



Improving Literacy Outcomes, Sierra Leone (2018-2023)

COST-EFFICIENCY ANALYSIS, FEBRUARY 2024

Summary

Catholic Relief Services (CRS) analyzed the cost-efficiency of improving literacy outcomes of in-school children in Sierra Leone through interventions of promoting literacy, teacher professional development, strengthening school management and administration, daily nutritious hot meal provision, promoting health and nutrition practices, and supporting caregivers. The analysis showed the following findings:

- It cost \$272 to support a child to improve literacy outcomes over four years. The largest intervention was promoting literacy (\$94 per child over four years, or 35% of the overall cost per child); the second largest intervention was promoting health and nutrition practices (\$83 per child over four years, or 31% of the overall cost per child); the third largest intervention was meal provision (\$52 per child over four years, or 19% of the overall cost per child).
- The in-kind contribution of food supplies and corresponding internal transportation, storage, and handling (ITSH) was an additional \$159 per child over four years. This implies that the project spent \$68 per child per year, with additional in-kind contribution of \$40 per child per year.
- Through the interventions implemented, there were improved learning outcomes, strengthened teacher and school administration skills, as well as changes in social behavior regarding health and nutrition.

Thanks to Paul Diouf, Jackson Julian Destiny, George Goba, Nelson Nyandemoh, Mahmood Fofanah, Philip Kamanda, and Alex Waitukia for contributing to the analysis. Thanks to Heather Dolphin, Erick Ngwiri, and Thomas Becker for the leadership and coordination. Thanks to Paul Bartilol and Lucian Lee (IRC) for the technical assistance.

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Introduction.

Between October 2018 to September 2023, the 'All Pikin for Learn' project (APFL) Phase IV was implemented by Catholic Relief Services (CRS) and Caritas Makeni as part of the McGovern-Dole Food for Education, Health and Nutrition program. It was implemented in 5 chiefdoms in Koinadugu district (Kamukeh, Wara Wara Bafodia, Diang, Kalian, Nieni) and 10 chiefdoms in Falaba district (Dembelia-Sinkunia, Kebelia, Sulima, Wollay Barawa, Morifindugu, Mongo, Nyedu, Neya, Delemadugu, and Kulor Saradu), in the Northern region of Sierra Leone.

APFL IV reached a total number of 59,804 pupils (6-12 years old) in 310 schools across 15 chiefdoms in Koinadugu and Falaba districts. During the project period, CRS aimed to improve learning outcomes of pupils in pre-primary and primary grades (see Figure 1 for project interventions). CRS provided a mid-morning nutritious daily meal which consists of fortified rice, lentils, and vegetable oil to pupils, teachers, and cooks in all the intervention schools, for every school day during the school year for four years. This is consistent with the Government of Sierra Leone's draft National School Feeding Plan. The project also worked with local communities, strengthening School Management Committees, Mothers' Support Groups (MSG), and Saving and Internal Lending Communities (SILC).

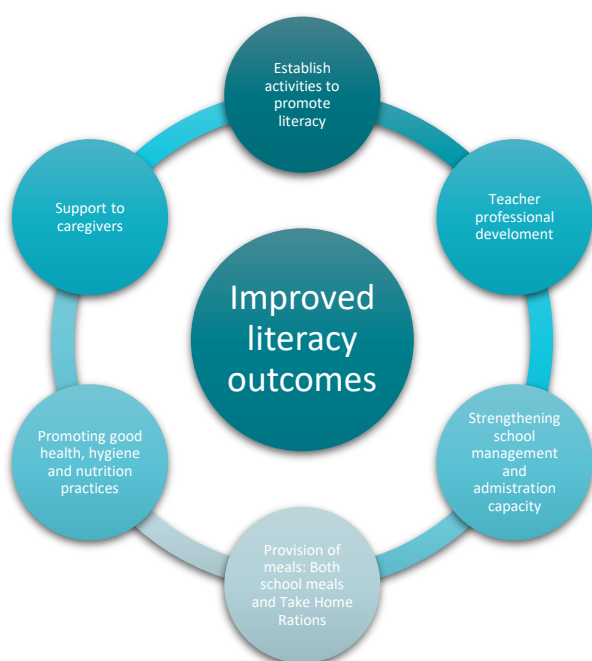


Figure 1: 'All Pikin for Learn' project (APFL) Phase IV interventions.

The project worked with the Ministry of Basic and Senior Secondary Education both in Freetown, in Koinadugu and Falaba Districts, the Association of Language and Literacy Educators (TALLE) and engaged a reputable teacher training institute for the training of teachers. Additionally, the project

contracted a local partner to implement health and nutrition related activities.

The implementation of the project was disrupted by the COVID-19 pandemic in 2020. Churches, mosques, and schools were closed for about eight months in 2020 with the resulting negative effect on student learning as contact time between teacher and pupils was lost and staff movement was hampered due to the lock down and consequently, school feeding was brought to a halt. Because of this, the project was extended by one year to close on 30th September 2023.

However, during this period, the program distributed Take Home Rations (THR) to beneficiaries. This distribution was done in two (2) phases: the first phase was conducted in April 2020, targeting 1,520 teachers and 49,938 students from approximately 16,646 households; the second phase was conducted in May 2020 and targeted 1,577 teachers, 930 cooks and 51,849 students from approximately 17,283 households.

The Government supported by partners took steps based on lessons learnt from the Ebola crisis to organize a radio teaching programme to support student learning during the period when schools were closed. APFL IV organized general COVID-19 sensitization and messaging during THR distribution, focusing on safe meeting procedures for reading clubs. Two transmitters were bought to support the transmission of radio lessons and life skills within Falaba and Koinadugu districts. Additionally solar-powered radio/lights with Secure Digital cards were provided pre-loaded with 6 weeks of radio learning content to the reading clubs while the Savings and internal lending Communities (SILC) groups were also sensitized on safe meeting guidelines.

The McGovern-Dole Food for Education, Health and Nutrition program activities are in alignment with the Sierra Leone Government Education flagship program. Thus, there is strong buy in from the government and visible trends that the government is working towards a national school feeding policy. The school feeding secretariat has identified the need for additional staffing at district level, showing government commitment in the coordination of national school feeding programs. As such, this analysis can help inform the magnitude of budget required for a national school feeding program.

Analysis Approach and Methodology

Cost-efficiency analysis estimates the ratio of program costs to outputs created, allowing organisations to compare cost-per-output for programs which all produced the same output. In February 2024, CRS conducted cost-efficiency analyses on the APFL IV project using the Dioptra tool. This analysis was conducted during a one week in-person analysis workshop. An analysis of the various interventions was conducted (Table 1):

Table 1: Analysis of APFL IV interventions

Intervention	Output indicator	Cost-Efficiency Metric
Promoting literacy	Total number of pupils supported	Cost per child
Teacher professional development	Total number of teachers trained	Cost per teacher
Strengthening school management and administration capacity	Total number of schools SMC/Admin trained	Cost per school
Meal provision	Total number of meals provided	Cost per meal
	Total number of beneficiaries	Cost per person
	Total number of schools provided with meals	Cost per school
Promoting good health, hygiene, and nutrition practices	Total number of individuals reached through the school health program	Cost per individual reached (Teachers, children, parents etc.)
Support to caregivers	Total number of caregivers reached	Cost per caregiver

Data

For the cost-efficiency analysis, the main data needed were the project expenditure and output data. Expenditure data were sourced from Insight, CRS' finance database (including Direct Project Costs, Direct Shared Costs, and Indirect Costs) for the project implementation period of October 1, 2018- September 30, 2023, and output data were sourced from project reports. Additionally, the final assessment on the outcomes of the project was utilized to supplement the analysis results.

The Dioptra Tool

Dioptra is a web-based cost analysis software that allows program staff in country offices, who are most familiar with day-to-day program implementation, to rapidly estimate the cost-efficiency of their program activities. It guides users through a standardized costing methodology, ensuring that all analysis results are methodologically consistent and can be meaningfully compared across different contexts and organizations.

By using the Dioptra tool, rather than having to learn a complex costing methodology and assemble data manually in spreadsheets, staff can focus on providing crucial estimates of how different resources were used across activities within a program, which are not captured in any current data system.

For more information, see www.dioptratool.org/how-does-dioptra-work.

Results

It cost \$272 to support a child through four years of education, health, and nutrition activities under the 'All Pikin for Learn' phase IV project. The in-kind contribution of food supplies and corresponding internal transportation, storage, and handling (ITSH) was an additional \$159 per child over four years. This implies that the project spent \$68 per child per year, with additional in-kind contribution of \$40 per child per year.

Cost Efficiency



Figure 2: Cost per child to improve literacy over four years

This includes the cost of interventions on promoting literacy, teacher professional development, school management capacity strengthening, school meals provision, promoting good health and nutrition and support to caregivers.

The in-kind contribution to the project which included the cost of food supplies, related transportation logistics and staffing to this component, increased the cost per child by \$159 to \$430.



Figure 1: Cost per child of each intervention over four years, excluding in-kind contribution.

Each intervention contributed to improving the overall learning outcomes. Out of the overall \$272 per child over four years, it cost \$94 to promote literacy (35% of the overall cost per child), \$15 to develop teacher skills (6%), \$18 to strengthen school management capacity (7%), \$52 to provide meals (19%), \$31 to improve health hygiene and nutrition practices (31%), and \$9 to support caregivers (3%) (Figure 3).

For each intervention, we also identified the specific outputs achieved such as teachers trained, school management committees (SMC) trained, or meals provided, and calculated the cost per output for each intervention (Table 2).

Table 2: Cost per output of each intervention over four years, excluding in-kind contribution.

Intervention	Cost (US\$)	Output achieved	Cost per output metric	Cost per output (US\$)
Promoting literacy	5,691,104	59,804 children	Cost per child	94
Teacher professional development	975,618	1,474 teachers	Cost per teacher	662
Strengthening School management	1,138,221	310 school managem't committees (SMC)	Cost per SMC strengthened	3,672
Meal provision	3,089,456	24,450,102 meals	Cost per meal	0.13
		77,084 individuals	Cost per individual	40
		310 schools	Cost per school	9,966
Promoting good health and nutrition	5,040,692	81,066 people	Cost per person	62
Support to caregivers	487,809	6,943 caregivers	Cost per caregiver	70

The largest intervention was promoting literacy (\$94 per child over four years, or 35% of the overall cost per child), since the main intended outcome of the project was to improve literacy.

Promoting literacy included one-time costs such as rehabilitation, construction, and provision of new furniture to 164 classrooms to improve the learning environment. To improve on learners reading skills, 309 functional reading clubs were established as well as providing recognition to the best performing learners and teachers. To bring learning principles in perspective, schools were supported to develop school gardens. Teacher class attendance and motivation is key in improving learning outcomes. The project recognized 30 best performing teachers as well as provided 160 teacher learning materials to 310 schools.

The second largest intervention was promoting health and nutrition practices (\$83 per child over four years, or 31% of the overall cost per child), which included construction of latrines and water systems, training, and drug distribution.

Promoting health and nutrition practices included teaching pupils to recognize how a healthy diet influences emotional well-being and how emotions may influence eating habits. The project contracted a local partner to train pupils, teachers, cooks, and caregivers on good practices of food storage, making nutritious meals and as well as good hygiene. 2,507 individuals from 2,443 MSGs as well as 64 peripheral health staff were also trained on maternal and infant young child feeding practices.

A large amount of one-time costs were spent on constructing 61 latrines and 81 water sources and systems to provide water to schools for use; by the end of the project 194 schools had improved water sources.

In addition, the project established a collaborative partnership with the Ministry of Health & Sanitation (MoHS), which conducted a 4-day training for 28 clinical nutritionists on child health and nutrition management. MoHS also coordinated and supported mass drug distribution of deworming drugs (Albendazole) and Vitamin A supplementation drugs in schools, reaching 58,025 pupils. CRS provided logistical support by transporting and pre-positioning all drugs at various health facilities within the two districts, and supported community radio discussions and jingles within the two districts to raise awareness and acceptance of these drugs.

When these additional unique beneficiaries were counted, a total of 81,066 people were reached with the intervention of promoting health and nutrition, for an average of \$62 per person reached over four years.

The third largest intervention was meal provision (\$52 per child over four years, or 19% of the overall cost per child), which included renovation of kitchens and storerooms, and procurement of kitchen equipment. This excludes the in-kind contribution of food supplies and transportation logistics.

The project renovated kitchens and procured assorted kitchen equipment for schools. To ensure safety and good storage practices of food supplies, 181 storerooms were renovated. These one-time costs enabled 77,084 people in 310 schools to receive 24,501,102 meals, including day meals for pupils and teachers, and Take-Home Rations (THR) awarded to teachers and cooks as motivation and for best performing students.



When all unique beneficiaries receiving meals and all meals were counted, the intervention cost an average of \$40 per person reached over four years, or an average of \$0.13 per meal (excluding the in-kind contribution of food supplies and transportation logistics), or an average of \$9,966 per school over four years.

The interventions to train teachers and school management committees incurred similar costs. Teacher professional development cost \$15 per child over four years (or 6% of the overall cost per child), while strengthening school management committees cost \$18 per child over four years (or 7% of the overall cost per child).

The project trained 100 pre-service teachers facilitated by the Ernest Bai Koroma University of Science and Technology, and 1,374 in-service teachers who received an 11-week training each year (done in phases over the holidays) to gain new modern teaching skills facilitated by Teach for Sierra Leone (education consultant). As such, a total of 1,474 teachers were trained over four years, for an average of \$662 per teacher over four years.

Capacity strengthening of school management committees aims to improve children’s learning outcomes by improving accountability and improving the school learning environment. The project trained 310 school management committees (SMCs) (1 per school) which consist of 7 individuals per committee, for a total of 2,170 individuals trained. The SMCs received a three-day training once in three years and monthly coaching by the district and program staffs. This intervention cost an average of \$3,672 per school over four years.

Supporting caregivers to keep their children in school cost \$9 per child over four years, or 3% of the overall cost per child.

This intervention utilized the Savings and Internal Lending Communities (SILC) methodology developed by CRS. 227 SILC groups were formed and trained by certified Private Service Providers; in return, the PSPs charge a fee for the services they provide to every second or upper circle groups, ensuring the sustainability of the SILC methodology even in the absence of CRS project staff. Caregivers who participated in the SILC groups utilized their savings to purchase items needed by pupils such as uniforms, payment of activity fees, and other household use or investments.

Mother Support Groups (MSG) were also supported by the project to improve nutrition, health, and hygiene at home, especially during holidays and weekends and for younger siblings. A total of 6,943 caregivers were reached, for an average of \$70 per caregiver over four years.

When breaking down the overall costs by cost type, program costs constituted 56%, direct shared costs constituted 26%, local partner costs constituted 3%, and others constituted 16%.

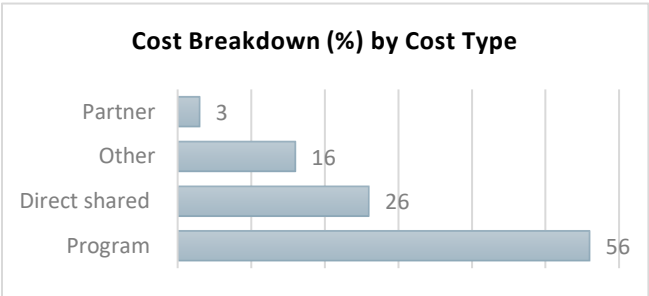


Figure 2: Cost breakdown by cost type

Through the interventions implemented, there were improved learning outcomes, strengthened teacher and school administration skills, as well as changes in social behaviour regarding health and nutrition.

APFL IV focused on improving learning outcomes and improving child nutrition. By the end of the project, 12% of the pupils demonstrated that they could read and understand grade level text after going through two grades of primary schooling which was an improvement from 4% at the baseline. The average school attendance was 86%. The school dropout rate of pupils’ grades 3 to 6 who dropped out of school at the end of the school year was low, at 4%.

Teachers with effective teaching skills can better impart literacy skills on pupils. 83% of teachers targeted demonstrated use of new and quality teaching techniques. School administration plays an accountable role in ensuring that learning continues without interruption. School administrators trained showed that 89% are utilizing the new skills taught.

Sated learners are often more attentive in class than their hungry counterparts. The school meal provision ensured all learners and teachers received hot nutritious meals. Only 0.14% of pupils indicate that they are hungry or very hungry during the school days.

Providing nutritious meals to the pupils is a pathway to good health and wellbeing. Food preparers were trained on safe food preparation and 75% achieved a passing score. Similarly, students were taught good health and hygiene practices and 59% attained a passing score.

Mother Support Groups (MSG) were trained on community-level nutrition interventions that promote infant and young child feeding behaviors; 72% of the MSG individuals practised what they were trained on.

Table 3: Program outcomes

Indicator	Achievement (%)
Percent of students who, by the end of two grades of primary schooling, demonstrate	11.7

that they can read and understand the meaning of grade level text	
Average student attendance rate in USDA supported classrooms/schools	86
Percent of students in target schools who indicate that they are hungry or very hungry during the school days	0.14
Percentage of students grades 3 to 6 who dropped out of school at the end of the school year	3.97
Percent of teachers/educators/teaching assistants in target schools who demonstrate use of new and quality teaching techniques or tools because of USDA	83
Percent of school administrators and officials in target schools who demonstrate use of new techniques or tools because of USDA assistance	89
Percent of participants of community-level nutrition interventions who practice promoted infant and young child feeding behaviours	72.3
Percent of students in target schools who achieve a passing score on a test of good health and hygiene practices	58.94
Percent of food preparers at target schools who achieve a passing score on a test of safe food preparation and storage	75.17

