minute Score		
		BL	EL	DIFF	BL	EL	DIFF	BL	EL	DIFF
Number Identification	20	6.1	18.8	+12.7	31%	94%	+63%	8.1	39.9	+31.8
Number Discrimination	10	2.2	8.3	+6.1	22%	83%	+61%			
Missing Number	10	1.1	5.1	+4.0	11%	51%	+40%			
Addition Level 1	20	3.8	14.1	+10.3	19%	71%	+52%	3.9	15.4	+11.5
Addition Level 2	5	0.6	3.2	+2.6	11%	64%	+52%			
Subtraction Level 1	20	2.2	10.8	+8.6	11%	54%	+43%	2.3	10.9	+8.6
Subtraction Level 2	5	0.4	2.6	+2.2	7%	52%	+45%			
Word Problems	6	2.2	5.1	+2.9	36%	84%	+48%			

BL = Baseline, EL = Endline, DIFF = Difference between Baseline and Endline

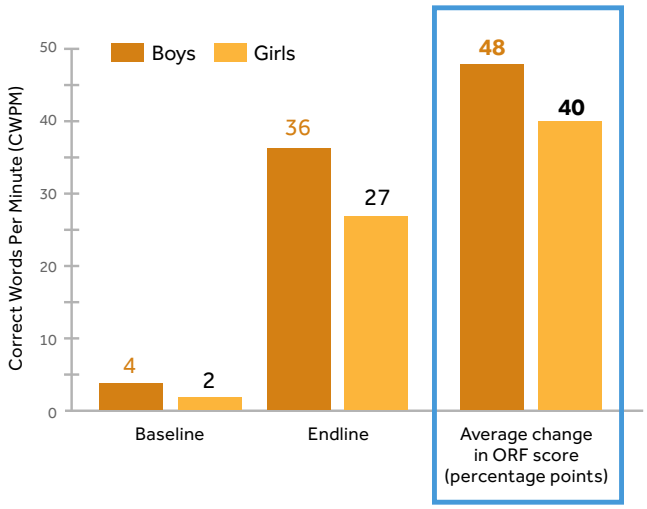
Figure 2: Percent Correct Scores for Math Subtasks



Results by Gender

Both girls and boys showed notable improvements in literacy, although boys outperformed girls on the more complex reading-related tasks (nonwords, familiar words, oral reading fluency, and reading comprehension) with statistical significance at endline. On the ORF subtask, the average score for girls increased by +40 percentage points, with girls progressing from reading 2 CWPM at baseline to 27 CWPM on average at endline (+25 CWPM over baseline). By comparison, the average ORF score for boys increased by +48 percentage points, with boys progressing from reading 4 to 36 CWPM at endline (+32 CWPM over baseline).

Comparison of Girls and Boys Progress on Reading Fluency



Girls and boys achieved very similar improvements in math scores between baseline and endline. For example, on the addition Level 1 subtask, girls improved by +50 percentage points (progressed from solving 3 addition problems per minute at baseline to 13 problems per minute at endline) while boys improved by +52 percentage points (from 5 addition problems per minute at baseline to 17 problems at endline). On the subtraction Level 1 subtask, girls improved by +42 percentage points (from 1 subtraction problem per minute at baseline to 10 problems were minute at endline), while boys improved by +43 percentage points (from 3 subtraction problems were minute at baseline to 12 at endline). However, girls started at a lower baseline and finished at a lower endline than boys across all EGMA subtasks. Endline scores were higher and statistically significant for boys for the number identification, number discrimination, addition Level 1 and 2, and subtraction Level 1 and 2 subtasks.

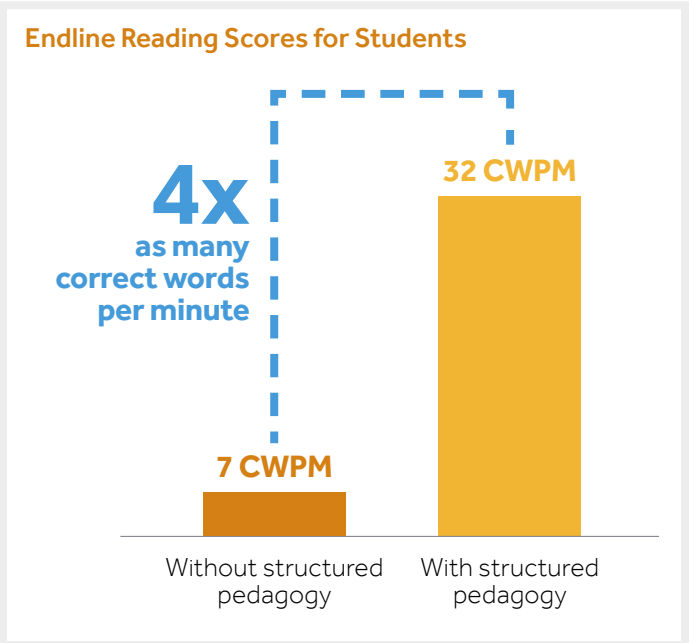
Results by District

Government adoption classrooms with structured pedagogy were implemented in two districts of Sidama: Bona and Teticha. Teachers in both districts received supplemental supervision from the same community partner, EECMY. Classes in the two districts had similar baseline literacy scores, although students in Teticha had slightly higher baseline scores on the letter identification subtask (students in Teticha could identify 20 correct letters per minute on average at baseline compared to an average of 15 correct letters per minute in Bona). In terms of endline scores, students in Teticha did better with statistical significance on the letter identification, nonword, familiar word, oral reading fluency, and reading comprehension subtasks. Students in Teticha improved by +50 percentage points on average on the ORF subtask compared to students in Bona, who improved by +39 percentage points.

On math, students in Bona and Teticha started at nearly identical baselines and achieved nearly identical levels of learning gains. For example, students in both districts improved by +63 percentage points on the number identification subtasks, +61 percentage points on number discrimination, and +52 percentage points on additional Level 1. On subtraction Level 1, students in Bona achieved gains of +44 percentage points, while those in Teticha achieved gains of +42 percentage points.

Comparison to Government Adoption Classes Without Structured Pedagogy

For comparison, students from 34 government adoption classes in Sidama, which did not use structured pedagogy, were assessed at baseline (sample size: n=358) and endline (sample size: n=282), using the same EGRA/EGMA instruments. Students in the classes with structured pedagogy outperformed their peers who were in the classes without structured pedagogy on all EGRA and EGMA subtasks. After the same number of overall learning hours, students in classrooms with structured pedagogy were able to read move than four times as many words in a passage per minute as students without structured pedagogy (at endline, students in the classes with structured pedagogy read 32 CWPM with only 8% zero scores while students in government adoption classes without structured pedagogy read 7 CWPM with 61% zero scores). On EGMA, students with structured pedagogy could identify twice as many numbers per minute, solve nearly twice as many addition Level 1 problems per minute, and solve twice as many subtraction Level 1 problems per minute as government adoption classes without structured pedagogy.



Conclusion

Results from the 2023-24 Luminos structured pedagogy pilot in Sidama show that the program had a significant positive impact on student reading and math outcomes across all EGRA and EGMA subtasks. One month before the end of the 10-month program, students in the 40 pilot classes could read 32 CWPM, an improvement of +28 CWPM over baseline. In addition to improvements in reading fluency, students made gains in reading comprehension, improving by +48 percentage points on the reading comprehension subtask.

Students in the government adoption classrooms with structured pedagogy were able to read more than four times as many CWPM as Grade 2 Sidaamu Afoo speakers in conventional schools in Sidama, who read only 7 CWPM, according to the 2021 national Early Grade Reading Assessment (EGRA) in Ethiopia. In addition, 27% of students in the government adoption classes with structured pedagogy were able to read more than 45 CWPM at endline, an increase from 1% at baseline. In contrast, the 2023 national EGRA in Ethiopia found that only 4% of Grade 2 students in conventional classrooms in Sidama were able to read more than 45 CWPM.

A Luminos student in the Sidama region in Ethiopia. (Photo by Michael Stulman/Luminos Fund)

Appendix

Early Grade Reading Assessment (EGRA)

Subtask	Reading skill	Description
Letter Name Identification	Alphabet knowledge	Students read letters and accurately say their corresponding name in one minute
Phonemic Awareness	Phonemic awareness	Students correctly identify the initial sounds of words
Nonword Reading	Decoding	Students read simple nonsense words in one minute
Familiar Word Reading	Word recognition	Students read frequent grade level appropriate words in one minute
Oral Reading Fluency	Oral reading fluency	Students read a short, written passage in one minute
Reading Comprehension	Reading comprehension	Students are asked to answer up to five questions relating to the text they read aloud for the oral reading fluency subtask
Listening Comprehension	Oral language comprehension	Students are asked questions relating to a short passage read aloud to them

Early Grade Math Assessment (EGMA)

Subtask	Numeracy skill	Description
Number Identification	Number competence	Students are given one, two, and three-digit numbers and asked to identify the numbers in one minute
Number Discrimination	Comparing numbers	Students are given a series of problems where they are asked to identify which number is bigger
Missing Number	Number patterns	Students are presented with sets of numerical sequences and asked to identify the number that belongs in the empty box
Addition Level 1	Addition fluency	Students are asked to solve a series of basic addition problems in one minute (no problems are greater than 20)
Addition Level 2	Application of procedural addition	Students are asked to solve 5 more complicated addition problems (no problems are greater than 70)
Subtraction 1	Subtraction fluency	Students are asked to solve a series of basic subtraction problems in one minute. Problems are the inverse of the Addition Level 1 items
Subtraction 2	Application of procedural subtraction	Students are asked to solve 5 more complicated subtraction problems
Word Problems	Real world problems	Students are asked to solve real word problems using basic addition and subtraction

THE LUMINOS FUND

The Luminos Fund is unlocking the light in every child. We're working to ensure all children have equal access to joyful, foundational learning, especially those shut out of education by crisis, poverty, or discrimination. To date, we've helped 277,787 children get a second chance at education in Sub-Saharan Africa and the Middle East.

In the Luminos program, we teach formerly out-of-school children learn how to read, write, and do math – to learn how to learn – through a joyful, activity-based curriculum. Our program allows out-of-school children to catch up to grade level, reintegrate into local schools, and prepare for lifelong learning.

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