ALL CHILDREN READING: GRAND CHALLENGE FOR DEVELOPMENT

Your Child, Reading, and You

Implemented by Œuvre Malienne d'Aide à l'Enfance du Sahel in Mali

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List of Acronyms

ACR GCD	All Children Reading: A Grand Challenge for Development
App	Application
CEPROCIDE	Centre de Promotion de la Citoyenneté pour un Développement durable à la base
CLSPM	Correct Letter Sounds per Minute
CNWPM	Correct Nonwords per Minute
CWPM	Correct Words per Minute
EDC	Education Development Center, Inc.
EGRA	Early Grade Reading Assessment
EOP	End-of-Project
FOI	Fidelity of Implementation
GoM	Government of Mali
ICT	Information and Communications Technologies
IRB	Institutional Review Board
IREX	International Research & Exchanges Board
M&E	Monitoring and Evaluation
MEN	Malian Ministry of Education
microSD	Micro Secure Digital
NICRA	Negotiated Indirect Cost Recovery Agreement
OMAES	Oeuvre Malienne d'Aide à l'Enfance du Sahel
ORF	Oral Reading Fluency
PAJE-Nièta	Projet d'Appui aux Jeunes Entrepreneurs-Nièta
PHARE	Programme Harmonisé d'Appui au Renforcement de l'Education
RARE	Réseau d'Acteurs Pour le Renouveau de l'Education
RTI	RTI International
SD	Standard Deviation
SIRA	Selective Integrated Reading Activity
STS	School-to-School International
USAID	United States Agency for International Development
YCRY	Your Child, Reading, and You

I. Executive Summary

All Children Reading: A Grand Challenge for Development (ACR GCD)—a partnership between the United States Agency for International Development (USAID), World Vision, and the Australian Government—is an ongoing series of grant and prize competitions that leverage science and technology to source, test, and disseminate scalable solutions to improve literacy skills of early grade learners in developing countries. Round 2 of ACR GCD, which started in 2014 and continues through 2017, supports technology-based innovations to improve early grade reading outcomes in developing countries.[1] These technology-based innovations concentrate on three focus areas:

1. Mother tongue instruction and reading materials

2. Family and community engagement

3. Children with disabilities

ACR GCD Round 2 increased its focus on the assessment of early grade reading skills to understand the ability of technology-based innovations to improve the literacy skills of early grade learners. To measure this, ACR GCD uses the Early Grade Reading Assessment (EGRA) to systematically assess reading skills across all Round 2 grantees. The EGRA is an oral assessment that measures students' most basic foundational literacy skills in the early grades—specifically, recognizing letters of the alphabet, reading simple words, understanding sentences and paragraphs, and listening with comprehension. The EGRA methodology was developed under EdData II and has been applied in more than 30 countries and 60 languages.[2] The EGRA instruments used by ACR GCD grantees were adapted to reflect the specific context of each grantee's project, including adaptations for students who have low vision or are blind and students who are deaf or hard of hearing.

Oeuvre Malienne d'Aide à l'Enfance du Sahel (OMAES)—an ACR GCD Round 2 grantee—implemented the Your Child, Reading, and You (YCRY) project. The YCRY project aimed to improve Malian children's reading abilities—specifically pre-reading and foundational skills—by increasing family and community members' commitment to their children's reading abilities and by increasing access to print and digital reading materials that supported reading acquisition. The YCRY project gave students in Grades 1 through 3 and their family members access to community libraries that offered literacy activities and developed mother tongue reading materials, including leveled books and locally sourced stories. The YCRY project also provided digital audio, texts, and interactive reading activities through the Stepping Stone application (app), a mobile delivery platform that children and family members used on low-cost tablets and mobile phones at community libraries.[3] The YCRY project began in February 2015 and concluded implementation in April 2017.[4]

To understand how the project impacted participating students' reading skills, School-to-School International (STS) and OMAES conducted EGRAs twice during the project. Baseline data were collected in October 2015, and endline data were collected in May 2017.[5]

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1   All Children Reading. (2017, June). About us. Retrieved from http://allchildrenreading.org/about-us/

2   EdData II was a contract mechanism funded by USAID from January 1, 2004 to December 31, 2013. Implemented by RTI International, the purpose of EdData II was to improve the accuracy, timeliness, accessibility, and use of data for education policy and program planning. See http://www.rti.org/sites/default/files/brochures/eddataii.pdf for additional details.

3   Students in intervention A attended libraries that provided access to tablets with the Stepping Stone app and digital reading content in addition to offering community library services. Students in intervention B attended libraries that did not offer access to the technological innovations of the project. Students in the comparison group did not have access to community libraries nor any of the technologies offered by the YCRY project.

4   OMAES's grant for the YCRY project ended on June 30, 2017..

5   Two versions of the EGRA instrument were developed: the EGRA instrument 1, which was administered at baseline, and the EGRA instrument 2, which was administered at endline. Four of the subtasks—orientation to print, initial sound identification, letter sound identification, and nonword reading—were identical across instruments. The passages used in the ORF, reading comprehension, and listening comprehension subtasks were different across the two instruments. The ORF, reading comprehension, and listening comprehension passages from instruments 1 and 2 were not equated. As a result, findings from these three subtasks are presented as baseline scores and endline scores rather than as gains and should not be directly compared. See EGRA Data Analysis and Considerations for more details.

During and immediately following the endline data collection, STS also conducted semi-structured, end-of-project (EOP) interviews with YCYR project management, community librarians, family members, students, and stakeholders. The interviews sought to explore any lessons learned from project implementation, better understand how the project impacted students and family members, and assess the potential scalability of the project.

The following report presents a summary of lessons learned from project implementation, EGRA results, and scalability assessments.

Key Findings

Figure 1: **Mean Results on EGRA Instrument 1 at Baseline and EGRA Instrument 2 at Endline by Subtask and Group[6]**
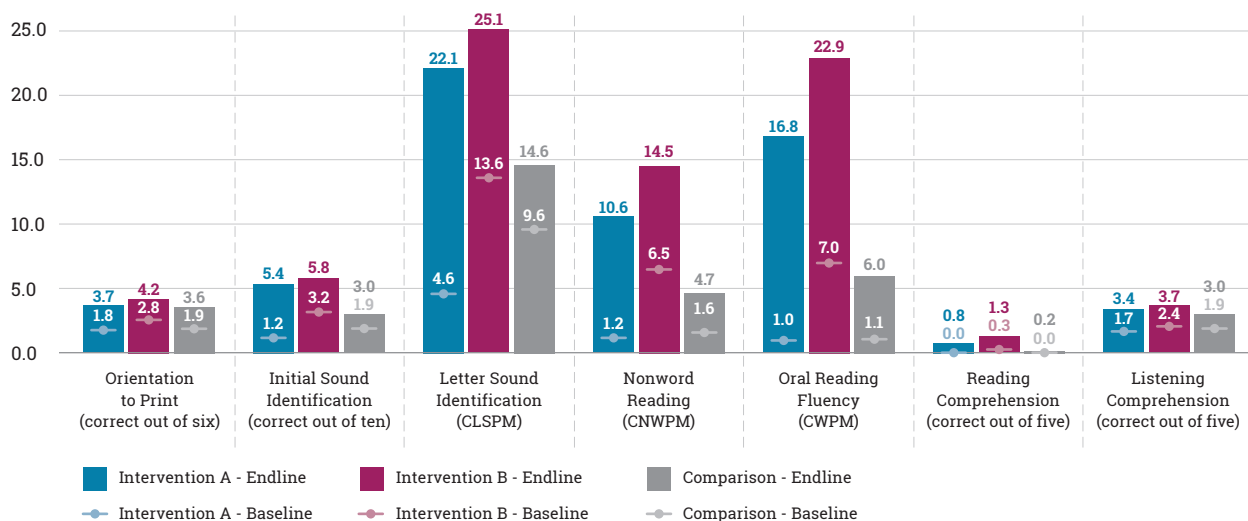
Figure 2: **Percentage of Students Receiving Zero Scores on EGRA Instrument 1 at Baseline and EGRA Instrument 2 at Endline by Subtask and Group (%)[7]**
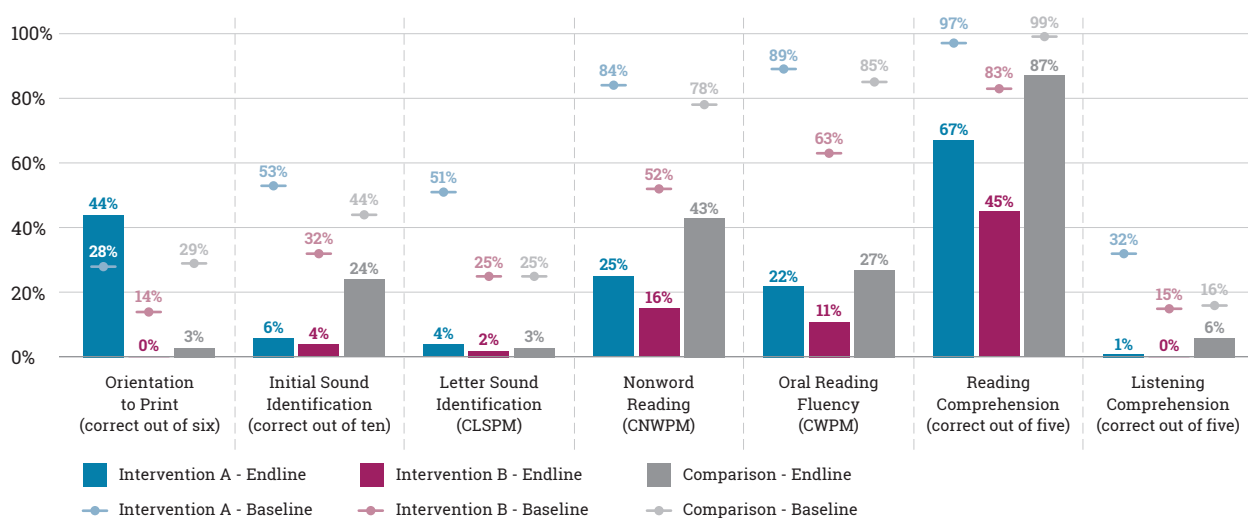
6   No significance testing was conducted between baseline and endline results on the ORF, reading comprehension, and listening comprehension subtasks due to differences in subtasks across tests. Significance test notations are not included in this figure but are included on individual subtask charts for clarity. See EGRA Data Analysis and EGRA Results for more details on significance testing for other subtasks. N sizes: $N_{\text{All students}}$=562; $n_{\text{Intervention A}}$=225; $n_{\text{Intervention B}}$=219; $n_{\text{Comparison}}$=118.

7   Significance test notations are not included in this figure but are included on individual subtask charts for clarity. See EGRA Data Analysis and EGRA Results for more details on significance testing. N sizes: $N_{\text{All students}}$=562; $n_{\text{Intervention A}}$=225; $n_{\text{Intervention B}}$=219; $n_{\text{Comparison}}$=118.

- Participants in the YCRY project showed greater improvements in pre-reading and foundational skills over the life of the project than their peers who did not participate, including improvements on the initial sound identification, letter sound identification, and nonword reading subtasks. Specifically, on the initial sound identification subtask, students in intervention A correctly identified 4.2 additional initial sounds from baseline to endline, as compared with 2.6 additional initial sounds among students in intervention B and 1.0 additional initial sounds among students in the comparison group (Figure 1). On the letter sound identification subtask, intervention A students correctly identified 17.5 additional letter sounds per minute at endline than at baseline, as compared with 11.5 additional letter sounds among intervention B students and 4.9 additional letter sounds for comparison group students. On the nonword reading subtask, intervention A students correctly identified 9.4 additional nonwords per minute at endline than at baseline, as compared with 8.0 additional nonwords among intervention B students and 3.1 additional nonwords for comparison group students.

- Findings indicate that students who participated in the YCRY project had higher fluency and reading comprehension scores at endline than their peers in the comparison group. On the oral reading fluency (ORF) subtask on the EGRA instrument 1 at baseline, intervention B students read an average of 7.0 correct words per minute (CWPM); at endline, they read 22.9 CWPM (Figure 1). While intervention A students performed similarly to comparison group students on the EGRA instrument 1 at baseline (1.0 and 1.1 CWPM, respectively), intervention A students read 16.8 CWPM on the EGRA instrument 2 at endline, as compared with 6.0 CWPM by comparison group students. This trend was similar for the reading comprehension subtask. On the EGRA instrument 1 at baseline, intervention B students correctly answered 0.3 comprehension questions on average, while intervention A and comparison group students did not answer any comprehension questions correctly. On the EGRA instrument 2 at endline, comparison group students correctly answered 0.2 questions on average, while intervention A and B students correctly answered 0.8 and 1.3 questions, respectively.[8]

- Students in intervention A—those who attended libraries that provided access to tablets and mobile phones with the Stepping Stone app and digital reading content—appear to have benefitted most from the project. Intervention A students had significantly higher gains in mean scores on the initial sound identification, letter sound identification, and nonword reading subtasks than did their peers in intervention B or the comparison group (Figure 1). Intervention A students also had the largest percentage-point decreases in zero scores on these subtasks (Figure 2). Furthermore, though intervention A students performed comparably to comparison group students on the EGRA instrument 1 at baseline, they had significantly higher scores than students in the comparison group at endline.

- The YCRY project provided increased access to mother tongue language reading materials for students in intervention villages. In collaboration with the Malian Ministry of Education and other stakeholders, OMAES oversaw the translation of decodable and leveled stories into Bamanankan. In total, 50 unique stories were translated, and 1,620 copies of stories were distributed to ten community libraries. The YCRY project also collected and produced for distribution 25 locally sourced stories; these stories were developed and contributed by community members.

- Participants in the YCRY project expressed favorable opinions about using technology for reading. During EOP interviews, family members and students with access to tablets with the Stepping Stone app expressed that it was one of the most impactful parts of the project; those who did not have access to the technology component wished they had been able to use it during the project. Anecdotal and log data indicate that users accessed a variety of different materials and modules on Stepping Stone. However, without more reliable user data by student, it is not possible to determine the impact that different amounts or types of exposure to the Stepping Stone app had on student reading gains.

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8   Gain scores were not computed for the ORF, reading comprehension, nor listening comprehension subtasks. See Considerations.

- **The average number of student visits over the 12 months of implementation varied by library.** Across the 12 months of intervention, students visited their community library 79.8 times on average. The highest average number of visits per student was 110.1, and the lowest average number of visits per student was 55.2.

II. Project Description

OMAES, a Malian nonprofit organization with extensive experience in mobilizing communities to participate in education, implemented the YCRY project with the goal of improving early grade reading skills for students in Grades 1 through 3 in Mali. OMAES, in collaboration with sub-contractor Education Development Center, Inc. (EDC) and the Malian Ministry of Education (MEN), sought to achieve this goal by providing children and their family members access to community libraries that offered literacy activities. OMAES developed mother tongue reading materials, including leveled books and locally sourced stories, which were accessed through the community libraries. OMAES also provided digital audio, texts, and interactive reading activities through the Stepping Stone app, a mobile delivery platform. Children and family members used low-cost Android tablets and mobile phones at community libraries to access Stepping Stone. The project began in February 2015, and implementation activities started in January 2016[9] in ten communities in the Ségou region of Mali. The project was co-funded by the International Research and Exchanges Board (IREX), an international nonprofit organization providing leadership and programs to improve the quality of education and access to information. IREX's Beyond Access initiative works with local partners to promote sustainable, inclusive access to information and technology for those who need it most. IREX provided funding to the OMAES project to enhance community libraries and family engagement.

The YCRY project included two components, the distribution of which depended on intervention group assignment (see Research Purpose and Design):

1. Access to community libraries stocked with hard copies of materials specifically developed in the Bamanankan language for beginning readers, including leveled books and locally sourced stories.

2. Access to digital audio, texts, and interactive reading activities through Stepping Stone on low-cost tablets and mobile phones.

The first component of the YCRY project—access to community libraries with Bamanankan language reading materials—was offered to all intervention group students and family members. OMAES set up ten community libraries and stocked them with hard copies of materials specifically developed in the Bamanankan language for beginning readers. The materials included 50 books of different reading levels per library, as well as graduated texts, alphabet cards, and literacy games. OMAES trained local parent associations in library management to promote family engagement and offered support. The project also trained volunteer youth librarians to run the library and its activities. Since not all volunteer librarians had prior training or experience teaching literacy, the project provided ongoing training, including techniques for building pre- and early-reading skills. Librarians were trained to organize and lead all library activities, and project staff paid regular visits to support, monitor, and reinforce project activities. Children and their parents were invited to visit the library three times per week at scheduled times, and the YCRY project also organized activities at the libraries to engage families and community members. To promote a culture of reading in the communities, the project held writing workshops and gathered local stories that were developed into books and subsequently distributed to all libraries. The YCRY staff also conducted home visits to teach family members games to help children learn to read.

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9   OMAES's grant for the YCRY project ended on June 30, 2017.

The second component of the YCRY project—access to digital materials through the Stepping Stone app—was offered in five randomly selected villages where Family Plus libraries were formed.[10] Participants who attended Family Plus libraries could use tablets loaded with the Stepping Stone app and access digital audio, texts, and interactive reading activities. The YCRY project provided each of the five libraries with seven solar-charged tablets and four Nokia phones. Additionally, digital content was loaded onto micro secure digital (microSD) cards for families that had personal mobile devices; this allowed them to access the content on their personal mobile devices outside of the library. Prior to roll out of the tablets in libraries, OMAES provided training on the Stepping Stone app to the local parent associations and librarians. Specifically, librarians were trained in installing and reinstalling the app, accessing content, and troubleshooting problems that users might have. OMAES gave librarians tablets and phones with the Stepping Stone app during the training so that they could practice using the app regularly and be prepared to provide technical expertise to project participants. The librarians then led training sessions for participants—targeting children's family members—on how to use the digital audio and reading activities on the Stepping Stone app.

The project reading materials were presented in Bamanankan and aimed to build pre-reading and foundational skills. Workshops offered as part of the project generated locally sourced stories and resulted in wordless picture books portraying familiar and culturally appropriate stories.[11] The workshops also generated books with text. In total, 30 locally sourced stories were developed into books. Additionally, MEN provided books with appropriate beginner-level text for children as well as some higher-level texts that could be read aloud at the libraries to expose children to a wider vocabulary. EDC digitized all print reading materials and uploaded them onto the Stepping Stone app for use in the five Family Plus libraries. The digital versions were accompanied by audio so that users could listen to the stories as they read along with the text.

III. Research Purpose and Design

The goal of the YCRY project was to improve early grade reading skills for students in Grades 1 through 3 in Mali by increasing family and community members' commitment to their children's reading abilities and by increasing access to educational resources in print and digital formats that support reading acquisition. The research conducted by STS and OMAES sought to answer the following questions specific to the YCRY project:

1. Does increased access to appropriate and engaging reading materials and trainings for families improve children's reading abilities?

2. Does the use of technology—specifically the Stepping Stone app—contribute to increased reading scores?

In addition, EOP research was conducted to answer the following supplemental questions common to all ACR GCD grantees:

1. How successful was the rollout of the project?

2. How did the project influence or impact adults' (teachers, parents, community members) knowledge, skills, or attitude regarding their role in helping children read?

3. How did the project influence certain subsets of the student population more than others based on identifiable contextual factors?

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10 Family Plus libraries provided tablets and access to the Stepping Stone app so participants could access digital content. Other than those technology components, the Family Plus libraries offered identical services as the other community libraries.

11 Materials included some wordless picture books to ensure that all family members, regardless of literacy skills, could read to their children.

4. How much did the development, implementation, and management aspects of the project cost?

5. Are this project and technology suitable for scaling?

To answer these research questions, STS and OMAES collected EGRA data twice during the project. Baseline data were collected in October 2015, and endline data were collected in May 2017. Qualitative, fidelity of implementation (FOI), and cost data were also collected to answer ACR GCD's supplemental questions.

The research design for the YCRY project included two intervention groups and a comparison group to answer each of the project-specific research questions and isolate the impact of the Family Plus libraries on student reading gains.

Sample

OMAES identified 25 villages in the Ségou region in which to implement the YCRY project. These villages were then assessed according to the following selection criteria identified by OMAES. Identified villages

- Have benefited from a literacy project in the past

- Have a bilingual curriculum primary school[12] with at least two classes per grade, 40 students total, and two teachers trained in the curriculum of Grades 1 through 3

- Have an area in which to set up the library

- Have two resource people (one female and one male) who can read and write in Bamanankan and are available and willing to be librarians

- Do not already have a functional library

- Have a functional school management structure

Fifteen villages across three *communes* were eligible for selection based on these criteria. After considering the project's budget, human resources, and statistical power calculations, STS and OMAES determined that the project should be implemented in a total of ten villages, each village having one library.

OMAES clustered villages into three groups based on their commune and randomly assigned each commune to one of three groups: intervention A, intervention B, or comparison (Table 1). Villages in intervention A established libraries with the Family Plus component, while libraries in intervention B did not provide the Family Plus component to participants. Students in the comparison group did not receive any support from the YCRY project.

Table 1: **Research Design of Project Groups**

Intervention Group	Number of Communes	Number of Villages
Intervention A with Family Plus libraries	1	5
Intervention B with community libraries	1	5
Comparison	1	3

12   In Mali, there are two curricula at the primary level: the classic curriculum, in which students are taught in French from Grade 1; and the bilingual curriculum, in which students are taught in a national language in Grade 1 and transition to receiving partial instruction in French in Grade 2.

Once the communes and villages were assigned to intervention groups, the YCRY project team visited the local primary school to recruit students to participate in the project and the EGRA student sample.[13] STS advised OMAES to randomly select 17 students from Grades 1, 2, and 3 for each school (51 students per school), for a total of 255 students in both intervention A and B groups and 153 students in the comparison group. However, in some schools, there were fewer than 17 students per grade. In these cases, OMAES invited all the students in that grade to participate. Ultimately, the EGRA sample at baseline included 250 students in intervention A, 253 students in intervention B, and 123 students in the comparison group, for a total of 629 students. Of those students, 562 were also assessed at endline. The attrition rate over the life of the project was 10.7 percent, primarily resulting from students dropping out of school due to migration or other personal reasons. Table 2 provides characteristics of the student sample used in this final report.

Table 2: **EGRA Sample Characteristics**

Characteristic		Intervention A	Intervention B	Comparison	Total: All Students
Grade at baseline	Grade 1	95	69	36	**200**
	Grade 2	76	82	48	**206**
	Grade 3	54	68	34	**156**
Gender	Girls	111	112	56	**279**
	Boys	114	107	62	**283**
Total		**225**	**219**	**118**	**562**

STS, with support from a team of Bamako-based Malian consultants and a representative from World Vision Mali, conducted EOP interviews between May 1 and June 5, 2017, during and following the endline EGRA data collection (see End-of-Project Interviews). EOP interview details are provided in Table 3.

Table 3: **EOP Interview Sample**

Type of Interview	N	Description
Project management	2	One OMAES project manager and one EDC staff member
Librarian	4	Two librarians from intervention A and two from intervention B
Family member	20	Ten parents from intervention A and ten from intervention B; 13 males and seven females
Student	20	Ten students from intervention A and ten from intervention B
Stakeholder	6	Five MEN representatives and one USAID/Mali staff member
Total	**52**	

Project management interviews were conducted with OMAES and EDC staff members. Consultants visited four villages—two from intervention A and two from intervention B. In each village, they interviewed five children and five parents whose children attended the community library as well as one volunteer librarian. A team member of World Vision Mali conducted interviews with MEN representatives from intervention areas, and STS interviewed OMAES project management and USAID/Mali staff members by phone.

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13   All students who were selected to participate in the project were assessed using the EGRA. Students who were not selected to participate and were not assessed did not receive the intervention, although some were able to use the community library. EGRA results should not be generalized beyond the sample of students included in this research. See Project Implementation.

IV. Fieldwork Preparation and Data Collection

EGRA Instrument

The EGRA used for the YCRY project measured reading skills in Bamanankan. Although French is the national language of Mali, Bamanankan is the most widely spoken language in Mali and is the dominant mother tongue language in the implementation areas of the YCRY project.

Two previous EGRAs have been conducted in Mali. In 2009, RTI International (RTI) and the Centre de Promotion de la Citoyenneté pour un Développement durable à la base (CEPROCIDE), a Malian nongovernmental organization and research firm, conducted an EGRA in Bamanankan, Bomu, Fulflde, and Songho—all mother tongue languages in Mali. From 2014 to 2015, RTI conducted an EGRA baseline for students who had completed second grade. However, since the YCRY project worked with students in Grades 1 through 3, STS adapted RTI's EGRA instrument to include pre-reading subtasks for these grades.

STS conducted a six-day adaptation workshop in October 2015. Both ACR GCD grantees in Mali—OMAES and Réseau d'Acteurs Pour le Renouveau de l'Education (RARE)—participated in the workshop and used the same Bamanankan EGRA instrument. In addition to STS, RARE, and OMAES, representatives from Direction Nationale de la Pédagogie, EDC, Direction Nationale de l'Enseignement Normal, Direction Nationale de l'Enseignement Fondamental, USAID/Mali, and World Vision also attended the workshop and participated in the adaptation of the subtasks. During the workshop, new content was developed for three subtasks on the Grades 1 and 2 EGRA: initial sound identification, letter sound identification, and nonword reading. Additionally, workshop participants developed reading passages and corresponding questions for the ORF and reading comprehension subtasks, as well as the passages and corresponding questions for the listening comprehension subtask.

The EGRA was pretested at a rural school on the outskirts of Bamako where conditions resembled those where OMAES and RARE would implement their interventions. The results from the pretest showed a high number of zero scores for all students on all subtasks, except listening comprehension. In light of these results, the workshop participants modified the subtasks and piloted three new versions of the instrument, which resulted in a marginal decrease in the number of zero scores. Upon review of the data, workshop participants noted these marginal decreases and finalized the instruments with approval from MEN.

The final EGRA instruments included the following seven subtasks: orientation to print, initial sound identification, letter sound identification, nonword reading, ORF, reading comprehension, and listening comprehension. Two versions of the EGRA instrument were developed: the EGRA instrument 1, to be administered at baseline, and the EGRA instrument 2, to be administered at endline. Four of the subtasks—orientation to print, initial sound identification, letter sound identification, and nonword reading—were identical across instruments. The passages used in the ORF and reading comprehension subtasks were different on the two instruments: the EGRA instrument 1 contained a 50-word passage plus five corresponding comprehension questions, while the EGRA instrument 2 contained a 52-word passage plus five corresponding comprehension questions. The listening comprehension passages were also different on EGRA instruments 1 and 2, although both contained five comprehension questions.[14]

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[14] The ORF, reading comprehension, and listening comprehension passages from instruments 1 and 2 were not equated, as there was insufficient pilot data available from the adaptation workshop. As a result, findings from these three subtasks are presented as baseline scores and endline scores rather than as gains and should not be directly compared. See EGRA Data Analysis and Considerations for more details.

Institutional Review Boards

Institutional review boards (IRBs) are responsible for ascertaining the acceptability of proposed research regarding institutional commitments and regulations, applicable laws, standards of professional conduct and practice, and ethical and societal norms. IRBs examine subject recruitment procedures, proposed remuneration, and the informed consent process. IRBs also evaluate the potential risks and benefits to participants, as outlined in each protocol.

The ACR GCD team, in consultation with in-country partners, determined that there was no appropriate local IRB process for Mali. To address this, OMAES provided MEN with details about the YCRY project's research design and obtained a letter of approval to proceed.

Baseline EGRA

The baseline EGRA assessor training, which included trainees for both the OMAES and RARE data collections, took place from October 12 to 16, 2015. OMAES and RARE recruited the assessors. All candidates had previous survey and assessment experience, including working with ASER, a widely used international literacy test to determine the reading level of early-primary school students. Many candidates also previously served as EGRA assessors for other projects. STS, with support from OMAES and RARE, trained assessors on how to administer the Bamanankan EGRA, both on paper and on tablets, using electronic data collection software Tangerine.[15]

The training included a variety of simulation methods and a half day spent practicing data collection with students in rural schools near Bamako. In addition to student reading assessments, a brief student questionnaire was developed and piloted during the assessor training. The questionnaire was used to gather data on the contextual factors that could affect reading proficiency, such as availability of Bamanankan reading materials and access to an adult at home who can read.

As part of their training, assessors participated in assessor accuracy testing.[16] Assessor accuracy testing is conducted to ensure consistency in scoring among assessors and to measure the degree to which assessors agree in their assessment decisions. At least 90.0 percent consistency is the minimum requirement; this means that at least 90.0 percent of assessors' ratings must be consistent with the list of acceptable responses. During the assessor accuracy testing on the final day of training, two candidates were unable to meet this threshold and did not participate in the baseline operational data collection.

Table 4: **Fieldwork Preparation and Data Collection Timeline**

Task	Dates
EGRA instrument adaptation workshop	October 5–10, 2015
Baseline assessor training, including pilot test and assessor agreement	October 12–16, 2015
Baseline EGRA operational data collection	October 19–28, 2015
Endline EGRA refresher training	April 24–28, 2017
Endline EGRA operational data collection	May 1–12, 2017
EOP interviews	May 1–June 5, 2017

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15   Tangerine® (http://tangerinecentral.org/) is an electronic data collection software designed for use on mobile computers, including netbooks, tablet computers, and smartphones. Its primary use is to enable recording of children's responses in oral early grade reading and mathematics skills assessments, specifically EGRA and Early Grade Mathematics Assessment, and interview responses from children, teachers, and principals on home and school context information.

16   Assessor accuracy testing is similar to interrater reliability testing. According to the EGRA Toolkit (2nd Edition), assessor accuracy refers to the testing conducted during training, while interrater reliability is conducted during operational data collection.

Following assessor training, assessors collected operational baseline EGRA data between October 19 and 28, 2015. Assessors conducted the EGRAs in the village primary schools, as these were the easiest places to locate participating students.

Endline EGRA

Before operational data collection, OMAES and RARE identified assessors to conduct endline EGRAs. CEPROCIDE conducted a refresher training session for assessors from both organizations from April 24 to 28, 2017.[17] The training included review sessions on the EGRA instrument and administration protocols. Although assessors practiced administering the EGRA during the refresher training, CEPROCIDE did not conduct assessor accuracy testing using commonly accepted protocols, and no agreement between assessors was calculated during the training (see Considerations).

The endline EGRA was conducted from May 1 to 12, 2017, in the ten intervention villages and three comparison villages. A teachers' strike started on the first day of the data collection, which led to the establishment of a contingency plan in collaboration with MEN. MEN representatives and the YCRY project staff directly contacted students and family members to arrange appointments to collect EGRA data at a neutral location, in this case, each village's library. The strike was resolved after one day, and the remainder of the endline EGRA data collection was held at schools, as originally planned.

End-of-Project Interviews

STS coordinated the administration of EOP interviews between May 1 and June 5, 2017, during and following the endline EGRA data collection.[18] The interviews were intended to explore the contextual factors that may have impacted variations in implementation and results among schools and students. They also explored the potential scalability of the project. EOP interviews were conducted with five groups of project participants: project management, librarians, family members, students, and stakeholders.

STS conducted project management interviews by phone with key staff from OMAES and EDC. Project management interviews consisted of open-ended questions related to general project information and intervention timeline, characteristics of the implementing organizations, perceptions of project design and implementation quality, and considerations for scalability.

STS hired a team of five local consultants—one supervisor and four data collectors—with prior experience administering qualitative interviews in the education sector to conduct interviews with librarians, family members, and students from both intervention groups. Librarians were asked 16 open-ended questions related to the use of technologies in the community libraries, challenges faced in implementing the project with fidelity, and training and support received through the project. Parents were asked 16 questions related to their level of engagement and participation in the libraries, the training they received through the project, and interactions with their children related to reading. Finally, students were asked two open-ended questions about their use of both the library and the project's technologies.

A local representative of World Vision Mali conducted interviews with representatives of MEN from the intervention areas. MEN representatives were asked nine questions related to the national and political context surrounding education and technology, the relevance of the YCRY project to education policy priorities, the relative advantage of the project in comparison with existing policies or programs, and the project's potential for scalability.

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17   World Vision directly contracted CEPROCIDE to conduct the assessor training due to its experience training assessors and administering EGRAs in Mali.

18   Due to security concerns in Mali, STS staff members were not present during data collection.

Finally, STS conducted a phone interview with a representative of USAID/Mali to discuss agency priorities for education programming, perspectives on the use of technology in educational contexts, and potential for scalability.

V. Project Implementation

The YCRL project commenced in February 2015, conducted its baseline assessment in October 2015, and began implementation in villages in January 2016. Implementation ended in April 2017, and endline data collection occurred from May 1 to 12, 2017.

This section presents implementation challenges, solutions, and successes that help answer the ACR GCD research question: *How successful was the rollout of the intervention?*

Development

The development phase of the YCRY project primarily consisted of the production of reading materials in print and digital formats and the establishment of the community libraries. To create reading materials, the YCRY project collaborated with MEN to choose appropriate existing early grade reading materials and to develop a process for producing stories at the community level. MEN provided hard copies of local language materials; some materials were also collected from EDC, World Vision Mali, and the Institute of Popular Education. Finally, OMAES oversaw the translation of pre-existing French language reading materials into Bamanankan. In total, 50 unique decodable and leveled stories were collected and translated, and 1,620 copies were provided to the ten libraries. This work was finished by December 2015, and the reading materials and furniture were delivered in the presence of local government representatives, school directors, teachers, community members, and children.

OMAES worked with villages to identify locations for community libraries and to select volunteer librarians. This work began in April 2015 and continued until December 2015, at which time libraries were stocked with materials and furniture. To design the librarian training materials—including a librarian guide, a booklet of reading activities for children, a booklet of stories and poems for children, and a training module and guide for the creation of local stories—OMAES worked with both EDC and IREX. The YCRY team conducted sensitization training in the selected villages with the intent of allowing the communities to select librarians. Ultimately, each village selected two community librarians, including ten males and ten females, for a total of 20 librarians. The project held a training workshop for librarians from December 7 to 12, 2015. The YCRY staff trained librarians on the concept of the library and role of the librarian, the management of and equipment in the library, and activities to offer children and families; Family Plus librarians also received instructions on the use of tablets and mobile phones. All librarians were given copies of the training materials for future reference.

In December 2015, EDC reviewed, revised, and uploaded reading materials into the Stepping Stone app on tablets and mobile phones that were distributed to Family Plus libraries. EDC also oversaw the audio recordings of reading materials available on the Stepping Stone app.

The YCRY project management expressed in EOP interviews that the development phase was challenging, though they did not experience significant delays. As OMAES did not have pre-designed project reading materials, its staff spent significant amounts of time interacting with MEN and other stakeholders to choose appropriate materials and translate them from French to Bamanankan. Transferring books from print to digital formats also proved difficult, as OMAES staff did not have the skills to do this themselves and had to delegate to EDC. The YCRY project management noted that, in retrospect, they would have benefitted from acquiring those skills and conducting this transfer themselves.

Implementation

Project implementation began in January 2016 after the librarian training. Initially, OMAES had envisioned that the YCRY project would be implemented for two full academic years, which would have required beginning implementation in September 2015. However, following discussions with STS and World Vision regarding the EGRA timeline, the YCRY project implementation start date was delayed. According to the project managers, this was a challenge, since it meant that the implementation did not follow the students' school calendar and instead began at the academic year's midpoint. Once implementation began, the YCRY project did not experience delays in the planned schedule and was able to roll out components as intended.

One of the challenges expressed by the YCRY project management and librarians in EOP interviews was the large number of children who wanted to utilize the library but were not part of the project. OMAES, with guidance from STS and World Vision, determined that children who were selected as part of the EGRA sample should be prioritized in receiving access to the library. This was primarily due to the limited budget, librarian capacity, and the desire to maximize exposure of children who were randomly selected to participate. Nevertheless, demand greatly outstripped the capacity of libraries and librarians. Children from different grades came to library sessions with their friends to listen and play games. In EOP interviews, librarians reported that even out-of-school children attended the sessions. Librarians noticed that, because there were often more children in the libraries than intended, the sessions were not as effective. As a result, OMAES staff recommended that each librarian work with no more than 20 to 30 children at a time for best results and maximum exposure per student. In some libraries, the YCRY project staff employed rotation strategies and smaller group sessions over more days. Although OMAES would have liked to provide access to library resources to more children than were included in the research design, unfortunately due to the high demand, librarians were at times forced to turn children away and could not accommodate all who were interested.

An additional area of improvement identified in EOP interviews included the complexity of some of the games, which made them difficult for some librarians to implement. To remedy this, project management suggested that the librarian training should increase from six days to ten days for future projects. Despite these issues, project management was very satisfied with the implementation of activities.

The YCRY project held a workshop from March 14 to 19, 2016, to help the team adapt the locally collected stories. Two pedagogical advisors from the Ségou region, the director of nonformal education at the teaching academy, and the librarians attended. Participants worked in small groups to adapt texts into Bamanankan, finalize the proposed illustrations, and agree on the leveling of the texts. The YCRY project management expressed that the story-writing workshop was complicated, since they had never before conducted this type of activity. It required skills in determining the cultural appropriateness of stories and leveling the text. OMAES developed a guide on how to collect local stories, but because each story needed to contain a certain number of words or letters to be adapted to students' needs, it was a challenging exercise. Ultimately, the communities developed 30 local stories, and 25 of them were finalized and produced for distribution in the libraries.

Feedback from family member and student EOP interviews indicated that, despite an overall satisfaction with the different components of the project, family engagement remained low. Many of the family members interviewed explained that they could not accompany their child to the library sessions because of time constraints, or stated that because of their participation in the project, they had to delegate chores to their child's older siblings. Despite this, most family members who were interviewed claimed that the project helped them realize their role in their child's education: they now check whether their children attended school, give them encouragement, and support and follow their progress more regularly. The overwhelming majority agree that their child's reading level has visibly increased due to the project, citing specific parts as crucial: library sessions, access to books, parent

training sessions, and Stepping Stone games. When asked what they would change, many family members asked for an expansion of the project—more books, more children involved, more training sessions, and more tablets and phones. Several participants from intervention B libraries were aware of the technologies received in the intervention A libraries and suggested that mobile devices would be beneficial in their libraries as well. Across intervention groups, some participants noted that the librarians were insufficiently trained.

In EOP interviews, children confirmed that they both enjoyed and benefitted from several aspects of the project. Generally, intervention A children preferred the Stepping Stone app and intervention B children wished they, too, had access to tablets. Many children reported that household chores were the most significant obstacle to attending library sessions. No other major challenges were reported by the children, though their responses did support the low levels of parental engagement expressed in the family member interviews.

Management

The project benefited from the support of multiple organizations, and OMAES team members did not experience any significant management challenges throughout the project. OMAES received continued support from MEN at the village level, in addition to the initial collaboration with the Head of the Education Division at MEN in developing reading materials for the project. However, during EOP interviews, the YCRY project management expressed that the project team and stakeholders would have benefitted from greater engagement at the central level of MEN during the implementation of the project—in particular, welcoming the central-level actors to visit an intervention village.

EDC provided significant technical support on the Stepping Stone app and on log data analysis both locally and from the United States home office. EDC currently implements the USAID Selective Integrated Reading Activity (SIRA) project in the Koulikoro, Ségou, and Sikasso regions of Mali, so there is already bi-directional engagement between OMAES and EDC.[19] Additionally, EDC staff from the USAID Projet d'Appui aux Jeunes Entrepreneurs (PAJE-Nièta) supported OMAES in managing the technology-based interventions of the YCRY project, including uploading content onto tablets and phones. Accordingly, OMAES supports EDC in the community-level interventions of the USAID SIRA project.

OMAES was also supposed to receive support in library management and training from IREX, though this support was limited. The YCRY project managers and EDC staff expressed in EOP interviews that greater engagement with IREX would have been fruitful. Finally, an additional source of support was the project's collaboration with fellow Malian organization and ACR GCD grantee RARE. The two organizations benefited from collaborating on enumerator training and working together on evaluation and implementation aspects of their respective programs.

Technology

The main technological component of the YCRY project was access to tablets and mobile phones installed with the Stepping Stone app, which provided digital books and accompanying audio, instructional audio, and interactive reading activities. The app content, which was in Bamanankan, targeted pre-reading and foundational skills, including the alphabetic principle, phonics, and decoding. EDC staff, both in Mali and in the US-based home office, provided technical assistance in loading the Stepping Stone software and videos onto tablets and mobile phones, analyzing usage data, and troubleshooting technology challenges throughout implementation.

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19   USAID SIRA is a five-year project that began in 2016 and aims to improve reading skills of primary school students in the Koulikoro, Ségou, and Sikasso regions of Mali. OMAES is an implementing partner on the project.

Overall, students who had access to tablets and mobile phones reported in EOP interviews that the app was the aspect of the YCRY project they most enjoyed. According to Family Plus librarians, children were highly motivated to learn and understood content faster than expected. From interviews and usage data, it was clear that children in the Family Plus villages interacted with a variety of different components of the app: recorded stories, alphabets, videos, and literacy games, among others. However, several challenges were reported regarding the technology. In EOP interviews, the YCRY project managers noted specific issues, such as solar chargers that no longer charged and staff that had no means to repair them. Since tablets were passed among multiple users, including children, they also incurred some damage and required repair from EDC. EDC recommended that to improve the Family Plus component, the project should employ a technical support team to travel to the field to observe implementation and spot potential technology problems before they arise. EDC also noted that librarians in intervention A libraries often continued to struggle with the technology after they received training. Similarly, EDC felt that family members were not trained sufficiently in the use of technology and struggled to use the Stepping Stone app. Notably, the YCRY staff observed that children learned quickly how to use the app and had fewer problems using the technologies than family members and librarians.

There were issues with the Stepping Stone app itself. Specifically, some app content did not transfer appropriately on mobile phones. Moving forward, the YCRY team suggested focusing solely on tablets and removing mobile phones as a medium for sharing materials due to compatibility issues. Additional challenges were noted regarding the usage of log data recorded by Stepping Stone. Ideally, the app would provide accurate usage data by user—for example, login time, content views, and log-out time for each session—to help program managers understand what materials were most utilized by teachers and to provide usage data to help better understand EGRA results. The Stepping Stone app automatically records when users turned the app on and off, materials viewed, and time spent viewing the materials; these data are automatically recorded and can be manually retrieved by transferring tablet memory cards to a computer. However, the format of the logs—only downloadable in text files—made interpreting and analyzing the logs for monitoring and evaluation (M&E) purposes difficult, as data had to be manually transferred from text files into Excel. Furthermore, the Stepping Stone app did not have login accounts for users, meaning that there was no way to verify who had used the app during a recorded session—a consideration when multiple people were using the same tablet over the course of the project. There were also issues with incorrect time stamps and improper recording of usage times. For example, if a teacher left the app running in the background while using the tablet for other purposes, the Stepping Stone log still recorded this as time spent on the app. Because of this unreliability, user data could not be included in this report.

EDC staff responsible for the development of the Stepping Stone app explained that because it is designed to run fully offline, they rely on a manual export procedure to download app logs; this sometimes results in duplicate, missing, or mislabelled logs. They are also dependent upon the time and date-stamp settings of the host device rather than relying on a standardized external source like an internet server, which means that log time stamps are not standardized. EDC is currently working on a version 3.0 of the platform, which should retain the offline mobile learning features—the major advantages of the platform—while also introducing an optional online data synchronization feature. EDC is also considering adding user accounts, though they expressed concerns that this function would introduce complex issues of privacy, data security, and increased training and support costs, in addition to further design and coding work. Finally, EDC hopes to develop analysis tools within the Stepping Stone app that would allow project staff and users to view usage data on-demand.

Fidelity of Implementation

By definition, FOI is the accurate and consistent application of an agreed-upon procedure. FOI research is used to assess the degree to which a project is implemented as intended. Measuring FOI helps implementers and researchers understand and differentiate between what was supposed to happen and what actually happened during the life of a project. When FOI is high and an intervention group experiences gains, then it is possible to associate gains with the intervention; this, in turn, makes it possible to recommend scaling the intervention. FOI research also makes it possible to identify which components of an intervention are most strongly associated with outcomes. When FOI is low and gains are low, it is impossible to know whether the reason for low gains is a poor design or poor implementation. FOI research can also be coupled with M&E to provide feedback to implementers during the project cycle to improve adherence to project design in the case of low FOI.[20]

As part of their projects, all ACR GCD Round 2 grantees conduct FOI research during the implementation period. The primary objectives of FOI for grantees were to

1. Understand what FOI is and why it is important throughout the life of the project

2. Identify essential components, activities, and questions for each phase of project implementation

3. Create relevant, project-specific FOI tools to monitor registrants' adherence to the intervention plan

STS held a series of FOI meetings with each ACR GCD Round 2 grantee to develop project-specific FOI tools and an implementation plan for FOI research. After finishing the FOI sessions, ACR GCD grantees were expected to pilot test their FOI tools and collect data. Grantees were advised to collect a minimum of one round of FOI data; two or more rounds of data collection were considered ideal.

The collected data serves several purposes:

1. To indicate where revisions in data collection tools were necessary

2. To highlight where improvements in implementation were needed

3. When combined with assessment results, to provide evidence, if possible, that gains were associated with the intervention

OMAES staff involved in the YCRY project participated in the FOI meetings by phone with STS, developed FOI tools, and collected FOI data. The YCRY project pilot tested the tools on March 9 and 17, 2016, at one Family Plus library and one community library. The team then finalized the tools and collected data periodically until January 2017. Data were collected from project staff, librarians, members of the local parent association, school directors, family members, and students. Additionally, librarians took student attendance, noted book checkouts, and collected Stepping Stone log data (see Additional Results for select findings). Overall, FOI data were used by the YCRY team as feedback to improve implementation.

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20   Creative Associates International, Inc. (2015). Fidelity of implementation (FOI) how-to guide (unpublished). Washington, D.C.: USAID.

VI. EGRA Data Analysis

EGRA data were analyzed using Microsoft Excel and IBM SPSS Statistics. Only students who had data at both baseline and endline were included, and EGRA subtask results were matched by student and compared by time period. Student reading performance was also evaluated across subgroups of students, including grade and gender.

Subtasks' mean fluencies and scores are reported, as are standard deviations (SD) relevant to those mean values.[21] Gain scores were computed as the difference between endline and baseline for four of the subtasks: orientation to print, initial sound identification, letter sound identification, and nonword reading. For the remaining three subtasks—ORF, reading comprehension, and listening comprehension—mean scores were calculated separately for the EGRA instrument 1 at baseline and the EGRA instrument 2 at endline. Results on these subtasks are compared between intervention groups for each time point. Zero scores were also calculated for all subtasks.[22]

When presented, the differences in gain scores among intervention groups, grade, and gender were tested for significance using analysis of variance and independent sample t-test analysis.[23] For grade and gender analysis, the differences in gain scores among intervention groups were tested for significance using analysis of variance with Bonferroni corrections for multiple testing to examine the significance of differences in scores among the sub-categories.[24] The differences in the proportion of zero scores were tested for significance using chi-square test.[25] Results with statistically significant differences are reported throughout with an asterisk.

For each subtask, decision rules were applied to assess whether outliers would need to be removed. For example, if the time remaining for a timed subtask resulted in a fluency rate that was outside a reasonable range, then that student's fluency rate was not included in the analyses. Reasonable ranges for the time remaining were based on multiple factors, including the rate at which letters or words in the language tested are typically read, the distribution—or relative performance—of students in the sample, and the mean fluency rates with and without the outlier data point(s). After consideration of the reasonable ranges in the data, one outlier was removed.[26]

For timed subtasks, fluency rates were calculated per second and multiplied by 60 seconds to compute the rate per minute. This assumes that, if there were additional items included on the timed subtask, the child would have continued responding at the same rate. As a result, average fluency rates for some subtasks were higher than the number of items in the subtask.

Table 5 provides details on the EGRA subtasks, including how results were calculated.

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21 SD describes how much observed values vary from the mean. A smaller SD indicates that most values are close to the mean; a larger SD indicates that values are further from the mean. This report provides mean fluencies and scores of the entire sample of students participating in the OMAES project. SDs are listed to understand the variability of the scores within the sample.

22 Students receive a zero score if they are unable to correctly identify a single item on a subtask. In this report, zero scores are shown as the number of students or as the total percentage of students unable to correctly identify a single item on a subtask.

23 Analysis of variance is a statistical model that is used to analyze the differences between group means, which helps identify differences in the sample that can be generalized to the population. The independent-sample t-tests compare the difference between the means of two independent groups on the same dependent variable.

24 The Bonferroni correction is a conservative way to conduct statistical significance testing across multiple variable subcategories. It calculates a new pairwise α in order to keep the familywise α value at 0.05.

25 The chi-square test is a statistical test comparing proportion of students with zero scores that were observed in the data against what was expected.

26 On baseline, one outlier student had subtask rates and scores more than three SDs above the mean.

Table 5: **EGRA Subtask and Data Analysis Method**

Subtask	Type	Analysis
Orientation to print	Untimed	Orientation to print is measured as the number of questions a student can correctly answer regarding text direction, the concept of a word, or basic knowledge of printed material. Students had the opportunity to answer six questions on this subtask.
Initial sound identification	Untimed	Initial sound identification is measured as the number of correct initial sounds identified out of ten. Initial sound identification is a measure of phonological awareness. Each student had the opportunity to identify ten beginning phonemes that are different from two others in a series of words.
Letter sound identification	Timed	Letter sound identification is measured as the number of correct letter sounds read in one minute (CLSPM). Letter sound identification is a measure of alphabet knowledge. Each student had the opportunity to read up to 100 upper- and lower-case letters.
Nonword reading	Timed	Nonword reading is measured as the number of correct "nonwords" read in one minute (CNWPM). Nonword reading measures decoding. Each student had the opportunity to read up to 50 one- or two-syllable nonwords.
Oral reading fluency	Timed	ORF is measured as correct words read in one minute (CWPM). ORF is a decoding and reading fluency measure. Each student had the opportunity to read 50 words in one minute on the EGRA instrument 1 at baseline and 52 words in one minute on the EGRA instrument 2 at endline. The ORF passage formed the textual basis for the reading comprehension subtask.
Reading comprehension	Untimed	Reading comprehension is measured as the number of correct answers verbally delivered to the assessor based on questions asked about the passage read as part of the ORF subtask. Each student had the opportunity to answer up to five questions on the EGRA instruments 1 and 2.
Listening comprehension	Untimed	Listening comprehension is measured as the number of correct answers verbally delivered to the assessor. Listening comprehension is a measure of vocabulary. Each student had the opportunity to answer five questions on the EGRA instruments 1 and 2 based on a passage read aloud to them by the assessor.

Considerations

Non-equated passages on the oral reading fluency, reading comprehension, and listening comprehension subtasks

The passages used for the ORF and reading comprehension subtasks on the EGRA instrument 1 at baseline and on the EGRA instrument 2 endline were different, as were the passages used for the listening comprehension subtask. The passages for both instruments 1 and 2 for these three subtasks were developed and piloted during the adaptation workshop in October 2015. At that time, the adaptation team selected two passages for the ORF and reading comprehension subtasks and two for the listening comprehension subtask based on observations that the passages were similar in difficulty. However, not enough data were collected during the pilot process to fully equate the two sets of passages. STS's psychometricians attempted to conduct an external anchor equating exercise but, ultimately, were unable to conclusively equate the passages from the EGRA instrument 1 and the EGRA instrument 2.

Student results from the EGRA instrument 1 at baseline and the EGRA instrument 2 at endline are presented separately to emphasize that, although the passages were similar in difficulty, they are not equated. As a result, scores from baseline and endline on these subtasks should not be directly compared. The orientation to print, letter sound identification, and nonword reading subtasks were identical on the baseline and endline EGRA instruments, and results for these subtasks can be compared.

Lack of assessor accuracy testing during endline EGRA

While CEPROCIDE conducted a refresher training session for the endline assessors, including practicing administering the EGRA, it did not administer assessor accuracy testing using commonly accepted protocols, as per the *EGRA Toolkit (2nd Edition)*. Therefore, agreement among assessors was not calculated, and the possibility of low assessor agreement cannot be excluded. Since low assessor agreement means that the amount of error introduced from the act of data collection itself may be high, reliability and consistency of endline data should be considered a limitation.

VII. EGRA Results

This section presents EGRA results to answer the key research questions posed by the YCRY project: *Does increased access to appropriate and engaging reading materials and training for families improve children's reading abilities?* and *Does the use of the technology—specifically the Stepping Stone app—contribute to increased reading scores?*

The following section contains findings by group—intervention A (access to community libraries and Family Plus component), intervention B (access to community libraries), and comparison—across EGRA subtasks. First, gain scores are explored for the orientation to print, initial sound identification, letter sound identification, and nonword reading subtasks. Differences in performance by grade for intervention groups A and B are also presented for these subtasks to help understand if the Family Plus component impacted students' reading gains within each grade. Then, EGRA results for the ORF, reading comprehension, and listening comprehension subtasks are presented by the EGRA instrument to allow for a relative comparison of performance across intervention groups at specific time periods. Results by gender are presented for all subtasks.

Figures 3 and 4 present the EGRA instrument 1 and the EGRA instrument 2 subtask results by group. On the EGRA instrument 1 at baseline, intervention B students—those who did not have access to the Family Plus component—had higher EGRA scores across all subtasks than their peers in intervention A or the comparison group. Additionally, comparison group students had higher scores than their peers from intervention A on all subtasks except reading comprehension, on which the two groups of students were unable to answer any questions correctly, on average.

Figure 3: **Mean Results by EGRA Subtask and Group on EGRA Instrument 1 at Baseline**[27]

Intervention A — Intervention B** — Comparison+
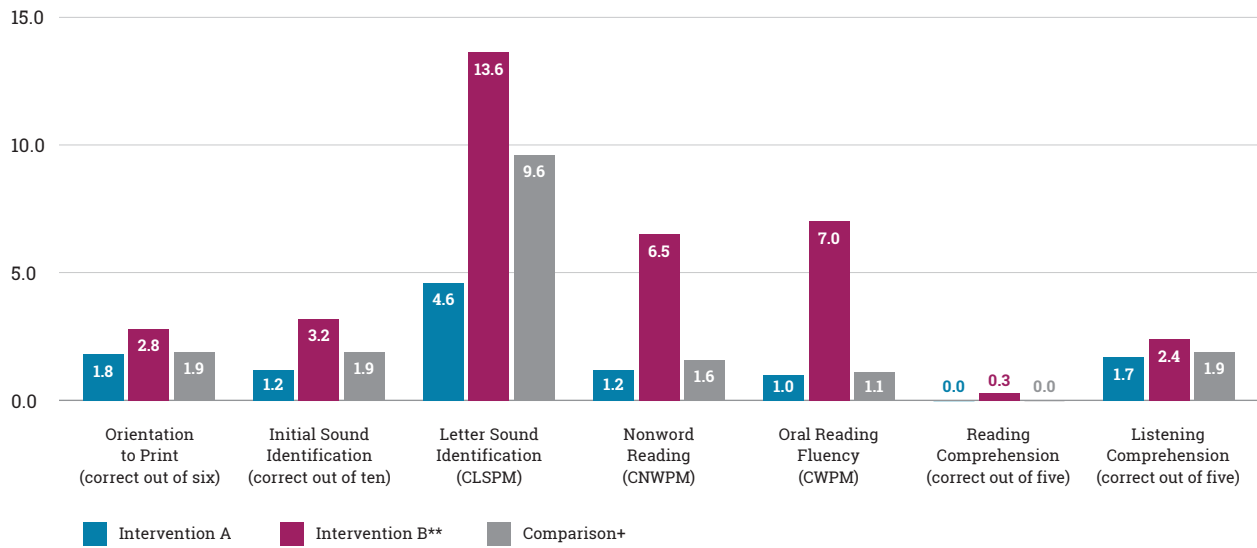
On the EGRA instrument 2 at endline, intervention B students again had higher mean scores across all subtasks than their peers in the other groups. Furthermore, intervention A students had higher scores than comparison group students on all subtasks except orientation to print. Gain scores for four subtasks are explored in the next section.

Figure 4: **Mean Results by EGRA Subtask and Group on EGRA Instrument 2 at Endline**[28]

Intervention A* — Intervention B** — Comparison
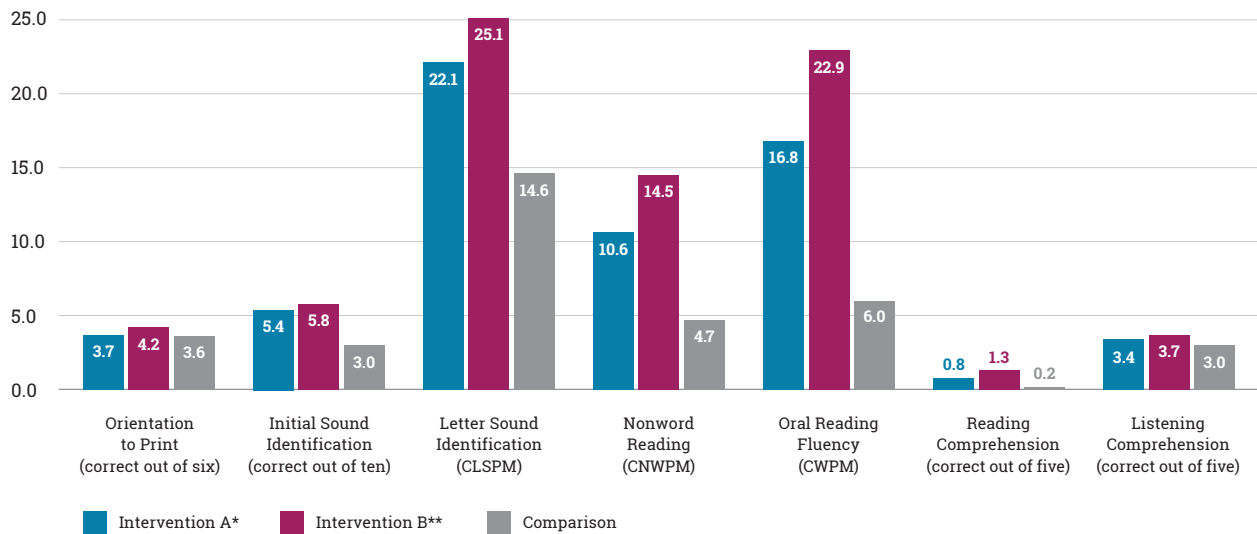
The following sections discuss results by subtask, including the proportion of students who received zero scores.

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27   Two asterisks (**) indicate the mean scores of intervention B students were statistically significantly higher than mean scores of intervention A and comparison students on all seven subtasks at p<0.05. A plus (+) indicates that the mean scores of comparison students were statistically significantly higher than the mean scores of intervention A students on all subtasks except reading comprehension. N sizes: $N_{All\ students}$=562; $n_{Intervention\ A}$=225; $n_{Intervention\ B}$=219; $n_{Comparison}$=118.

28   An asterisk (*) indicates the mean scores of intervention A students were statistically significantly higher than mean scores of comparison students on all subtasks except orientation to print at p<0.05. Two asterisks (**) indicate the mean scores of intervention B students were statistically significantly higher than mean scores of intervention A and comparison students on all seven subtasks at p<0.05. N sizes: $N_{All\ students}$=562; $n_{Intervention\ A}$=225; $n_{Intervention\ B}$=219; $n_{Comparison}$=118.

EGRA Results by Subtask: Orientation to Print, Initial Sound Identification, Letter Sound Identification, and Nonword Reading

Gain scores were calculated for the orientation to print, initial sound identification, letter sound identification, and nonword reading subtasks to determine change over the life of the project. Gain scores were computed as the difference between endline and baseline scores for each of the four subtasks. Results, by group, are presented in Figure 5.

Figure 5: **Average Gain Scores by Group—Orientation to Print, Initial Sound Identification, Letter Sound Identification, and Nonword Reading[29]**
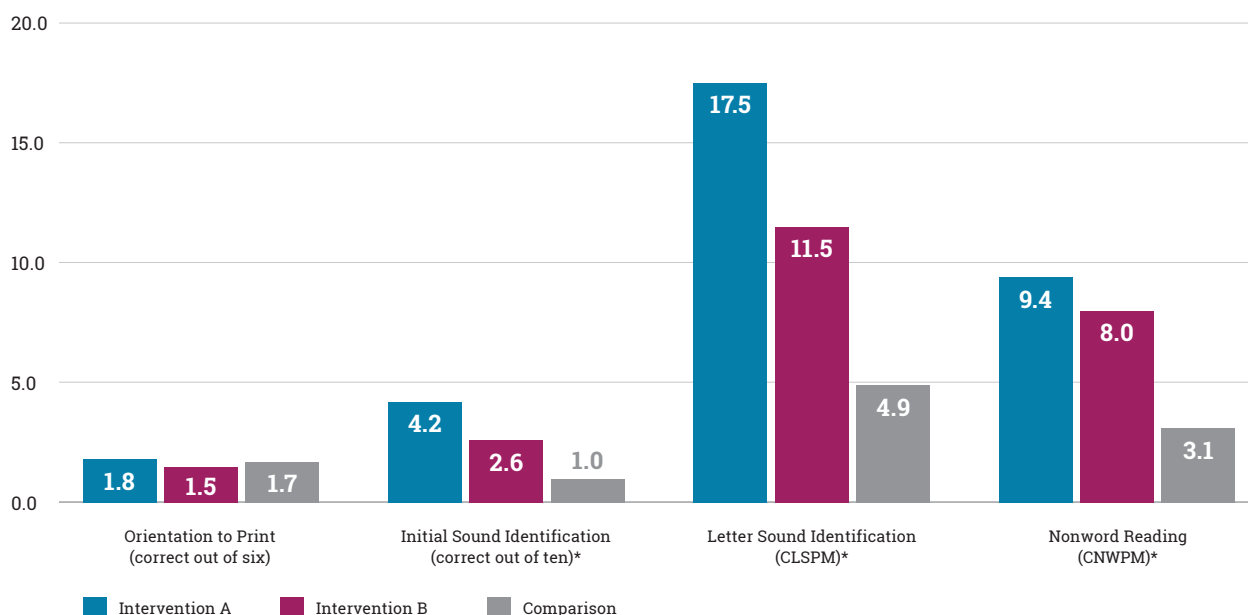

During the intervention period, all students showed gains on the first four EGRA subtasks. **On three out of four subtasks—initial sound identification, letter sound identification, and nonword reading—students in interventions A and B made greater gains than students in the comparison group.** Gains made by students were significantly different across groups. Specifically, students in intervention A—those with access to the Stepping Stone app on tablets and mobile phones—showed greater gains than their peers in intervention B and the comparison group. On the orientation to print subtask, students made comparable improvements; there were no significant differences in the gains achieved during the year among the three groups on this subtask.

Orientation to Print

The orientation to print subtask measures students' knowledge of how words are organized on a page, the direction of print, and how print materials are organized. In this subtask, students were given a text and asked a series of questions that measured their understanding of how words on a page were organized and read. Students indicated their response to the six questions asked by pointing to the correct part of the page or by indicating the correct direction of reading. This is an untimed task, and results are presented as the average number of questions answered correctly out of six.

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29   An asterisk (*) indicates that student gains were significantly different across intervention groups at $p < 0.05$.

Average gain scores for the orientation to print subtask are presented in Figure 5. **Overall, orientation to print scores increased from baseline to endline for all students, and the differences in gains were not significantly different among groups.**

Figure 6 shows the percentage of students who received zero scores at baseline and endline on the orientation to print subtask. **Across groups, intervention A showed the greatest decline in the proportion of students receiving zero scores on the orientation to print subtask—a 27.2 percentage-point decrease.** The proportion of students receiving zero scores on the orientation to print subtask was also lower at endline than at baseline among students in intervention B and in the comparison group. The decrease in the proportion of students receiving zero scores between baseline and endline was statistically significant for intervention B; however, it was not for intervention A, nor was it for the comparison group.[30]

Figure 6: **Percentage of Students Receiving Zero Scores by Group at Baseline and Endline— Orientation to Print (%)**[31, 32]
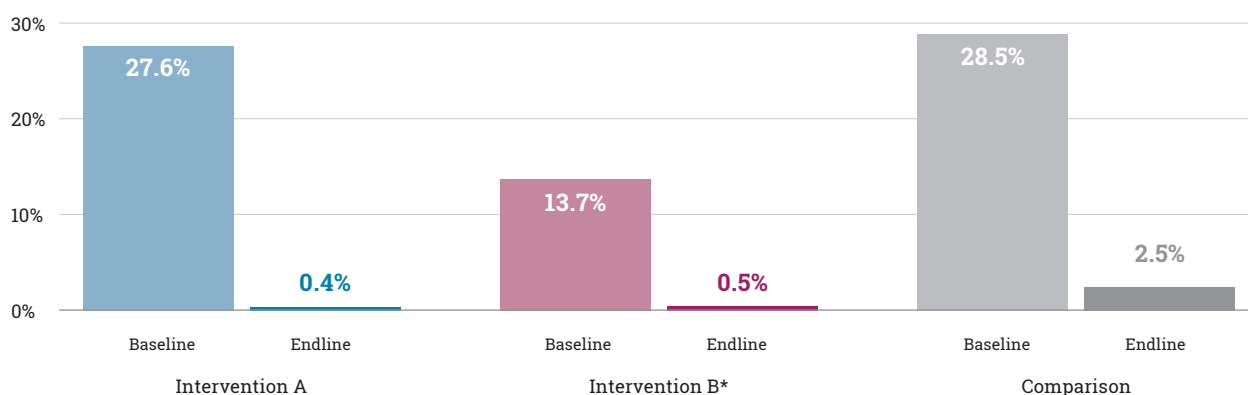
Initial Sound Identification

The initial sound identification subtask measures students' ability to identify the initial sounds of words. The ability to identify isolated sounds within a word is a test of phonemic awareness and indicates that a student understands that words are made up of sounds—an understanding he or she can then use to associate sounds with letters, which is a building block of decoding. In this subtask, the assessor read ten words, and students were asked to verbally indicate the initial sound—or phoneme—of each word. This is an untimed subtask, and results are presented as the average number of questions answered correctly out of ten.

Average gain scores for the initial sound identification reading subtask are presented in Figure 5. Overall, **initial sound identification scores increased from baseline to endline for all students, with students in both intervention groups showing greater gains than students in the comparison group.** Students in intervention A had the greatest gains followed by intervention B then the comparison group. Specifically, students in intervention A identified 4.2 additional correct initial sounds at endline as compared to baseline, while intervention B's scores increased by 2.6 additional correct initial sounds. Students in the comparison group identified 1.0 additional initial sound at endline than they did at baseline. The differences in gains on this subtask were significantly different across groups.

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30   Chi square test of significance indicated that the proportions of students receiving zero scores at baseline and endline (observed) were not statistically significantly different from what was expected in the data for intervention group A and the comparison group.

31   An asterisk (*) indicates that the proportion of students receiving zero scores at endline was statistically significantly different than the proportion of students receiving zero scores at baseline at $p < 0.05$. N sizes: $N_{All students}$=562; $n_{Intervention A}$=225; $n_{Intervention B}$=219; $n_{Comparison}$=118.

32   The proportion of intervention A students receiving zero scores at baseline and endline (observed number) was not statistically significantly different from what was expected in this data.

Figure 7: **Percentage of Students Receiving Zero Scores by Group at Baseline and Endline—
Initial Sound Identification (%)[33]**
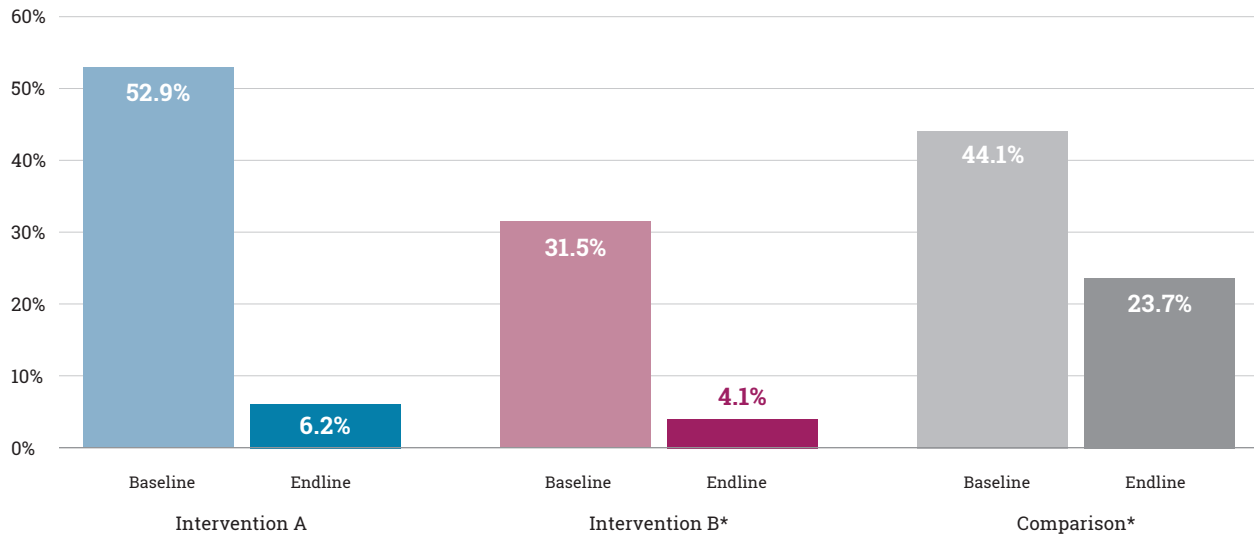
The proportions of students receiving zero scores at baseline and endline are presented in Figure 7. **Across groups, the greatest decrease in the proportion of students receiving zero scores from baseline to endline was observed in intervention A, equal to a 46.7 percentage-point decrease.** The proportion of students receiving zero scores in intervention B dropped by 27.4 percentage points from baseline to endline. These differences were statistically significant for students in interventions A and B, but the decrease for the comparison group was not statistically significant.

Letter Sound Identification

The letter sound identification subtask measures students' understanding of the alphabetic principle, which states that each letter of the alphabet corresponds to a specific sound. To demonstrate letter sound identification, students must identify the appropriate sounds for each letter. The ability to match letters with correct sounds is critical to reading fluency and comprehension. For this subtask, students were presented with a stimulus of 100 letters and asked to read aloud as many of the sounds as they could in one minute.[34] Results for this subtask are reported as a fluency rate of CLSPM.

Average gain scores for the letter sound identification subtask are presented in Figure 5. Overall, **letter sound identification fluency rates increased from baseline to endline for all students, with students in both intervention groups showing greater gains than students in the comparison group.** Students in intervention group A had the largest gains, followed by intervention B, then the comparison group. Specifically, students in intervention A increased their letter sound identification fluency rate by 17.5 CLSPM at endline compared to baseline. Students in intervention B increased their fluency by 11.5 CLSPM, while students in the comparison group increased their fluency by 4.9 CLSPM. The differences in the letter sound identification fluency gains achieved by students in the three groups were significantly different.

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33   An asterisk (*) indicates that the proportion of students receiving zero scores at endline was statistically significantly different than the proportion of students receiving zero scores at baseline at $p<0.05$. N sizes: $N_{All students}=562$; $n_{Intervention A}=225$; $n_{Intervention B}=219$; $n_{Comparison}=118$.

34   There is an auto stop rule in all the timed EGRA subtasks. In this case, the test was discontinued if a student was unable to correctly name any the first ten letters on the stimulus.

Figure 8: **Percentage of Students Receiving Zero Scores by Group at Endline—Letter Sound Identification (%)**[35, 36]
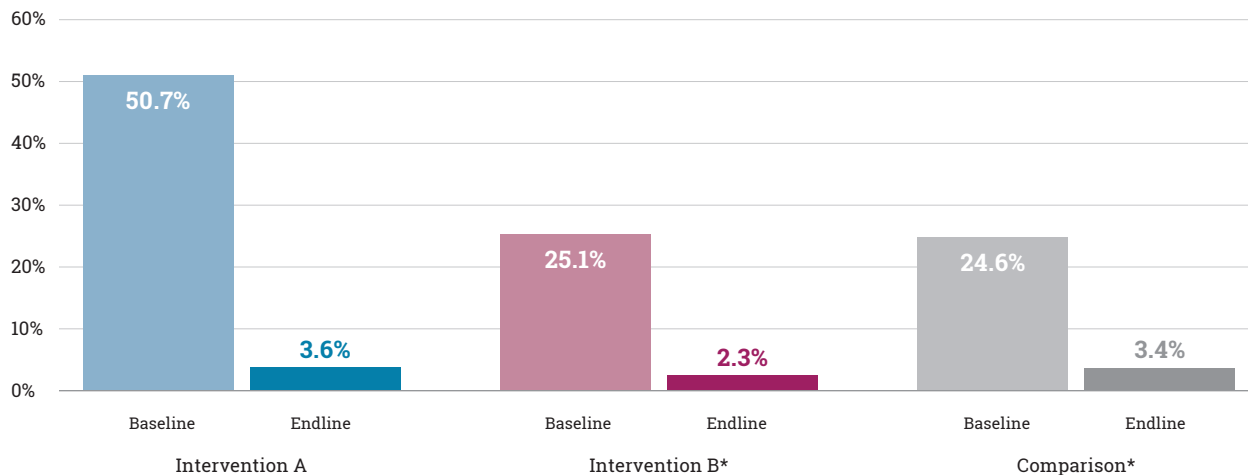
Figure 8 shows the proportions of students receiving zero scores at baseline and endline on the letter sound identification subtask. **Across all groups, there was a decrease in the percentage of students receiving zero scores from baseline to endline; the decreases were larger in both intervention groups than in the comparison groups.** From baseline to endline, the proportion of students receiving zero scores in interventions A and B decreased by 47.1 percentage points and 22.8 percentage points, respectively, compared with 21.2 percentage points for students in the comparison group. The differences in the proportion of zero scores were statistically significant for students in intervention B and in the comparison group.[37]

Nonword Reading

The nonword reading subtask measures students' decoding ability by presenting them with words that they would not be able to recognize due to familiarity. Many students in the early grades learn to memorize or recognize a range of familiar words. Thus, to assess their decoding skills, students are presented with invented nonsense words, which requires them to sound out each letter and syllable to decode a word. During this timed subtask, the assessor presented each student with 50 nonwords and asked him or her to read as many as possible in one minute.[38] Results for this subtask are reported as a fluency rate of CNWPM.

Average gain scores for the nonword reading subtask are presented in Figure 5. On average, **nonword reading fluency increased from baseline to endline for students in all groups; students in both intervention groups showed greater gains than students in the comparison group.** Students in intervention A had the greatest gains, followed by intervention B, then the comparison group. Specifically, nonword reading fluency for students in intervention A increased by 9.4 CNWPM at endline as compared to baseline, and students in intervention B increased their fluency by 8.0 CNWPM. By contrast, students in the comparison group increased their fluency by 3.1 CNWPM. The differences in the nonword reading fluency gains achieved by students in the three groups were significantly different.

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35   An asterisk (*) indicates that the proportion of students receiving zero scores at endline was statistically significantly different than the proportion of students receiving zero scores at baseline at p<0.05. N sizes: $N_{All\ students}$=562; $n_{Intervention\ A}$=225; $n_{Intervention\ B}$=219; $n_{Comparison}$=118.

36   The proportion of intervention A students receiving zero scores at baseline and endline (observed number) was not statistically significantly different from what was expected in this data.

37   Chi square test of significance indicated that the proportions of students receiving zero scores at baseline and endline (observed) were not statistically significantly different from what was expected in the data for intervention A.

38   After one minute, the student was asked to stop. The subtask was discontinued if a student was unable to correctly read any the first ten nonwords.

Figure 9: **Percentage of Students Receiving Zero Scores by Grade and Group at Endline—Nonword Reading (%)[39]**

The proportions of students receiving zero scores at baseline and endline are presented in Figure 9. **Decreases in the percentage of students receiving zero scores from baseline to endline were greater in interventions A and B than in the comparison group—58.6 percentage points, 35.7 percentage points, and 34.8 percentage points, respectively.** The decreases in the proportions of students receiving zero scores at baseline and endline were statistically significant across groups.

EGRA Results by Grade: Orientation to Print, Initial Sound Identification, Letter Sound Identification, and Nonword Reading

Additional results on the four subtasks discussed in the earlier section—orientation to print, initial sound identification, letter sound identification, and nonword reading—are presented in this section. Specifically, student performance by grade for interventions A and B was explored to help understand if the interventions differently impacted reading gains within each grade. Figure 10 represents gains made by students in interventions A and B by grade level on these four subtasks.

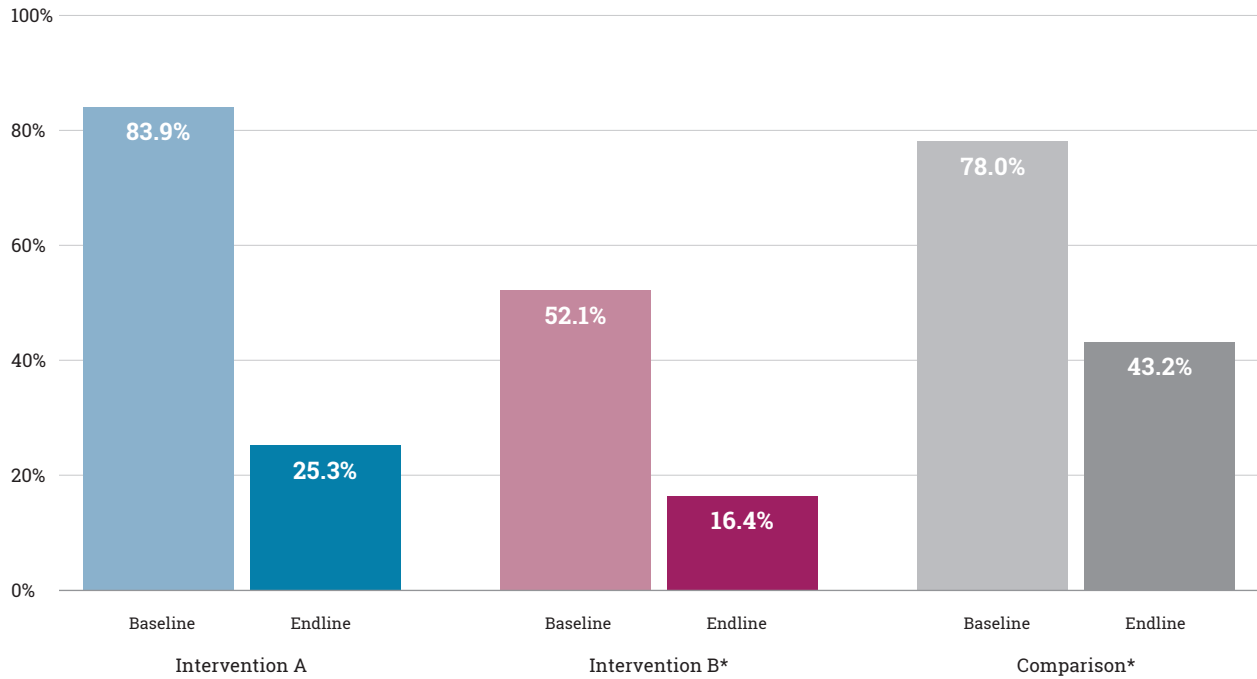39   An asterisk (*) indicates the proportion of students receiving zero scores at endline was statistically significantly different than the proportion of students receiving zero scores at baseline at $p<0.05$. N sizes: $N_{All students}=561$; $n_{Intervention A}=224$; $n_{Intervention B}=219$; $n_{Comparison}=118$.
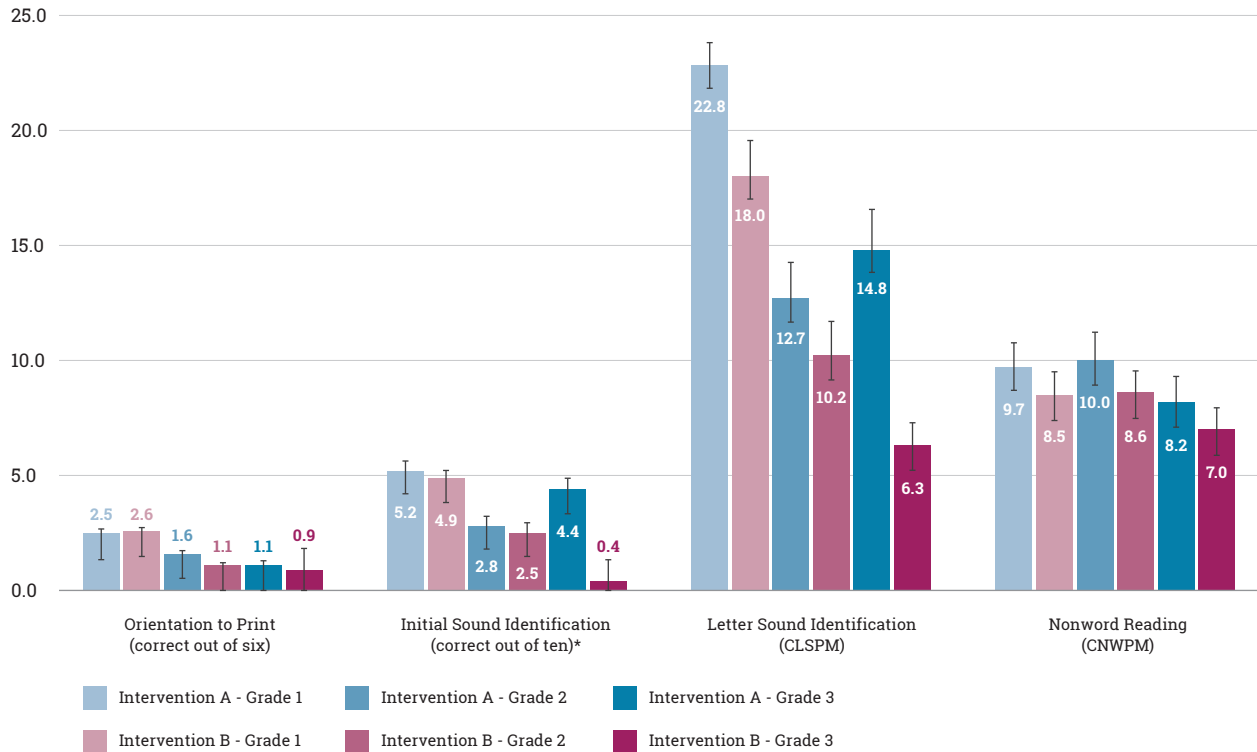
Examining results by grade and subtask, **gains for students in interventions A and B were statistically different by grade level on the initial sound identification subtask.** Specifically, gain scores on initial sound identification were comparable for Grades 1 and 2 students by group; however, students in Grade 3 had significantly greater gains than students in the other two grades. This variation in the magnitude of average gains between interventions A and B is statistically significant across all three grades.

EGRA Results by Gender: Orientation to Print, Initial Sound Identification, Letter Sound Identification, and Nonword Reading

In addition to calculating student results at baseline to endline across all students by grade and by intervention group, results were analyzed by students' gender. This aids understanding of whether the YCRY project impacted girls and boys differently. There were 279 girls and 283 boys in the sample, and average gain scores are presented in Figure 11.

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40 An asterisk (*) indicates the average gain score were statistically significantly different across grade levels at p<0.05. Mean score estimates are noted above each bar in the graph. The confidence interval is indicated by the lines at the top of each bar. Confidence intervals indicates a range of values that's likely to encompass the true value. *N* sizes: All students: Intervention Group A *n*=225, Intervention Group B *n*=219; Grade 1: Intervention Group A *n*=95, Intervention Group B *n*=69; Grade 2: Intervention Group A *n*=76, Intervention Group B *n*=82; Grade 3: Intervention Group A *n*=54, Intervention Group B *n*=68.

Figure 11: **Average Gain Scores by Gender and Group—Orientation to Print, Initial Sound Identification, Letter Sound Identification, and Nonword Reading[41]**
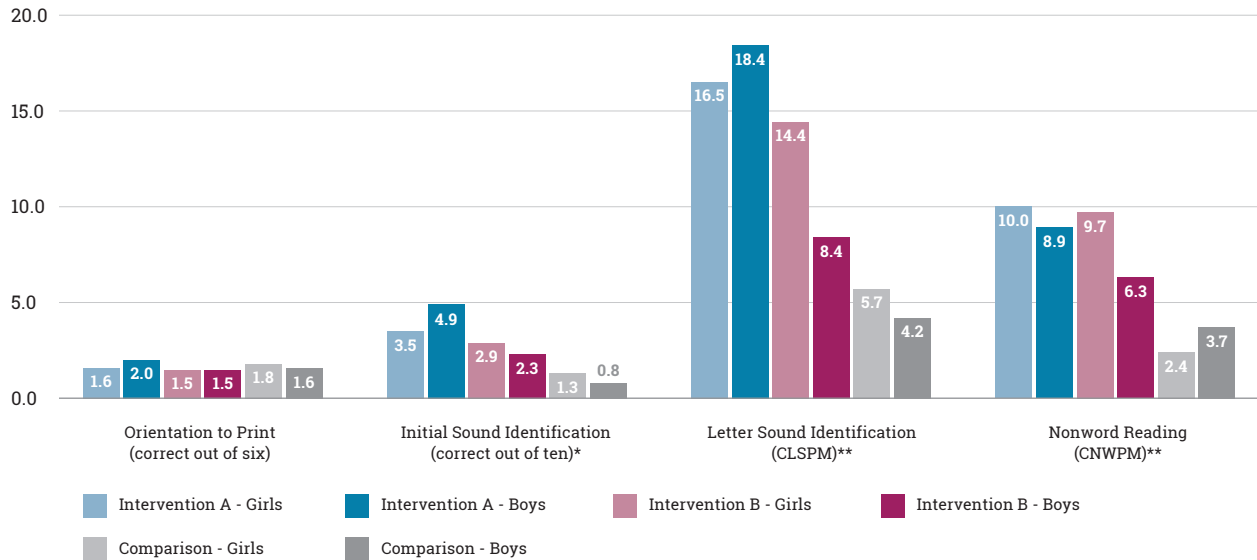
Across intervention groups and subtasks, there were no notable trends in gain scores by gender. Girls in intervention B made significantly higher gains than boys in the same group on two subtasks: letter sound identification and nonword reading. Boys in intervention A made significantly higher gains than girls on the initial sound identification subtask (see Annex Table E.9). On other subtasks, girls and boys performed similarly.

Figure 12: **Percentage of Students Receiving Zero Score at Endline by Gender and Group— Orientation to Print, Initial Sound Identification, Letter Sound Identification, and Nonword Reading[42]**
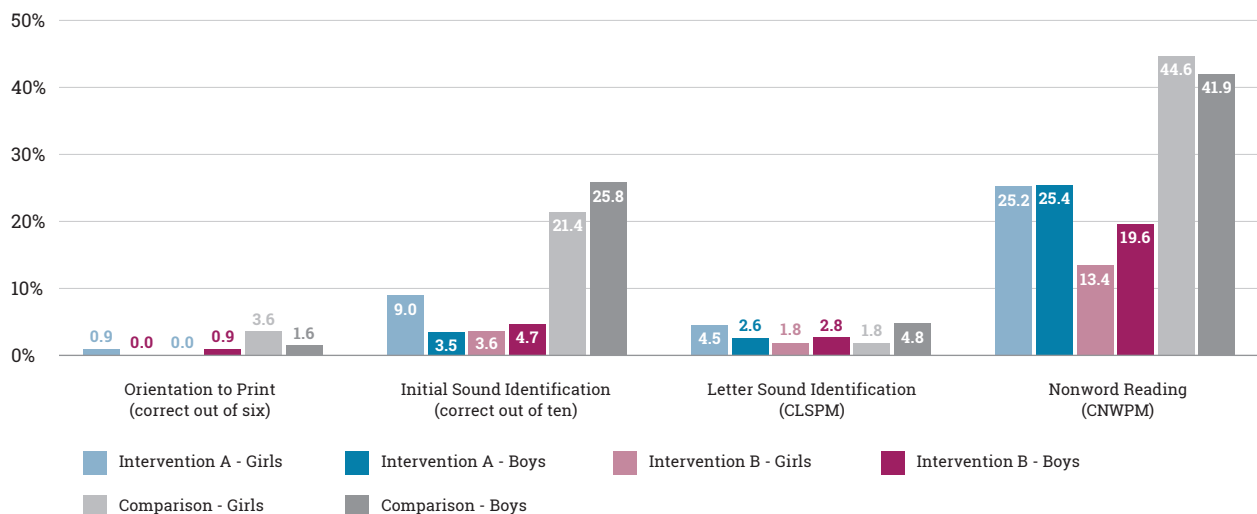
Figure 12 shows the percentage of girls and boys who received zero scores by group at endline. **The proportions of zero scores between girls and boys were not significantly different on any subtask at endline.**

41   An asterisk (*) indicates the average gain scores of boys were statistically significantly higher than average gain scores of girls at p<0.05. Two asterisks (**) indicate the average gain scores of girls were statistically significantly higher than average gain scores of boys at p<0.05. N sizes: Intervention Group A: Girls *n*=111, Boys *n*=114; Intervention Group B: Girls *n*=112, Boys *n*=107; Comparison Group: Girls *n*=56; Boys *n*=62.

42   N sizes: Intervention Group A: Girls *n*=111, Boys *n*=114; Intervention Group B: Girls *n*=112, Boys *n*=107; Comparison Group: Girls *n*=56; Boys *n*=62.

EGRA Results by Subtask: Oral Reading Fluency, Reading Comprehension, and Listening Comprehension

In the following section, EGRA results for ORF, reading comprehension, and listening comprehension are presented by grade and by the EGRA instrument to allow for a relative comparison of performance by group at baseline and endline. Results for the ORF, reading comprehension, and listening comprehension subtasks were tested for significance within time points only. Results were tested to determine whether there was significant difference in the performance of students by group on the EGRA instrument 1 at baseline and separately to determine whether there was significant difference in the performance of students by group on the EGRA instrument 2 at endline. As the ORF, reading comprehension, and listening comprehension passages were different on the EGRA instruments 1 and 2, results should not be directly compared across instruments or time periods.

Mean results at baseline and endline are presented in Figures 13 and 14. At baseline, intervention B students had significantly higher scores than their peers on all three subtasks. **Students in intervention A and students in the comparison group did not perform statistically differently on any of the three subtasks at baseline.**

Figure 13: **Mean Results by Group on EGRA Instrument 1 at Baseline—ORF, Reading Comprehension, and Listening Comprehension[43]**
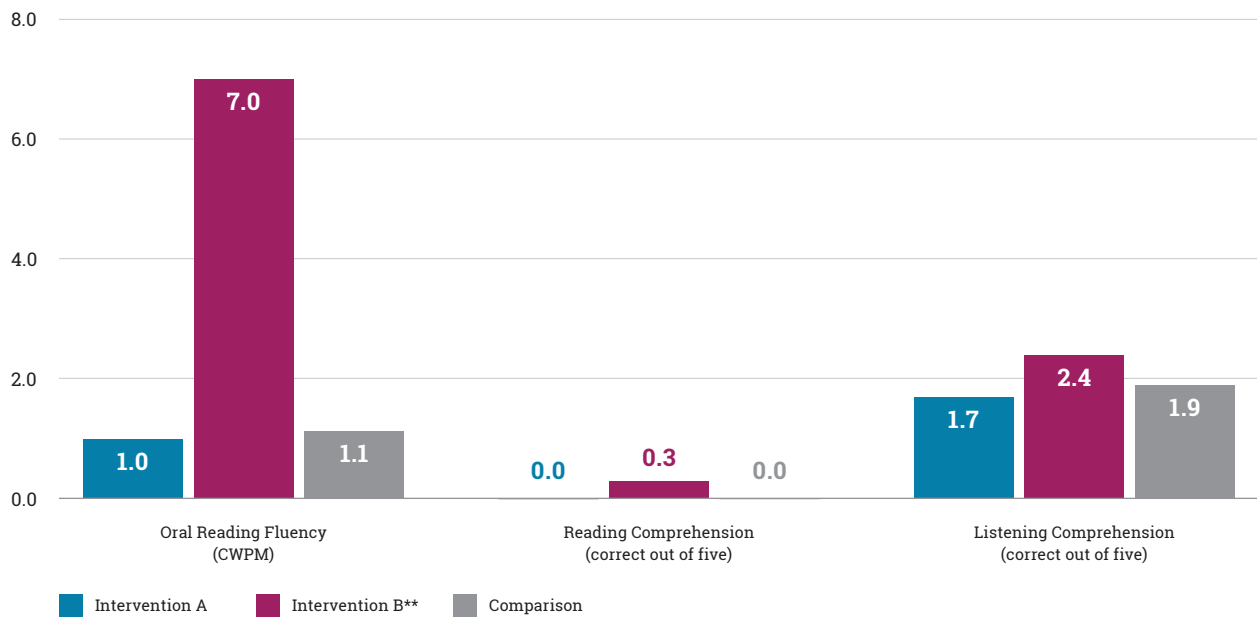
At endline, students in intervention B had significantly higher scores than students in intervention A or students in the comparison group on all three subtasks. Furthermore, **students in intervention A had statistically significant higher mean scores across all three subtasks than their peers in the comparison group.**

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43 Two asterisks (**) indicate the mean scores of intervention B students were statistically significantly higher than mean scores of intervention A and comparison students on all three subtasks at p<0.05. N sizes: $N_{\text{All students}}$=562; $n_{\text{Intervention A}}$=225; $n_{\text{Intervention B}}$=219; $n_{\text{Comparison}}$=118.

Figure 14: **Mean Results by Group on EGRA Instrument 2 at Endline—ORF, Reading Comprehension, and Listening Comprehension[44]**

Legend: Intervention A* (blue), Intervention B** (magenta), Comparison (gray)

Oral Reading Fluency (CWPM): Intervention A 16.8, Intervention B 22.9, Comparison 6.0
Reading Comprehension (correct out of five): Intervention A 0.8, Intervention B 1.3, Comparison 0.2
Listening Comprehension (correct out of five): Intervention A 3.4, Intervention B 3.7, Comparison 3.0
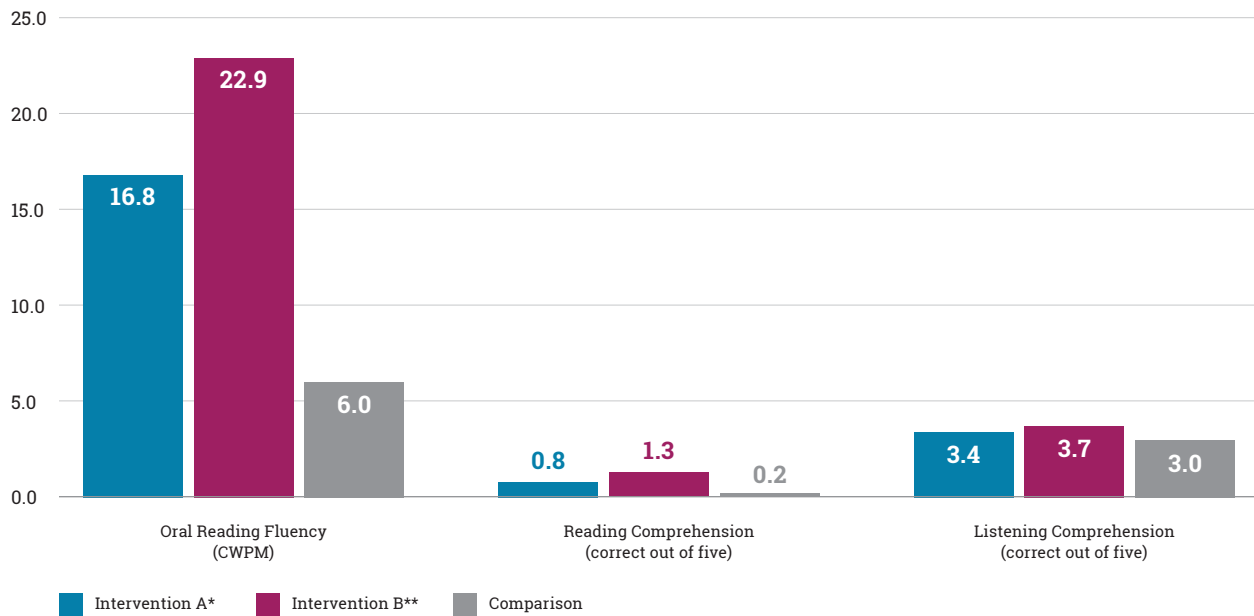
Oral Reading Fluency

The ORF subtask measures students' overall reading competence. It is the culmination of translating letters into sounds, merging sounds to become words, linking words to become sentences, relating the text to meaning, and making inferences to fill in missing information. A student's ORF score is dependent on the skills assessed in previous subtasks since students need to have some mastery of letter sounds and decoding to read fluently. Students had the opportunity to read up to 50 words in the ORF passage on the EGRA instrument 1 at baseline and up to 52 words on the EGRA instrument 2 at endline. Results for this subtask are reported as a fluency rate of CWPM.

Students' mean results on the ORF subtask on the EGRA instrument 1 at baseline are presented in Figure 13. **Of the three groups, students in intervention B had significantly higher average fluency rates on ORF— 7.0 CWPM—than their peers in intervention group A and in the comparison group at baseline.** Students in intervention group A and the comparison group had similar fluency rates on this subtask on the EGRA instrument 1 at baseline—1.0 CWPM and 1.1 CWPM, respectively. There was no significant difference in the average fluencies of students in these two groups on the EGRA instrument 1.

Students' mean results on the ORF subtask at endline are presented in Figure 14. At endline, intervention B students had significantly higher scores than their peers in intervention A and in the comparison group. **While intervention A students and comparison group students performed similarly at baseline, intervention A students had significantly higher scores than their peers in the comparison group at endline.[45]** Specifically, intervention A students read 16.8 CWPM while students in the comparison group read 6.0 CWPM.

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44 An asterisk (*) indicates the mean scores of intervention A students were statistically significantly higher than mean scores of comparison students on all three subtasks at p<0.05. Two asterisks (**) indicate the mean scores of intervention B students were statistically significantly higher than mean scores of Intervention A and comparison students on all three subtasks at p<0.05. N sizes: $N_{All\ students}$=562; $n_{Intervention\ A}$=225; $n_{Intervention\ B}$=219; $n_{Comparison}$=118.

45 As EGRA instruments 1 and 2 were not equated, only relative performance at each time point should be compared.

Figure 15: **Percentage of Students Receiving Zero Scores by Group on EGRA Instrument 1 at Baseline and EGRA Instrument 2 at Endline—Oral Reading Fluency (%)[46]**
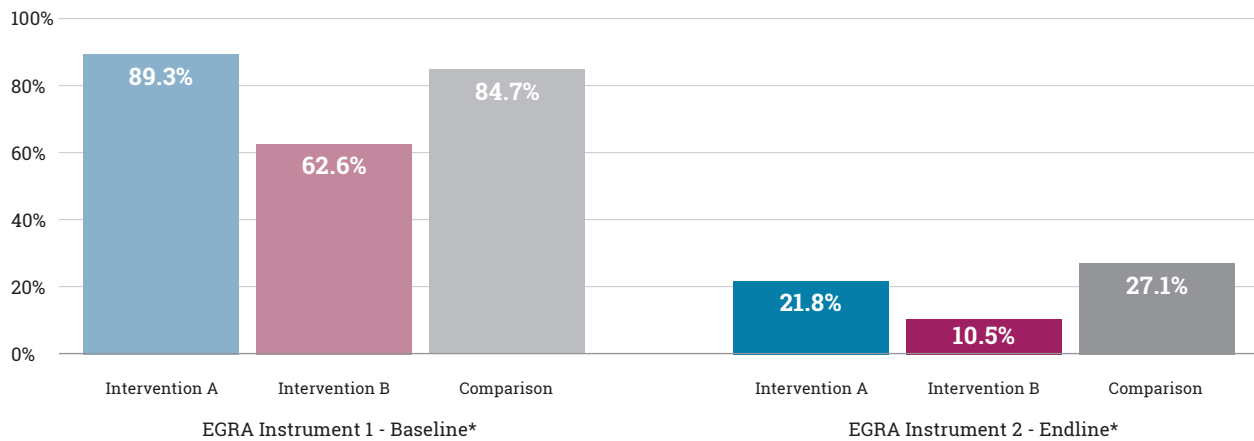
The percentages of students receiving zero scores on the EGRA instrument 1 at baseline and on the EGRA instrument 2 at endline are presented in Figure 15. **At endline, the largest proportion of students receiving zero scores on ORF was observed in the comparison group—27.1 percent of those students.** The proportions of zero scores among intervention A and B students were 21.8 percent and 10.5 percent, respectively. The proportions of students receiving zero scores in the intervention groups were significantly different at baseline as well as at endline.

Reading Comprehension

Comprehension is the purpose of reading. Once a child learns the sound-letter relationship (alphabetic principle) and becomes able to decode and read with automaticity, he or she becomes increasingly able to understand the meaning of a text. This subtask assesses that ability.

For the reading comprehension subtask, the assessor removed the passage used in the ORF subtask and then asked each student up to five comprehension questions based on what he or she had read. The number of questions asked depended on how many words each student read on the ORF subtask. For instance, if a student read just the first ten words, he or she would be asked only the first comprehension question. Similarly, if a student read all words on the ORF subtask, he or she would be asked all five questions. Students who received zero scores on the ORF subtask also received zero scores on the reading comprehension subtask because no questions were presented to them. Additionally, any student who could not correctly answer a single reading comprehension question received a zero score on this subtask.

Students' mean results on the reading comprehension subtask on the EGRA instrument 1 at baseline are presented in Figure 13. On average, **students in intervention B correctly answered 0.3 questions at baseline, while students in intervention A and in the comparison group did not correctly answer a single reading comprehension question correctly, on average.** Students in intervention B group had significantly higher scores than their peers in intervention A and the comparison group, whose scores were comparable and not statistically different.

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46   An asterisk (*) indicates a significant difference in the proportion of zero scores across groups at p<0.05. *N* sizes: *N*All students=562; *n*Intervention A=225; *n*Intervention B=219; *n*Comparison=118.

Students' mean results on the reading comprehension subtask on the EGRA instrument 2 at endline are presented in Figure 14. Students in intervention group B had higher average reading comprehension scores than their peers in intervention A and the comparison group—1.3, 0.8, and 0.2 correct questions, respectively. These results were statistically significantly different. **While students in intervention A performed similarly to students in the comparison group at baseline, they outperformed the comparison group at endline (Figure 13).**[47]

The percentages of students receiving zero scores on the EGRA instrument 1 at baseline and on the EGRA instrument 2 at endline are presented in Figure 16. The smallest percentage of students receiving zero scores on the reading comprehension subtask on the EGRA instrument 2 at endline—45.2 percent—was observed among intervention B. Overall, 66.7 percent of students in intervention A received zero scores at endline, while 87.3 percent of students in the comparison group received zero scores at endline. The proportions of students receiving zero scores in the groups were significantly different at baseline and endline.

Figure 16: **Percentage of Students Receiving Zero Scores Group on EGRA Instrument 1 at Baseline and EGRA Instrument 2 at Endline—Reading Comprehension (%)**[48]
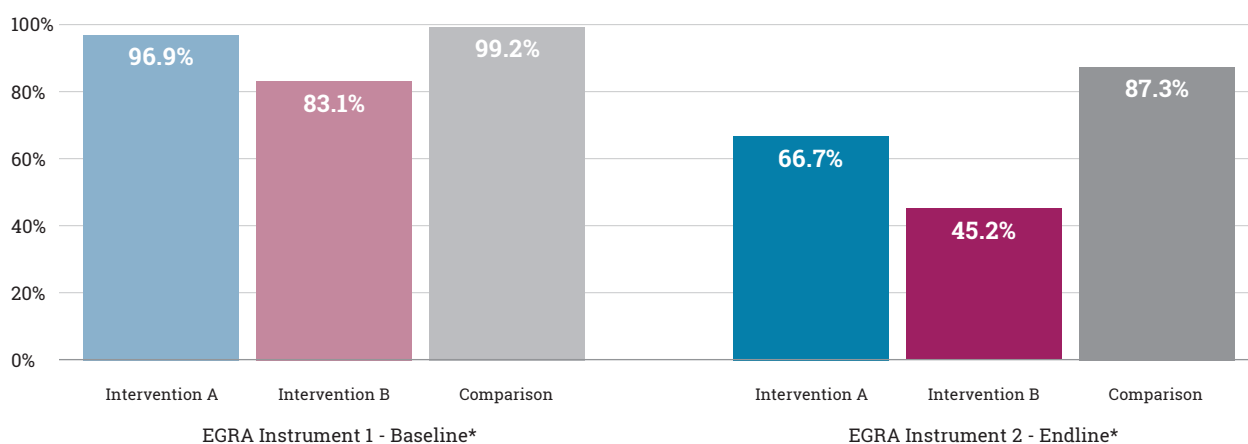
Listening Comprehension

The untimed listening comprehension subtask measures students' ability to comprehend the meaning of a story read to them orally. Students do not need to know how to read to answer listening comprehension questions. As a result, this subtask is an important measure of students' pre-reading abilities because it helps detect obstacles to learning to read, such as limited language proficiency, auditory problems, attention deficit, and other difficulties. In this subtask, the assessor reads a short passage to the student and asks them to answer comprehension questions based on what they heard. Results for this subtask are presented as the number of questions correctly answered out of five.

Students' mean results on the listening comprehension subtask on the EGRA instrument 1 at baseline are presented in Figure 13. On average, **students in intervention B had significantly higher scores than their peers in intervention A and in the comparison group.** Intervention B students correctly answered 2.4 questions at baseline, while intervention A students and comparison group students correctly answered 1.7 and 1.9 questions, respectively. There was no significant difference in the scores of intervention A and comparison students.

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47   As EGRA instruments 1 and 2 were not equated, only relative performance at each time point should be compared.

48   An asterisk (*) indicates a significant difference in the proportion of zero scores across groups at p<0.05. *N* sizes: *N*All students=562; *n*Intervention A=225; *n*Intervention B=219; *n*Comparison=118.

Students' mean results on the listening comprehension subtask on the EGRA instrument 2 at endline are presented in Figure 14. **Comparison group students had significantly lower scores than their peers in interventions A and B.**

The percentage of students receiving zero scores on the listening comprehension subtask on the EGRA instrument 1 at baseline and on the EGRA instrument 2 at endline is presented in Figure 17. The lowest percentage of students receiving zero scores at endline—0.5 percent—was observed in intervention B, while 0.9 percent of students in intervention A received zero scores at endline. The greatest proportion of students receiving zero scores— 5.9 percent—was observed in the comparison group. The proportions of students receiving zero scores across groups were significantly different at baseline and at endline.

Figure 17: **Percentage of Students Receiving Zero Scores by Group on EGRA Instrument 1 at Baseline and EGRA Instrument 2 at Endline—Reading Comprehension (%)[48]**
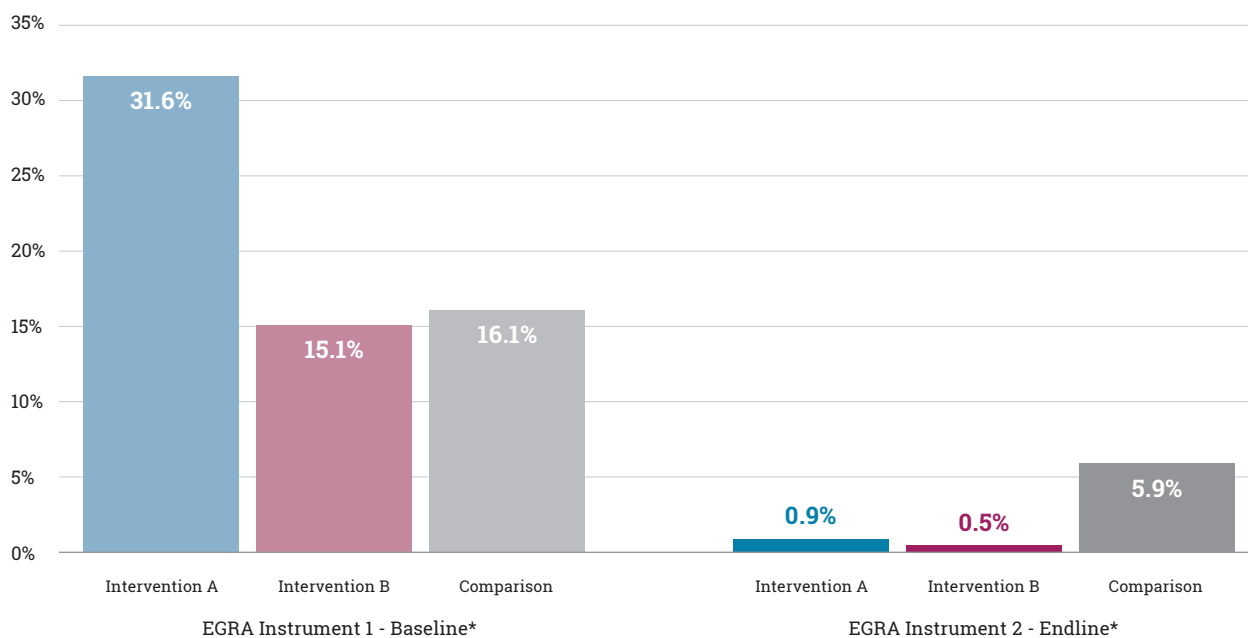
EGRA Results by Gender: Oral Reading Fluency, Reading Comprehension, and Listening Comprehension

In addition to calculating student results at baseline and endline across all students by group, results were analyzed by students' gender to understand if the YCRY project impacted girls and boys differently. There were 279 girls and 283 boys in the sample, and mean results from the EGRA instrument 1 at baseline and the EGRA instrument 2 at endline are presented in Figures 18 and 19, respectively.

Figure 18: **Mean Results by Grade and Group on EGRA Instrument 1 at Baseline—ORF, Reading Comprehension, and Listening Comprehension**[50]
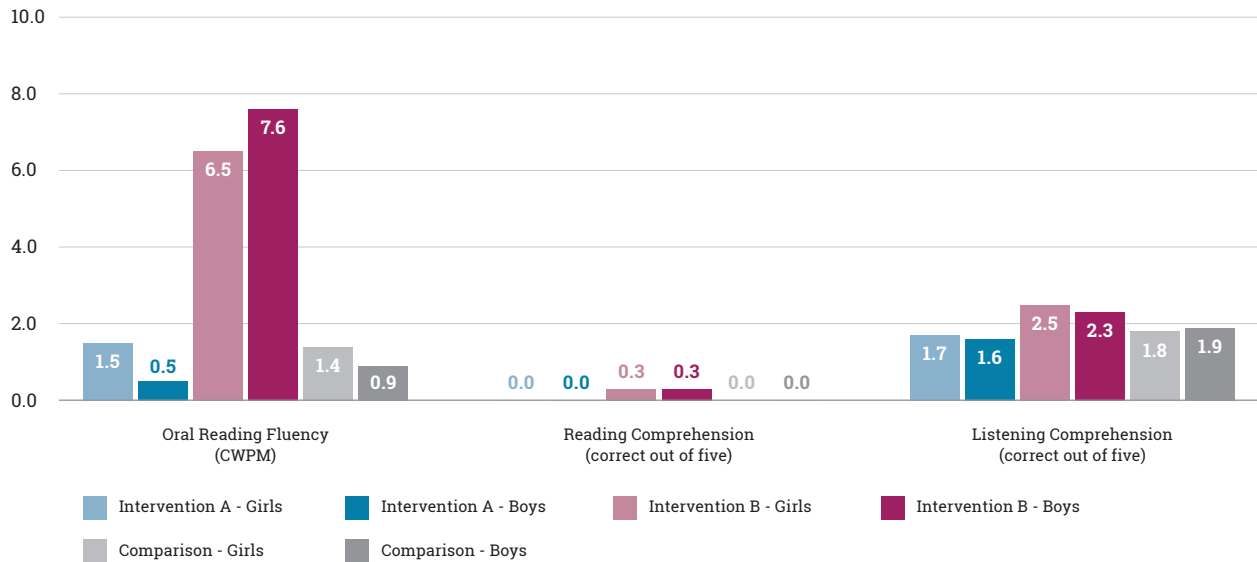
At baseline and endline, there were no significant differences in performance by gender and group on any of these subtasks.

Figure 19: **Mean Results by Grade and Group on EGRA Instrument 2 at Endline—ORF, Reading Comprehension, and Listening Comprehension**[51]
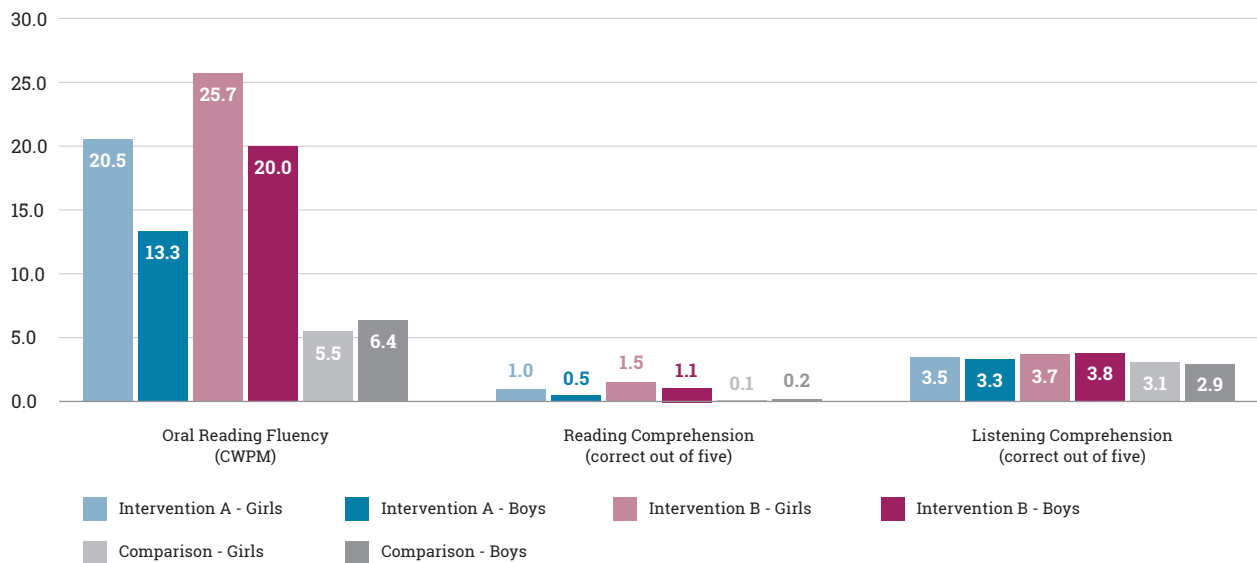
The proportions of girls and boys who received zero scores on the EGRA instrument 2 at endline are presented in Figure 20. **On the reading comprehension subtask at endline, girls in interventions A and B had lower proportions of zero scores than boys in the respective groups.**

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50   *N* sizes: Intervention Group A: Girls *n*=111, Boys *n*=114; Intervention Group B: Girls *n*=112, Boys *n*=107; Comparison Group: Girls *n*=56; Boys *n*=62.

51   *N* sizes: Intervention Group A: Girls *n*=111, Boys *n*=114; Intervention Group B: Girls *n*=112, Boys *n*=107; Comparison Group: Girls *n*=56; Boys *n*=62.

Figure 20: **Percentage of Students Receiving Zero Scores at Endline by Gender and Group—ORF, Reading Comprehension, and Listening Comprehension[52]**
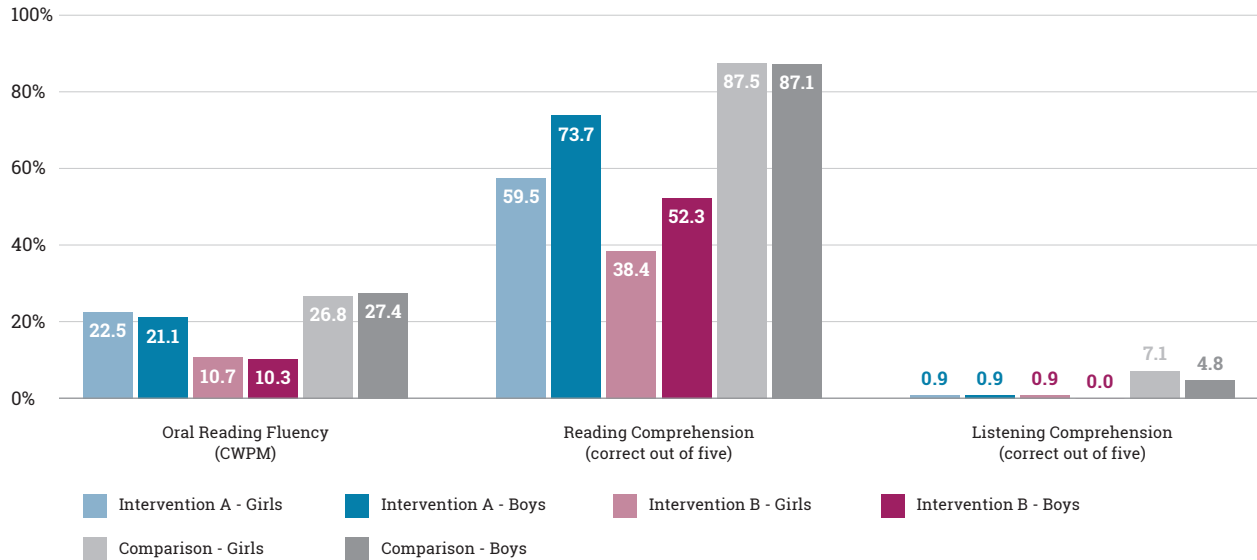
Additional Results

To better understand possible variations in student learning experiences and the context under the YCRY project, questions from the student questionnaire were compiled into seven composites, or groups of questions related to each other. Each composite consists of a series of items related to a specific theme that may have affected students' early grade reading skill acquisition. Composites were then assigned a maximum score equal to the total number of items in the composite.[53]

The composites for the YCRY project include

1. Language exposure

2. Socioeconomic status

3. Family reading support

4. Teacher reading support

5. Disposition to reading

6. Technology use

7. Engagement in program

Descriptive statistics for the student questionnaire composites are presented in Table 6 (see Annex D for composite descriptions, questions, response options, and frequencies).

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52   *N* sizes: Intervention Group A: Girls *n*=111, Boys *n*=114; Intervention Group B: Girls *n*=112, Boys *n*=107; Comparison Group: Girls *n*=56; Boys *n*=62.

53   Non-responses were given a '0.'

Table 6: **Average Student Questionnaire Composite Scores by Intervention Group**

Composite Category	Intervention A	Intervention B	Comparison	All Students
Language exposure	5.9	5.8	5.7	**5.8**
Socioeconomic status	8.1	7.8	8.0	**8.0**
Family reading support	3.0	3.1	2.7	**3.0**
Teacher reading support	2.5	2.6	2.3	**2.5**
Disposition to reading	2.6	2.6	2.5	**2.6**
Technology use	8.2	–	–	**8.2**
Engagement in program	3.2	3.2	–	**3.2**

On average, composite scores were similar across all groups of students. **Results indicate that students had similar learning experiences and context across groups for all composites.** A majority of students who attended community libraries reported that they went with a sibling—57.0 percent of intervention A students and 55.3 percent of intervention B students. More than half—65.2 percent—of intervention A students had never read stories on a phone or tablet before the YCRY project, and 61.4 percent said they used the Stepping Stone app on their own without help from a family member.

A correlational analysis was conducted to determine what relationships, if any, existed between mean composite scores and EGRA reading scores. None of the composites showed any significant relationship with subtasks.

Additionally, community libraries collected attendance for students when they visited. The average numbers of student visits by library are presented in Figure 21. **Across the 12 months of intervention, students visited their library an average of 79.8 times.** Students in library A, an intervention A library, visited an average of 110.1 times over 12 months as compared with library J, which students visited an average of 55.2 times over 12 months.

Figure 21: **Average Number of Student Visits per Library**

Intervention A: Average per Student
Intervention B: Average per Student
Average: All Students
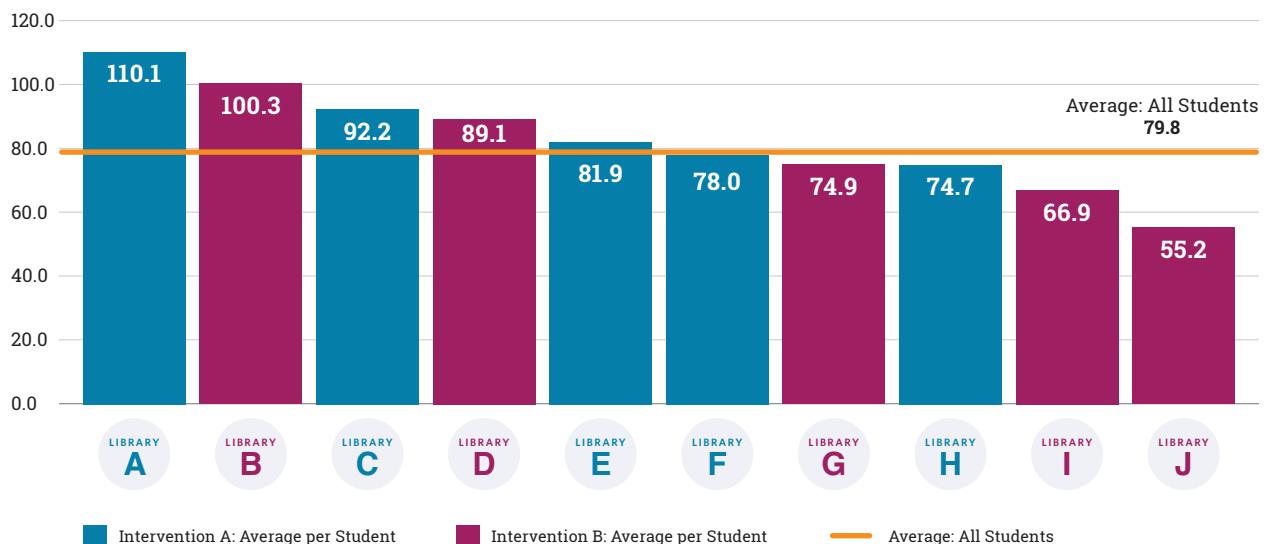
VIII. Scalability

Stakeholders are increasingly interested in assessing the scalability of interventions in addition to their results or impacts. To scale up a project means to expand, replicate, adapt, and sustain a successful project in a new geographic area and to reach more beneficiaries over time.[54] ACR GCD grantees have implemented small-scale pilot projects, and an important consideration after each project is the feasibility of replicating or expanding the technology-based innovation and project models to a different or larger population or area.

To inform this decision, STS conducted a scalability assessment guided by the following research question: *Are this project and technology suitable for scaling?* STS used an indirect approach that relies on qualitative descriptions of project performance around seven parameters of sustainability:

- Credibility
- Observability
- Relevance
- Relative Advantage
- Ease of Transfer and Adoption
- Testability
- Sustainability of Funding

The seven parameters were adapted from the USAID-funded Scalability Assessment Tool developed by Management Systems International.[55] The tool includes seven sections and 28 questions. STS used data from EOP interviews, EGRA results, literature reviews, and project M&E to assess scalability parameters. These results are meant to inform local program staff, stakeholders, and donors about key considerations before scaling the YCRY project's model and technologies to a larger or different beneficiary population.

Credibility

An intervention or innovation must be credible to be supported and taken to scale through either replication or expansion. This aspect of scalability assesses whether various stakeholders—including potential adopters, funders, implementers, and beneficiaries—believe that the model has a strong evidence base that may include existing empirical research or anecdotal information.

? **Key Considerations**

1. What evidence was used to develop the intervention?
2. What evaluations have been conducted on the intervention?
3. In what social contexts does the intervention work?
4. What individuals and institutions support the intervention?

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54   Cooley, L., & Linn, J. F. (2014). *Taking Innovations to scale: Methods, applications and lessons.* Results for Development Institute. Washington, D.C. Retrieved from https://www.usaid.gov/sites/default/files/documents/1865/v5web_R4D_MSI-BrookingsSynthPaper0914-3.pdf

55   Ibid.

The YCRY project was developed using a strong body of evidence and extensive experience. OMAES, an organization with more than 25 years of experience in the education sector in Mali, and EDC, a global nonprofit organization working in more than 25 countries with private- and public-sector partners, combined their knowledge base and previous implementation experience to conceptualize a project that addressed key challenges in early grade reading in Mali. EDC had previously implemented projects that offered materials and community support using information and communications technologies (ICT), including nationwide implementation of technology-supported education programs, a wide variety of small-scale pilots, and feasibility assessments.

Although the YCRY project was a pilot intervention and had not previously been evaluated, there was an existing evidence base that contributed to its development. Evidence from the USAID Programme Harmonisé d'Appui au Renforcement de l'Education (PHARE) program included a strong focus on the use of ICT to support early grade literacy and was implemented by EDC in partnership with MEN. EGRA results from USAID PHARE demonstrated measurable benefits of students who received the project's ICT components versus those who did not. Furthermore, EDC had already tested and implemented the Stepping Stone app in Mali through the USAID PAJE-Nièta project. The project distributed more than 4,000 mobile phones pre-loaded with the Stepping Stone app and containing multiple literacy and numeracy activities to out-of-school youth.[56] The Stepping Stone app has since been tested on a variety of projects and is used by around 12,000 children in Mali, according to EDC staff members who have been involved in the development of Stepping Stone from its inception. Evaluations of the PAJE-Nièta project suggested a potentially high impact of the Stepping Stone app: 77.0 percent of youth who were part of the project showed improved reading skills on EDC's Out-of-School Literacy Assessment.[57] There is also a significant body of research supporting the importance of access to mother tongue language materials and of parental and family engagement in children's reading skills development. Specifically, OMAES's decision to deliver the YCRY project through community libraries was guided by the knowledge that communities with a culture of literacy positively impact children's reading achievement.[58]

Although the YCRY project is a pilot intervention and has only been implemented in ten villages in the Ségou region of Mali, the model is highly applicable to a variety of social contexts. The project provided Grades 1 through 3 students and their family members with access to community libraries and reading materials in digital and print formats. These components are highly relevant and have the potential to be valuable across many different contexts, within and beyond Mali. Furthermore, because the technology component—access to the Stepping Stone app on tablets and mobile phones—can be utilized in internet-deprived areas due to an offline feature, the project could be replicated in both urban and rural areas.

The YCRY project received support from a variety of organizations and stakeholders. Specifically, local representatives of MEN were engaged in the selection and development of reading materials for the project, and EDC, an international organization with a long history of implementing education projects in Mali, was a partner. Further, USAID/Mali expressed support for the model and its scale-up through USAID SIRA; the YCRY project also received funding from the Hewlett Foundation. Despite this, OMAES project managers expressed in EOP interviews that they would have benefitted from more active support from central MEN representatives.

56   Education Development Center, Inc. (n.d.). *History of Stepping Stone.* Retrieved from http://sstone.edc.org/en/what-is-stepping-stone-4/history-of-stepping-stone/

57   Education Development Center, Inc. (n.d.). *Positive Youth Development in Mali: Better Educated, Economically Productive and Civically Engaged Rural Youth.* Retrieved from http://idd.edc.org/sites/idd.edc.org/files/Mali%20Out%20of%20School%20Project%20Summary.pdf

58   Œuvre Malienne d'Aide à l'Enfance du Sahel. (2014). *Your Child, Reading, and You: Technical Proposal.* (Unpublished proposal for funding)

> **✓ Credibility Conclusion**
>
> Credibility for the YCRY project is high. The project built upon empirical evidence on early grade reading skills development and family and community engagement. It also utilized previously tested technology to deliver newly developed Bamanankan reading materials. The model is applicable to a wide variety of social contexts within and outside of Mali, and the different methods used to engage students and families would be easily adapted to these new social contexts. MEN stakeholders, USAID/Mali, and EDC were engaged in the project and expressed support for its scale-up.

Observability

For an intervention or innovation to be scaled, it should have observable results that show efficacy or impact. Observability of results is key to providing non-technical audiences with proof that an intervention or innovation achieved its intended outcomes and therefore will have positive impacts on beneficiaries.

> **? Key Considerations**
>
> 1. Are the results visual and observable?
> 2. What is the relationship (if any) between results and the intervention?
> 3. Is there any emotional appeal associated with the evidence?

Results from the pilot of the YCRY project are promising. **The project aimed to improve phonological awareness, phonics, decoding, and vocabulary. On these foundational skills, students who participated in the YCRY project showed statistically significant higher gains than their peers in the comparison group.** Specifically, on the initial sound identification subtask—a test of phonemic awareness—students in interventions A and B were able to correctly identify 4.2 and 2.6 additional initial sounds at endline, respectively, as compared with only 1.0 additional initial sounds among the comparison group. Also, on the letter sound identification subtask, which measures students' understanding of the alphabetic principle—that each letter of the alphabet corresponds to a specific sound—students in intervention A identified 17.5 additional CLSPM at endline over baseline and students in intervention B identified 11.5 additional CLSPM. Comparison group students read 4.9 additional CLSPM at endline. On the nonword reading subtask—a measure of students' decoding ability—intervention A and B students also outperformed their peers, reading 9.4 and 8.0 additional CNWPM, respectively, as compared with only 3.1 additional CNWPM in the comparison group.

These results, which show that students who received exposure to the YCRY project had greater reading gains than their peers who simply received an additional year of schooling, indicate that the project positively impacted the foundational reading skills of early grade students. Additionally, intervention A students, who had access to the Stepping Stone app, had greater gains than intervention B students, which indicates that access to reading materials through technology may lead to greater results. However, this cannot be stated conclusively because intervention A and B students were not equivalent at baseline. These finding should be further explored with additional research, ensuring that intervention group members who receive different project components have the same baseline reading skills.

There is emotional appeal associated with the YCRY project. In addition to family members' satisfaction with their children's reading progress, they also recognized the importance of better engaging in their education. Specifically, family members report in EOP interviews that they monitor their children's progress, give encouragement, and

ensure regular school attendance. When asked during EOP interviews, many family members requested that the project be expanded to include more reading materials, more children, and more training sessions. In fact, demand from children and community members to use the library was, in some cases, too high for the librarians to manage. This indicates that library users recognized the importance and benefits of having access to the project's resources.

✓ **Observability Conclusion**

Participants in the YCRY project showed greater improved early grade reading skills—particularly in the pre-reading and foundational skills that the project intervention targeted—than their peers who did not participate. Before the YCRY project is scaled, further research should investigate the relationship between reading gains and the Stepping Stone app to conclusively establish if access to reading materials through technology leads to greater gains.

Relevance

An intervention must be relevant to the context in which it is being implemented to be scalable. It should effectively address a problem that is recognizable and considered important by stakeholders.

? **Key Considerations**

1. What is the level of significance of the problem that the intervention is trying to address?
2. Does the intervention address a priority on the policy agenda for potential adopters?
3. Does the intervention address a need felt by the potential beneficiaries?

In Mali, reading assessments have indicated that at least 70 percent of primary school children are unable to read at grade level.[59] Research suggests that low learning levels are impeding economic growth, as a 10.0 percent increase in the share of students reaching basic literacy would translate into a 0.3 percentage-point greater annual growth rate for the country.[60] Further, results from a 2013 ASER conducted by OMAES with funding from the Hewlett Foundation showed significant reading challenges in five of the eight regions of Mali—only 3.2 percent of students aged six to 14 were reading with comprehension.[61] Further, results from a 2009 EGRA in Mali showed that a majority of students were unable to correctly read a single word at the end of Grade 2. According to statistics, only 38.8 percent of Malian females and 56.0 percent of Malian males aged 15 to 24 are literate; a 2009 study showed that only 17.9 percent of Grade 2 students in Mali have books at home.[62] This evidence suggests that the YCRY project intervention is highly relevant in the Malian context.

EOP interviews conducted by World Vision Mali with five stakeholders from MEN confirmed that early grade literacy was indeed a policy priority for the Malian government and that it is not sufficiently addressed through the formal education system. Stakeholders noted that, from a social-environment perspective, the project addressed a major issue in Mali: parents' belief that school is the sole point of entry for their children's literacy education. Stakeholders also stated that the project helped by providing appropriate reading materials, which are

59 Gillies, J., Quijada, & J.J. (2008). *Opportunity to learn: A high impact for improving educational outcomes in developing countries.* Academy for Educational Development. Washington, D.C. Retrieved from https://www.fhi360.org/sites/default/files/media/documents/Opportunity%20to%20Learn%20-%20English.pdf

60 Hanushek, E., & Woessmann, L. (2009). *Do better schools lead to more growth?: Cognitive skills, economic outcomes, and causation,* NBER Working Paper 14633. Cambridge, MA: National Bureau of Economic Research.

61 Œuvre Malienne d'Aide à l'Enfance du Sahel. (2014). *Your Child, Reading, and You: Technical Proposal.* (Unpublished proposal for funding)

62 Ibid.

scarce both inside and outside of schools. Significant gaps in bilingual education—specifically in mother tongue language education—were also pointed out by MEN representatives. Furthermore, in EOP interviews, USAID/Mali suggested that the YCRY project was filling a critical role in their priority of improving early grade reading. This statement is supported by the incorporation of components of the YCRY project into the USAID SIRA project.[63]

The YCRY project addresses a concern expressed by beneficiaries of the project around the lack of a culture of reading and the related problem of reading readiness in children in rural Mali. In EOP interviews, parents and family members expressed that they were not previously aware of ways to support their children's reading progress or provide supplementary activities outside of school. They embraced and showed strong support for the increased training and knowledge they received through the project. Nevertheless, some family members noted that the most pressing problems, such as teacher absenteeism and strikes, were not addressed by this project. They also expressed that schools still lacked sufficient reading materials and that children had to walk significant distances to get to their primary schools.

Relevance Conclusion

Relevance of the YCRY project is high. Literacy is a key goal of MEN, particularly due to the low early grade reading skills and low adult literacy rates in Mali. MEN and USAID have prioritized early grade literacy in their policies and funding, and the YCRY project fills gaps not previously addressed by other projects—specifically, the lack of reading culture and parent support for reading at home. Although the project does not address all needs felt by beneficiaries, the model provides strong supplemental support to in-school interventions currently being implemented in Mali.

Relative Advantage

Relative advantage relates to whether the intervention offers an improvement over current or alternative solutions to the problem.

Key Considerations

1. How adequate are the current solutions to the problem?
2. Is this intervention more effective than the current solutions?
3. Is this intervention more effective than other established innovative models?

The current approaches to teaching reading to students in Mali are not seen as sufficient. According to MEN representatives, the Government of Mali (GoM) has no current projects that effectively use technologies in Grades 1 through 3, although they had briefly experimented with the use of radios in teaching. Other projects that were implemented or are currently being implemented in Mali—such as USAID SIRA, USAID PHARE, and École et Langues Nationales en Afrique—focus on teaching instruction rather than family engagement or providing reading materials for use out of school.

Compared to other current solutions, the YCRY project has the added advantage of engaging families and communities, as well as potentially targeting out-of-school and schooled children. Through the YCRY project, OMAES enabled families to have immediate access to numerous reading resources they could use to help their

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63   USAID SIRA plans to implement activities based on the YCRY model in 180 libraries—including the 10 libraries from this pilot—across its three regions of intervention.

children succeed, thus eliminating potential pitfalls of typical education programs that restrict access to learning materials to schools. The project's delivery mechanism—community libraries and the low-cost Stepping Stone app technologies—provides a relative advantage over these school-level interventions. Especially given the prevalence of teacher absenteeism and strikes, the project is a strong supplement and substitute for school-level interventions. During EOP interviews with family members, several individuals mentioned that, before the project, they did not possess any reading materials at home and that the YCRY project led them to engage further with their children's education. Interviews with families, students, and librarians confirmed that the project, and particularly its technology, enabled clear progress in their children's literacy levels and motivation to learn.

The YCRY project scaled innovative approaches of previously tested models and used them in new contexts. Since the Stepping Stone app was piloted as part of the USAID PAJE-Nièta project, OMAES benefitted from the lessons learned from the project's implementation. Specifically for USAID PAJE-Nièta, it was observed that many of the challenges in the use of technology could be resolved through increased and improved training. In the YCRY project, OMAES ensured that librarians for intervention A received tablets or phones fully loaded with books and skill-builders during the training so that they could practice using the Stepping Stone app regularly. OMAES also ensured that the volunteers were trained to troubleshoot common problems. Due to this increased training, librarians were better prepared to train families in the usage of the Stepping Stone app and help them with potential issues.

Despite the YCRY project's ability to leverage lessons learned from other innovative models, the project could not entirely address all the issues it hoped to resolve. For example, despite its attempt to robustly engage family members, family engagement remained low. In EOP interviews, family members expressed time constraints that restricted their ability to attend library sessions or support their children's reading at home. Some family members noted that community librarians were not sufficiently trained. Additionally, although the tablets in the libraries generally functioned well, the Stepping Stone app content was not functional on mobile phones, which meant that family members who had mobile phones could not access digital materials on-demand outside of the library.

> ✓ **Relative Advantage Conclusion**
>
> The YCRY project builds upon previously tested innovative models and has scaled them to a different set of beneficiaries—namely, family members—through a community-based intervention. Solutions offered by MEN and other implementers may not be sufficient to improve early grade literacy challenges; in particular, other solutions only attempt to improve students' reading skills through school- and teacher-level interventions. As the YCRY project intervenes at the community level through libraries and works to better mobilize family support in the home, it is a strong complement to the other projects currently operating in Mali.

Ease of Transfer and Adoption

Ease of transfer and adoption relates to whether the characteristics and components of the intervention lend themselves to being adopted by organizations other than the original implementer. This parameter of scalability looks at how complex or resource-heavy an intervention is, as well as whether specific elements of the intervention may be deemed inappropriate or unattractive to other implementers.

? **Key Considerations[64]**

1. What is the level of technical sophistication of the components and activities of the intervention?

2. What is the level of complexity of the intervention?

3. What level of supervision and monitoring is needed?

The components of the YCRY project required relatively low levels of technical sophistication by the user. With the Stepping Stone app and a library of text, audio, videos, photos, or illustrations, an implementer can create a series of lessons or training courses that can be accessed on low-cost mobile devices. Children and family members can access these reading resources via microSD cards on simple-feature phones. Despite weak infrastructure within the country, Mali has high mobile device usage: the average Malian owns a mobile device, with most owners able to make calls, send and read text messages, and listen to audio. Many of the children had not used tablets before the project but quickly learned how to use them and the Stepping Stone app with little training. Project management did note that some librarians and family members continued to struggle with the tablets even after training, indicating that younger participants may have been better able to take up the technology component of the project. Additionally, providing the Stepping Stone app on mobile phones was more challenging than expected; in most cases, participants chose to use tablets as the sole medium for the app. This exposed a concern over the longevity and cost-effectiveness of using lower-quality tablets: EDC staff expressed that the tablets would likely last only one or two years given the level of use on the YCRY project. Finally, because the Stepping Stone app is a proprietary platform, it is unlikely that the programming and maintenance of the software could be done without technical expertise from EDC. Still, EDC noted that the Stepping Stone app could easily be updated to accommodate different languages and devices.

The level of complexity of the intervention is moderate. Despite relying on a wide range of components to function correctly, each component in isolation could be replicated by other implementers. The YCRY project gave children and family members access to print and digital materials through community libraries and through low-cost technology devices. Library spaces and resources were not in existence before the project, and these were all developed with very few challenges during the pilot. **Further, by engaging MEN and local community members to help populate the library with resources and by utilizing community members to serve as volunteer librarians, the project was able to achieve buy-in and reduce the time taken to procure materials and staff.** This strategy could be replicated easily by other implementers in different contexts. Trainings and training materials were not highly technical or complex and were suited to the local context.

In theory, the level of supervision and monitoring required for the YCRY project is minimal. The YCRY project built on existing communities and local volunteers to run and manage daily operations, which minimized the amount of resources required for M&E. Additional resources could have been invested in M&E activities to ensure that the library tablets were functioning properly and to further bolster family engagement through routine visits and check-ins. The Stepping Stone app contains an internal tracking system that captures data on usage, which minimizes the level of in-person M&E needed to monitor user progress. For example, the app tracks how often a child or family member has read or listened to stories and how many times they completed skill-builder activities. The YCRY project librarians collected this data from tablets and periodically downloaded usage logs from participants' mobile devices when they visited the library. However, the app's usage logs had technical challenges that made it difficult for the YCRY staff to use them as a sole source of monitoring participant progress. Future implementers would need to take into account the cost-benefit of more routine M&E visits to libraries to monitor progress, as well as the necessary investments in improving Stepping Stone's ability to capture usage data effectively.

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64   In the original tool, this section includes 11 questions. This analysis includes the questions deemed most relevant for the intervention model and context.

✓ **Ease of Transfer and Adoption Conclusion**

The YCRY project consists of components that are relatively low in complexity and technical sophistication and could be transferred and adopted by other organizations. Although low levels of supervision and monitoring are required, technical difficulties with the Stepping Stone app limit the project's ease of transfer.

Testability

The testability parameter examines how easy it is for organizations to pilot the intervention on a small scale before full adoption. Testability assesses whether potential adopters would need to commit significant resources or time to test the model if they chose to pilot it in a new context.

? **Key Consideration**

1. Can the model be tested on a limited scale?

The YCRY model is easily testable on a limited scale. The Stepping Stone app is a low-cost solution available on basic tablets and mobile phones. Additionally, because the project model encourages community engagement as a means to populate and staff libraries, no pre-existing infrastructure or trained librarians are required. Furthermore, the YCRY project has already created a substantial set of leveled reading materials in Bamanankan that would facilitate replication in other parts of Mali. If the project model were to be replicated in a context with a different mother tongue language, the necessary time and resources would need to be invested in collecting existing reading materials and developing new materials.

Adaptation of the technology component to other contexts has already been tested. In addition to Mali, the Stepping Stone app has been rolled out in other countries, including Zambia as part of the USAID Time to Learn project, which engaged 2,250 teachers in 2014.[65] EDC staff would be needed to program the software in a new language, and to create, process, and insert all relevant components into the Stepping Stone app; therefore, the project cannot be implemented elsewhere without support from EDC or other technically competent partners. It is unclear what level of time or financial investment would be required to update the contents for a new language.

✓ **Testability Conclusion**

The current YCRY model is easily replicable in Bamanankan-speaking areas of Mali. However, the project would require time and financial investment in materials development and in technology updates to replicate in new languages.

65   Education Development Center, Inc. (n.d.). *History of Stepping Stone*. Retrieved from http://sstone.edc.org/en/what-is-stepping-stone-4/history-of-stepping-stone/

Sustainability of Funding

Sustainability of funding refers to how cost effective the intervention is and whether there are funds available to scale the intervention, either through government or other organizations.

> **?** **Key Considerations**
>
> 1. Is the model more cost effective than other solutions?
> 2. What kind of funding commitment is required to scale the model?
> 3. Is there any potential for internal revenue from the model (i.e. service fees)?

No comprehensive cost-effectiveness analysis was conducted on the YCRY project; instead, a cost analysis was performed. A cost analysis is often a component of scalability assessments as it helps decision makers and stakeholders understand the feasibility of replication with given budgetary constraints. Because ACR GCD grantees implement new approaches, they often allot significant financial resources to developing new materials that could be used on a recurring basis. To better understand the funding requirements of the YCRY project, a cost analysis was conducted to present the total cost of the intervention and to clarify the investments that would be needed for project replication or scale-up.

USAID guidance on conducting cost analyses on early grade reading projects suggests that the "ingredients method"[66] be used to calculate costs in the following categories:

- Management and associated technical costs
- Development costs
- Implementation costs

Project staff completed a costing template with guidance from World Vision and STS. Costs were outlined based on the activities from the project work plan; each expenditure was classified based on the three categories listed above.[67] Invoiced costs were used for analysis from the beginning of the project through June 2017. Though costs specific to the closeout of the project are not included in this analysis, these would most likely be categorized as implementation costs.[68] The absences of these costs should be considered when comparing the proportion of project budget spent on the three categories. Furthermore, despite attempts to fully match costs invoiced to those in the costing analysis, approximately $6,644 invoiced by OMAES through June 2017 was not included in the cost analysis. It is not possible to determine to which cost category these expenses should be included.

Table 7 provides a detailed breakdown of costs by category based on the YCRY project's activities.

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[66]   RTI International. (2015). Measurement and research support to education strategy goal 1: Early grade reading costing template and guidance. Washington, D.C.: USAID. Retrieved from http://pdf.usaid.gov/pdf_docs/PBAAF458.pdf

[67]   The total grant amount for the OCLR project was $302,831. At the end of the grant on June 30, 2017, the project had invoiced $286,918.

[68]   Since close-out costs are not included in this analysis, the cost proportions in Table 7 are not inclusive of all implementation costs.

Table 7: **Cost Analysis**

Activity	Management	Development	Implementation
Objective 1 - Project start-up	$ -	$ -	$ 42,042
Objective 2 - Increase families' access to books	$ -	$ -	$ 16,107
Objective 3 - Increase families' access to digital books through tablets and mobile phones	$ -	$ 26,244	$ -
Objective 4 - Phonological awareness, phonological memory, vocabulary, and increased concentration of children	$ -	$ -	$ 5,452
Objective 5 - Determine the viability of the project through EGRA	$ -	$ 39,421	$ -
Total	**$ 151,007**	**$ 65,665**	**$ 63,601**
Percentage of Total (%)	**53.9**	**23.4**	**22.7**

The management category includes costs that are not directly related to implementation and are likely to vary widely based on who is overseeing the implementation of the intervention. **Management costs for the YCRY project represented about 53.9 percent of the costs expended** and include the cost of maintaining the project office in Bamako, personnel salaries, and other indirect rates and fees.[69]

Development includes the costs related to the development of materials, survey instruments, programs, and other content that would not need to be redeveloped in the scale-up of a project. **The development costs for the YCRY project represented about 23.4 percent of the costs expended.** The major expenses within this category were the development of reading materials and the EGRA instruments. These costs are one-off expenditures that would not need to be incurred again if a similar project were implemented in Bamanankan-speaking areas in Mali.

The implementation cost category is arguably the most relevant for stakeholders who are considering scaling up a project or intervention. This category includes all of the recurrent activities and costs that would need to be expensed should the project be replicated, including materials printing and distribution, training, M&E, events and presentations, workshops, and human resources activities. **For the YCRY project, implementation costs represented about 22.7 percent of the total project cost.** Within this cost category, the largest expenses were travel costs for field-based technical activities and monitoring visits, contract services paid to EDC, and training and workshop costs.

Projects sometimes benefit from in-kind services, institutional support, or pre-existing relationships with stakeholders or governments that may provide the project with tangible benefits, although it may be difficult or impossible to monetize the costs. Examples of this include local volunteers, strong capacity or support from a large non-governmental organization, or relationships with local governments that could ease logistics and procedures. The YCRY project benefitted from its longstanding relationship with EDC, which, although a sub-contractor of the project, may have provided additional non-technical or non-expensed support. Notably, development costs were

69 Management costs are inclusive of a 17% flat fee charged for Negotiated Indirect Cost Recovery Agreement (NICRA), which captures indirect costs including regional management and technical support, the local OMAES country representative, Overseas Operations management (OMAES headquarters), Program Quality and Support (OMAES headquarters), and shipping and procurement costs. This also captures miscellaneous headquarters-based services that were provided to the project including finance, internal auditing, human resources, executive management, board, and global knowledge and information management. This analysis assumes that no NICRA expenses were also billed as independent line items, although it should be recognized that some double-counting may have occurred.

relatively low for the YCRY project due to the fact that the Stepping Stone app was already developed and tested. Further, OMAES had strong connections with MEN officials and USAID/Mali, who provided support and guidance at points throughout the project.

> ✓ **Sustainability of Funding Conclusion**
>
> Management costs for the YCRY project represented a larger proportion of the overall cost of the project than development or implementation costs. A scale-up of the project would not require significant investments in development unless it is determined that reading materials and the Stepping Stone app require improvements, indicating that it may be cost effective to replicate the project. More rigorous cost and impact data should be collected to understand better the cost effectiveness of the model.

IX. Conclusions

OMAES leveraged its extensive experience in mobilizing communities to participate in education and existing technologies to implement the YCRY project. The project gave students in Grades 1 through 3 and their family members access to community libraries that offered literacy activities and developed mother tongue reading materials, including leveled books and locally sourced stories. The YCRY project also provided digital audio, texts, and interactive reading activities through the Stepping Stone app, a mobile delivery platform that children and family members used on low-cost tablets and mobile phones at community libraries. The libraries were popular with local community members, and, in fact, there was more demand for library resources and activities than the project could meet.

The observable results and the replicability of the library component make this an attractive model for scale-up. Additionally, because the intervention engages family members and communities, it is highly complementary to the GoM's and MEN's approaches at the school-level. The following are lessons that should be considered for any future interventions incorporating components of the YCRY project.

Lessons Learned

> 📖 Complementary literacy approaches that engage families and communities can make a difference.

Literacy experts stress the importance of systematic teaching and learning, and assistance targeting learners' specific problems when teaching children to read, which is to say: formal teaching or schooling. The YCRY project's success in developing early grade reading skills in Grades 1 through 3 students showed that pre-reading and foundational reading skills could improve through means other than formal schooling or more systematic approaches. EGRA results indicate that students in libraries with the Family Plus component—tablets and mobile phones equipped with the Stepping Stone app and digital content—had greater pre-reading and foundational skills gains over the life of the project than students who attended libraries without the Family Plus component. GoM and MEN's existing focus on improving early grade reading through formal schooling makes the YCRY project an attractive complementary approach.

Community libraries, especially those equipped with technology, can have meaningful impacts beyond improved reading.

The YCRY project mobilized community members to create, staff, and develop materials for community libraries. Also, adult community members contributed locally developed stories to the YCRY project. Although participants received priority to access the library, there was high demand from other students, both older and younger, as well as from out-of-school children. Regardless, students who participated in either intervention group in the YCRY project showed greater improved pre-reading and foundational skills than students in the comparison group, indicating that access to community libraries makes a difference.

Pilot projects such as YCRY should invest in additional research to better understand the impacts of the individual components of their models.

The results from this research study provide quality evidence of the positive impacts of the project. While there were two intervention groups—intervention A with the Family Plus libraries and intervention B with the community libraries—there was insufficient FOI to clearly delineate how much of the different components students received, thus making it difficult to determine what components contributed to the impact observed. The study also had some key limitations: nonequivalence of intervention groups at baseline; lack of assessor accuracy tests at endline; and absence of equating data on the ORF, reading comprehension, and listening comprehension subtasks between baseline and endline. Future research on the YCRY project model should focus on resolving some of these limitations and collecting FOI measures that can be correlated with EGRA results.

Projects that introduce technologies into low-resource areas should assess the utility of pre-existing technologies and invest in sufficient training for participants.

The technology component of the YCRY project introduced tablets in community libraries for communal use, but it was also expected that families would be able to use their personal mobile phones to access the Stepping Stone app content at home. However, feedback from the YCRY project management and from community librarians indicated that the app was not compatible with mobile phones owned by the families in intervention A. This limited the children's ability to access digital content on-demand outside of the library setting—and perhaps did not allow the project to maximize communities' existing resources to support children's reading skills development. Further, librarians noted that children learned how to use tablets and the app more quickly than their family members. In future iterations of the project, OMAES could focus on improving the app's ability to be used on mobile phones, investing in more tablets, and developing ICT literacy in family members.

Interventions that work outside the formal school system may be easier to scale, though stakeholder engagement is still critical.

OMAES developed a credible model that can be adopted and replicated in other parts of Mali and other countries due to its relatively low levels of complexity and because it operates outside the formal school system. Still, OMAES engaged strong local partners with technical expertise in ICT, and ensured that MEN was involved in the development of reading materials and in the implementation of the project. The support and buy-in cultivated by OMAES may have facilitated the YCRY project's relatively challenge-free implementation and, in fact, has already led to scale-up of the project through other donor-funded projects. This underscores the importance of engaging with local governments and other stakeholders regardless of a project's intervention point.

Annexes

Annex A: **EGRA Instrument 1 at Baseline**

Enumerator Name	

La date et l'heure

Date	
Time	

Le site de l'école

École	

L'identification de l'élève

L'identification de l'élève	

Le consentement

I ni sɔgɔma! Ne tɔgɔ ye _____ I ɲɔgɔn demisɛnninw bɛ ne bolo. Kalanjɛ, farikoloɲɛnajɛ ani ntolatan ka di u ye. E dun, e tɔgɔ ? Mun de ka di e ye ?

[Attendez la réponse de l'enfant. Si l'enfant semble à l'aise, passez directement au consentement verbal.

S'il hésite ou a l'air peu à l'aise, posez la deuxième question avant de passer au consentement verbal].

N'i ma taa kalanyɔrɔ la don min, i bɛ mun kɛ? (Le jour où tu ne vas pas à l'école, que fais-tu ?)

Veuillez lire, à haute voix, la déclaration suivante à l'élève pour obtenir son consentement verbal:

N bɛ n nakun fɔ i ye. Kalan minisiriso y'a ɲini ka denmisɛnninw ka kalanjɛ kɛcogo kiimɛ. E sugandira k'i sendon o kiimɛni na. Nafaba de bɛ i sendonni in na ; nka n'a man di i ye, diyagoya tɛ.

An bɛna lamɛnni ni kalanjɛ tulon dɔw kɛ.

I bɛ waati min kɛ fɛn dɔw kalanni na, o bɛ jateminɛ. Nka ɲɔgɔndan tɛ. Ne ni e bɛ min kɛ, o tɛ foyi falen i ka kuruw la kalanso kɔnɔ. N bɛna ɲininkali dɔw k'i la fana aw ka du kan. Maa si tɛn'a dɔn ko e ka jaabiw dɔn. N'i t'a fɛ ka ɲininkali min jaabi, i b'o to yen. N b'a fɔ i ye hali bi, i diyagoyalen tɛ k'i sendon kiimɛni in na, n'a ma bɛn i ma.

I sɔn na wa? *[Attendez la réponse de l'élève avant de poser la prochaine question. Si l'élève dit 'oui' à la question, posez la question suivante. Si l'élève dit 'non', remerciez l'élève et passez au prochain élève.]*

An bɛ se k'a daminɛ wa?

Consentement verbal obtenu: ☐

Information de l'élève

Nom de l'élève

Age de l'élève

L'élève est dans quelle classe ?

☐ 1ere   ☐ 2eme   ☐ 3eme

Le sexe de l'élève

☐ Fille   ☐ Garçon

Orientation a la lecture

[Montrez à l'élève la Feuille A]

Lisez les instructions suivantes et enregistrez les réponses de l'élève :

I tɛna masalabolo in kalan fɔlɔ, sisan n'i bɛna masalabolo in kalan i bɛ a kalan ka taa fan jumɛ fɛ.

([L'élève déplace son doigt de la gauche à la droite])

☐ Correct   ☐ Incorrect   ☐ Pas de Réponse

Sisan, ne b'a fɛ, i ka masalabolo in damininɛ jira.

([L'élève pose le doigt sur la 1ére ligne, le mot le plus à gauche « Bi / Bi sɔgɔmada »])

☐ Correct   ☐ Incorrect   ☐ Pas de Réponse

Sisan, ne b'a fɛ, i ka masalabolo in laban jira.

([L'élève pose le doigt sur « la / lakɔli la »])

☐ Correct   ☐ Incorrect   ☐ Pas de Réponse

Sisan, sira fɔlɔ laban jira.

(L'élève déplace son doigt sur le premier « Mun »])

☐ Correct   ☐ Incorrect   ☐ Pas de Réponse

N'i sera sira fɔlɔ laban na, i bɛna sira min kalan o kɔ, o jira.

([L'élève déplace son doigt vers le mot placé le plus à gauche de la seconde ligne – « b'i »])

☐ Correct   ☐ Incorrect   ☐ Pas de Réponse

Sisan, kumasen fɔlɔ laban jira.

([L'élève pose son doigt sur « ye »])

☐ Correct   ☐ Incorrect   ☐ Pas de Réponse

Identification du son initial

Instructions à l'élève : Nin ye degeli de ye min bɛ kɛ baro senfɛ. N bɛna daɲɛ kelen fɔ i ye. Nb'a fɔ ka segin a kan. O kɔfɛ, i mana siginiden min mankan mɛn daɲɛ in daminɛ na, i b'o fɔ n ye. I sɔnna wa?

Misali la "fa" daɲɛ bɛ daminɛ ni « fff » mankan ye. O tɛ wa ? « fa » daɲɛ bɛ fɔlɔ ni mankan jumɛn ye ? « fa » ?
[Attendre que l'élève répète le son "fff". S'il ne répond pas, dites-lui, "« fa » daɲɛ bɛ daminɛ ni « fff » mankan ye.]

An ka misali wɛrɛw lajɛ :

"sisi" daɲɛ bɛ daminɛ ni mankan jumɛn ye? « sisi » ?

> *(Si l'élève répond correctement, dites-lui* « a ka ɲi kosɛbɛ. « sisi » daɲɛ bɛ daminɛ ni « sss » mankan ye.*)*

> *(Si l l'élève ne répond pas, dites-lui* « sisi » daɲɛ bɛ daminɛ ni « sss » mankan ye.*)*

« taga » daɲɛ bɛ daminɛ ni mankan jumɛn ye? « taga » ?

> *(Si l'élève répond correctement, dites-lui* « a ka ɲi kosɛbɛ! « taga » daɲɛ bɛ daminɛ ni « t' » mankan ye.*)*

> *(Si l l'élève ne répond pas, dites-lui* « taga » daɲɛ bɛ daminɛ ni « t' » mankan ye.*)*

« Ami » daɲɛ bɛ daminɛ ni mankan jumɛn ye ? « Ami » ?

> *(Si l'élève répond correctement, dites-lui* « a ka ɲi kosɛbɛ! « ami » daɲɛ bɛ daminɛ ni « a » mankan ye.*)*

> *(Si l l'élève ne répond pas, dites-lui* « Ami » daɲɛ bɛ daminɛ ni « a » mankan ye.*)*

Ne bɛ min nɔfɛ i y'o faamu wa ? Sisan, ne bɛna daɲɛ wɛrɛw kalan i ye. N bɛ daɲɛ bɛɛ kelen kelen kalan siɲɛ fila. I tulomajɔ kosɛbɛ. I bɛ fɔlɔ ka mankan min mɛn daɲɛ daminɛ na, i b'o fɔ n ye. I sɔnna wa ?

Ne pas corriger l'élève pendant le test. En cas de non-réponse ou d'hésitation de sa part, après 3 secondes, relancer la question. Si l'élève ne réponds pas, marquer la case « Pas de réponse » et passez au prochain item.

1. « ba » daɲɛ bɛ daminɛ ni mankan jumɛn ye ? « ba » ? (/b'/)

   ☐ A ka ɲi   ☐ A man ɲi   ☐ jaabi ma di

2. « di » daɲɛ bɛ daminɛ ni mankan jumɛn ye ? « di » ? (/d'/)

   ☐ A ka ɲi   ☐ A man ɲi   ☐ jaabi ma di

3. « gafe » daɲɛ bɛ daminɛ ni mankan jumɛn ye ? « gafe » ? (/g'/)

   ☐ A ka ɲi   ☐ A man ɲi   ☐ jaabi ma di

4. « Umu » daɲɛ bɛ daminɛ ni mankan jumɛn ye ? « Umu » ? (/uuu'/)

   ☐ A ka ɲi   ☐ A man ɲi   ☐ jaabi ma di

5. « so » daɲɛ bɛ daminɛ ni mankan jumɛn ye ? « so » ? (/ssss'/)

   ☐ A ka ɲi   ☐ A man ɲi   ☐ jaabi ma di

6. « pili » daɲɛ bɛ daminɛ ni mankan jumɛn ye ? « pili » ? (/p'/)

   ☐ A ka ɲi   ☐ A man ɲi   ☐ jaabi ma di

7. « kɔ » daɲɛ bɛ daminɛ ni mankan jumɛn ye ? « kɔ » ? (/k'/)

   ☐ A ka ɲi   ☐ A man ɲi   ☐ jaabi ma di

8. « malo » daɲɛ bɛ daminɛ ni mankan jumɛn ye ? « malo » ? (/k'/)

   ☐ A ka ɲi   ☐ A man ɲi   ☐ jaabi ma di

9. « ɲɛ » daɲɛ bɛ daminɛ ni mankan jumɛn ye ? « ɲɛ » ? (/ɲ'/)

   ☐ A ka ɲi   ☐ A man ɲi   ☐ jaabi ma di

10. « walan » daɲɛ bɛ daminɛ ni mankan jumɛn ye ? « walan » ? (/w'/)

   ☐ A ka ɲi   ☐ A man ɲi   ☐ jaabi ma di

Le son de la lettre

Siginidenw ni siginidenkuluw filɛ ka ɲɛ. Siginiden ninnu kalan i k'u mankan fɔ n ye. Misali la, nin siginiden in :
[Indiquer le "a": dans la ligne des exemples] Ale bɛ kalan /a/ i n'a fɔ "naji" daɲɛ kɔnɔ.

An k'a waleya sisan. Nin siginiden in kalan *[Indiquer le "l" dans le rang des exemples]:*

Si l'élève répond correctement, dites: A ka ɲi kosɛbɛ, siginiden in bɛ kalan /l/ i n'a fɔ "lɛfɛ" daɲɛ kɔnɔ.

Si l'élève ne répond pas correctement, dites: Ayi, siginiden in bɛ kalan /l/ i n'a fɔ "lɛfɛ" daɲɛ kɔnɔ.

An ka misali wɛrɛw lajɛ. Nin siginiden in kalan *[Indiquer le "aa" dans le rang des exemples]:*

Si l'élève répond correctement, dites: A ka ɲi kosɛbɛ, siginiden in bɛ kalan /aa/ i n'a fɔ "naani" daɲɛ kɔnɔ.

Si l'élève ne répond pas correctement, dites: Ayi, siginiden in bɛ kalan /aa/ i n'a fɔ "naani" daɲɛ kɔnɔ.

An ka misali wɛrɛw lajɛ tun. Nin siginiden in kalan *[Indiquer le "en" dans le rang des exemples]:*

Si l'élève répond correctement, dites: A ka ɲi kosɛbɛ, siginidenkulu in bɛ kalan /en / i n'a fɔ « den » daɲɛ kɔnɔ.

Si l'élève ne répond pas correctement, dites: Ayi, siginidenkulu in bɛ kalan /en/ i n'a fɔ « den » daɲɛ kɔnɔ.

I y'a faamu wa? An bɛ se ka taa a fɛ ? Ni ne ko "a daminɛ", i kɛtɔ ka siginiden fɛn o fɛn kalan, i b'i bolo da o kan. I b'u kalanni daminɛ numanfɛ ka taa kininfɛ sira ni sira. I y'a faamu kosɛbɛ wa? I bolo da sigiden fɔlɔ kan. I labɛnnen don wa? I b'a lajɛ k'u kalan ka ɲɛ teliya la. A damiɛ!

b	a	u	l	s	o	ɔ	L	u	c
k	d	nj	h	t	e	l	ii	m	ɔ
r	u	c	ns	p	ee	ɛ	n	e	b
n	an	ɛ	L	ɔn	t	M	oo	l	g
nt	o	uu	h	u	d	W	r	g	l
k	nc	s	f	a	n	An	a	k	nf
ɛ	w	on	L	ng	s	np	in	a	s
j	a	ɛn	l	ɛɛ	p	nb	y	a	ɔ
m	ŋ	z	nk	b	e	U	L	d	aa
g	a	r	ɲ	ɔc	o	K	un	l	en

Time Remaining	
Autostop?	☐

Mots inventés

Daɲɛ dɔw filɛ, lala i ma deli ka minnu ye. Nka ne tun b'a fɛ i k'a lajɛ k'u kalan. Misali la, daɲɛ fɔlɔ in bɛ kalan « gɛ » *[Indiquer le mot « gɛ » avec le doigt]* I bɛ se ka segin daɲɛ fɔlɔ in kalanni kan wa ?

[Après sa réponse, ou après 3 secondes dans le cas de non-réponse, montrez-lui comment faire.]

Daɲɛ in dun ? *[indiquer le mot « zii » avec le doigt].* I bɛ se k'o kalan wa ?

[Après sa réponse, ou après 3 secondes dans le cas de non-réponse, montrez-lui comment faire.]

Nin dun ? *[indiquer le mot « hu » avec le doigt].* I bɛ se k'o kalan wa ?

[Après sa réponse, ou après 3 secondes dans le cas de non-réponse, montrez-lui comment faire.]

I y'a faamu wa ? N bɛ min nɔfɛ i y'o faamu wa? Ni ne ko "a daminɛ", i bɛ siraw ta kelen kelen k'u kalan k'a daminɛ numanfɛ ka taa kininfɛ. N'i sera sira dɔ laban na, i b'o nɔkanta daminɛ. I labɛnnen don wa? I b'a lajɛ k'u kalan ka ɲɛ teliya la. A daminɛ!

zi	fe	do	lu	tee
laa	bii	kee	mo	sawa
ki	gibɔ	lezo	fuki	cuto
gamo	Luba	yow	basɔ	pifo
pa	kiwɔ	zaa	yenu	jowe
guu	Mire	maja	dɛca	nsɔ
yɛbu	lina	ɲipɛ	tansa	yonpe
wɛn	Mudo	sipu	poora	ŋasi
zuso	wɛɛ	Loo	lunan	njew
ɲope	Nbeli	luro	pini	leko

Time Remaining	
Autostop?	☐

Lecture du texte 1

Sisan, n b'a fɛ i ka maana in kalan. I b'i kan bɔ kosɛbɛ A lajɛ i k'a kalan ka ɲɛ teliya la; o kɔ ne bɛ ɲininkali dɔw kɛ i la. Ni ne ko i k'a daminɛ, i b'a daminɛ yan *[Mettez la feuille de la Section 5 devant l'élève (F/5). Montrez du doigt le premier mot du passage]*. I labɛnna wa ? An k'a daminɛ. *[Faites démarrer le chrono en appuyant sur le bouton START / STOP]*

Samiyɛ	waati	don.	Ji	sigira
Sibi	bɔlɔnw	kɔnɔ.	Dɔgɔ	don,
Fati	ye	a	ka	ɔrɔbu
kura	don.	A	n'a	terimuso
Umu	taara	sugu	la.	U
bɛ	taama	na.	Sɔɔnin,	Fati
binna.	A	kasira.	A	y'a
ka	ɔrɔbu	lajɛ.	A	seginna
so.	A	ba	ye	ɔrɔbu
kura	wɛrɛ	di	a	ma.

Time Remaining	
Autostop?	☐

Questions de Compréhension

[Reprendre le texte]

Sisan, i bɛna ɲininkali damadɔ jaabi maana in kan.

1. Ko in kɛra san waati jumɛn ? ([Samiyɛ])

   ☐ Correct   ☐ Incorrect   ☐ Pas de réponse

2. Fati ye mun don? ([ɔrɔbu])

   ☐ Correct   ☐ Incorrect   ☐ Pas de réponse

3. Mun ye Fati sɔrɔ ? ([A binna])

   ☐ Correct   ☐ Incorrect   ☐ Pas de réponse

4. Jɔn kasira ? ([Fati])

   ☐ Correct   ☐ Incorrect   ☐ Pas de réponse

5. Fati binna. A ka ɔrɔbu bɛ cogo di ? ([ɔrɔbu nɔgɔlen])

   ☐ Correct   ☐ Incorrect   ☐ Pas de réponse

Compréhension à l'audition

Sisan, ne bɛna maana kelen kalan i ye siɲɛ kelen. O kɔ, n bɛ ɲininkali damadɔ k'i la maana in kan. I bɛ maana in lamɛn kosɛbɛ. I bɛ tila ka ɲininkaliw jaabi i fɛrɛ ma' I sɔnna wa? N b'a fɛ i ka min kɛ i y'o faamu wa? An k'a daminɛ. A lamɛn kosɛbɛ:

Bi ye seli ye.

Ma ye Buba n'a dɔgɔmuso Fanta ka fini kuraw labɛn.

U y'u pari ka taa warabafilɛso la.

U taara mɔbili ɲini sirada la.

U mɛɛnna u ma mɔbili sɔrɔ bawo mɔbili bɛɛ falen don.

Laban na, mɔbili dɔ sɔrɔla.

U selen warabafilɛso la Buba ni Fanta ye ji suma san.

O kɔfɛ, u ye waraba, sama, bama ani bagan caman wɛrɛw ye.

U ye fotow ta ani k'u teriw ye.

Seli diyara dɛ !

1. Buba ni Fanta taara min ? ([Warabafilɛso la.])

    ☐ Correct   ☐ Incorrect   ☐ Pas de réponse

2. Munna u ma mɔbili sɔrɔ joona ? ([Bawo mɔbili bɛɛ falen don. Bawo selidon don.])

    ☐ Correct   ☐ Incorrect   ☐ Pas de réponse

3. Bagan jumɛnw bɛ sɔrɔ warabafilɛso la ? ([Waraba, sama, banba (hali n'a ye bagan fila fɔ)/ Kungokɔnɔ baganw.])

    ☐ Correct   ☐ Incorrect   ☐ Pas de réponse

4. Jɔnw ye fotow ta ? ([Buba ni Fanta])

    ☐ Correct   ☐ Incorrect   ☐ Pas de réponse

5. Munna u ye ji suma san ? ([Bawo minnɔgɔ b'u la.])

    ☐ Correct   ☐ Incorrect   ☐ Pas de réponse

Entretien sur l'environnement de l'élève

An tilala ka ban. An tɔ ye ɲininkali damadɔw ye e kan, aw ka du kan, i ka kalan kan ani aw ka so kan.

1. E si ye san joli ye? ((Enregistrez le nombre d'années. Si l'élève ne sais pas ou ne répond pas, enregistrez 99.))

2. I bangena kalo jumɛn ? ((Enregistrez le mois. Si l'élève ne sais pas ou ne répond pas, enregistrez 99.))

3. I bangena san jumɛn ? ((Enregistrez l'année. Si l'élève ne sais pas ou ne répond pas, enregistrez 99.))

4A. I bɛ kan jumɛn (w) fɔ so ? ([Jaabi caman bɛ se ka di])

☐ Bamanankan ☐ Fulfuldé ☐ Songhoi ☐ Bomu

☐ Français ☐ Arabe ☐ Autre ☐ Pas de réponse / ne sais pas

4B. Si la réponse est autre, précisez:

5. Kalanjɛ gafe dɔ b'i bolo wa?

☐ Oui ☐ Non ☐ Pas de réponse / ne sais pas

6A. Gafe wɛrɛw, kunnafonisɛbɛnw walima fɛn kalanta wɛrɛ b'i bolo k'a bɔ kalanso taw wa ?

☐ Oui ☐ Non ☐ Pas de réponse / ne sais pas

6B. Misali damadɔw di ? ((Pas besoin d'enreigstrer la réponse))

7A. Gafe ninnu bɛ kan jumɛnw na ?

☐ Français ☐ Bamanankan ☐ Fulfuldé ☐ Songhoi

☐ Bomu ☐ Arabe ☐ Autre ☐ Pas de réponse / ne sais pas

7B. Si la réponse est autre, précisez:

8. K'a bɔ e la, mɔgɔ wɛrɛ bɛ a' ka du kɔnɔ min bɛ se kalanjɛ la wa ?

☐ Oui   ☐ Non   ☐ Pas de réponse / ne sais pas

9A. Jɔn ni jɔn bɛ se kalanjɛ la aw ka so ? ((Plusieurs réponses sont autorisée))

☐ Mère   ☐ Père   ☐ Soeur(s)/frère(s)   ☐ Autre

☐ Ne sais pas / pas de réponse

9B. Si la réponse est autre, précisez:

10. Arajo b'aw ka so wa ?

☐ Oui   ☐ Non   ☐ Pas de réponse

11. Telefɔni b'aw ka so wa ?

☐ Oui   ☐ Non   ☐ Pas de réponse

12. Yeelen (kuran) b'aw ka so wa ?

☐ Oui   ☐ Non   ☐ Pas de réponse

13. Tele b'aw ka so wa ?

☐ Oui   ☐ Non   ☐ Pas de réponse

14. Firigo (jisumanyalan) b'aw ka so wa ?

☐ Oui   ☐ Non   ☐ Pas de réponse

15. Sokɔnɔɲɛgɛn b'aw ka so wa ?

☐ Oui   ☐ Non   ☐ Pas de réponse

16. Nɛgɛso b'aw ka so wa ?

☐ Oui   ☐ Non   ☐ Pas de réponse

17. Moto b'aw ka so wa ?

☐ Oui ☐ Non ☐ Pas de réponse

18. Wotoro walima kurun walima pinasi b'aw ka so wa ?

☐ Oui ☐ Non ☐ Pas de réponse

19. Mɔbili, kamiyɔn, 4x4, sɛnɛkɛmansin b'aw ka so wa ?

☐ Oui ☐ Non ☐ Pas de réponse

20. E ye zaridɛn kɛ yanni e ka don lakɔli la wa ?

☐ Oui ☐ Non ☐ Pas de réponse / ne sais pas

21. I bɛ kalanso jumɛn na ɲinan ?

☐ 1ère année ☐ 2ème année ☐ 3ème année ☐ 4ème année

22. E tun bɛ kilasi jumɛn na salon?

☐ Jardin d'enfants ☐ 1ère année ☐ 2ème année ☐ 3ème année

☐ 4ème année ☐ Pas à l'école ☐ Pas de réponse / ne sais pas ☐ Autres

23. Yala karamɔgɔ bɛ to ka baara d'e ma ka kɛ so wa ?

☐ Oui ☐ Non ☐ Pas de réponse / ne sais pas

24. [Ni 8 jaabi ye ɔwɔ ye] Yala mɔgɔ b'i dɛmɛ ka baara in kɛ tuma dɔw wa ?

☐ Oui ☐ Non ☐ Pas de réponse / ne sais pas

25. Salon, e ye kalan bila ka tɛmɛ dɔgɔkun kelen kan wa ?

☐ Oui ☐ Non ☐ Pas de réponse / ne sais pas

Annex B: **EGRA Instrument 2 at Endline**

Enumerator Name	

La date et l'heure

Date	
Time	

Le site de l'école

École	
Nom d'élève	
ID	
Groupe	

Autre élève

Nom d'élève: ((nom et prénom))	

Verification de l'élève

Est-ce [Nom d'élève]?	☐ Oui ☐ Non

Raison d'absence

Pourquoi est-ce que l'élève ne peut pas passer l'EGRA?

☐ L'enfant est absent   ☐ L'enfant ne va plus à l'école

☐ Son handicap empêche l'enfant de faire passer l'évaluation   ☐ L'élève est malade   ☐ Autre

Si autre, précisez:	

Nom d'élève remplacement

Nom d'élève qui est le remplaçant(e): ((nom et prénom))	

L'identification de l'élève

L'identification de l'élève	

Le consentement

I ni sɔgɔma! Ne tɔgɔ ye _____ I ɲɔgɔn demisɛnninw bɛ ne bolo. Kalanjɛ, farikoloɲɛnajɛ ani ntolatan ka di u ye. E dun, e tɔgɔ ? Mun de ka di e ye ?

[Attendez la réponse de l'enfant. Si l'enfant semble à l'aise, passez directement au consentement verbal.

S'il hésite ou a l'air peu à l'aise, posez la deuxième question avant de passer au consentement verbal].

N'i ma taa kalanyɔrɔ la don min, i bɛ mun kɛ? (Le jour où tu ne vas pas à l'école, que fais-tu ?)

Veuillez lire, à haute voix, la déclaration suivante à l'élève pour obtenir son consentement verbal:

N bɛ n nakun fɔ i ye. Kalan minisiriso y'a ɲini ka denmisɛnninw ka kalanjɛ kɛcogo kiimɛ. E sugandira k'i sendon o kiimɛni na. Nafaba de bɛ i sendonni in na ; nka n'a man di i ye, diyagoya tɛ.

An bɛna lamɛnni ni kalanjɛ tulon dɔw kɛ.

I bɛ waati min kɛ fɛn dɔw kalanni na, o bɛ jatemine. Nka ɲɔgɔndan tɛ. Ne ni e bɛ min kɛ, o tɛ foyi falen i ka kuruw la kalanso kɔnɔ. N bɛna ɲininkali dɔw k'i la fana aw ka du kan. Maa si tɛn'a dɔn ko e ka jaabiw don. N'i t'a fɛ ka ɲininkali min jaabi, i b'o to yen. N b'a fɔ i ye hali bi, i diyagoyalen tɛ k'i sendon kiimɛni in na, n'a ma bɛn i ma.

I sɔn na wa? *[Attendez la réponse de l'élève avant de poser la prochaine question. Si l'élève dit 'oui' à la question, posez la question suivante. Si l'élève dit 'non', remerciez l'élève et passez au prochain élève.]*

An bɛ se k'a daminɛ wa?

Consentement verbal obtenu: ☐

Information de l'élève

Nom de l'élève

Age de l'élève

L'élève est dans quelle classe ?

☐ 1ere ☐ 2eme ☐ 3eme ☐ 4eme ☐ 5eme

Sexe de l'élève

☐ Fille ☐ Garçon

Orientation a la lecture

[Montrez à l'élève la Feuille A]

Lisez les instructions suivantes et enregistrez les réponses de l'élève :

I tɛna masalabolo in kalan fɔlɔ, sisan n'i bɛna masalabolo in kalan i bɛ a kalan ka taa fan jumɛ fɛ.

([L'élève déplace son doigt de la gauche à la droite])

☐ Correct ☐ Incorrect ☐ Pas de Réponse

Sisan, ne b'a fɛ, i ka masalabolo in damininɛ jira.

([L'élève pose le doigt sur la 1ére ligne, le mot le plus à gauche « Bi / Bi sɔgɔmada »])

☐ Correct ☐ Incorrect ☐ Pas de Réponse

Sisan, ne b'a fɛ, i ka masalabolo in laban jira.

([L'élève pose le doigt sur « la / lakɔli la »])

☐ Correct ☐ Incorrect ☐ Pas de Réponse

Sisan, sira fɔlɔ laban jira.

(L'élève déplace son doigt sur le premier « Mun »])

☐ Correct ☐ Incorrect ☐ Pas de Réponse

N'i sera sira fɔlɔ laban na, i bɛna sira min kalan o kɔ, o jira.

([L'élève déplace son doigt vers le mot placé le plus à gauche de la seconde ligne – « b'i »])

☐ Correct ☐ Incorrect ☐ Pas de Réponse

Sisan, kumasen fɔlɔ laban jira.

([L'élève pose son doigt sur « ye »])

☐ Correct ☐ Incorrect ☐ Pas de Réponse

Identification du son initial

Instructions à l'élève : Nin ye degeli de ye min bɛ kɛ baro senfɛ. N bɛna daɲɛ kelen fɔ i ye. Nb'a fɔ ka segin a kan. O kɔfɛ, i mana siginiden min mankan mɛn daɲɛ in daminɛ na, i b'o fɔ n ye. I sɔnna wa?

Misali la "fa" daɲɛ bɛ daminɛ ni « fff » mankan ye. O tɛ wa ? « fa » daɲɛ bɛ fɔlɔ ni mankan jumɛn ye ? « fa » ?
[Attendre que l'élève répète le son "fff". S'il ne répond pas, dites-lui, « fa » daɲɛ bɛ daminɛ ni « fff » mankan ye.]

An ka misali wɛrɛw lajɛ :

"sisi" daɲɛ bɛ daminɛ ni mankan jumɛn ye? « sisi » ?

> *(Si l'élève répond correctement, dites-lui* « a ka ɲi kosɛbɛ. « sisi » daɲɛ bɛ daminɛ ni « sss » mankan ye.*)*

> *(Si l l'élève ne répond pas, dites-lui* « sisi » daɲɛ bɛ daminɛ ni « sss » mankan ye.*)*

« taga » daɲɛ bɛ daminɛ ni mankan jumɛn ye? « taga » ?

> *(Si l'élève répond correctement, dites-lui* « a ka ɲi kosɛbɛ! « taga » daɲɛ bɛ daminɛ ni « t' » mankan ye.*)*

> *(Si l l'élève ne répond pas, dites-lui* « taga » daɲɛ bɛ daminɛ ni « t' » mankan ye.*)*

« Ami » daɲɛ bɛ daminɛ ni mankan jumɛn ye ? « Ami » ?

> *(Si l'élève répond correctement, dites-lui* « a ka ɲi kosɛbɛ! « ami » daɲɛ bɛ daminɛ ni « a » mankan ye.*)*

> *(Si l l'élève ne répond pas, dites-lui* « Ami » daɲɛ bɛ daminɛ ni « a » mankan ye.*)*

Ne bɛ min nɔfɛ i y'o faamu wa ? Sisan, ne bɛna daɲɛ wɛrɛw kalan i ye. N bɛ daɲɛ bɛɛ kelen kelen kalan siɲɛ fila. I tulomajɔ kosɛbɛ. I bɛ fɔlɔ ka mankan min mɛn daɲɛ daminɛ na, i b'o fɔ n ye. I sɔnna wa ?

Ne pas corriger l'élève pendant le test. En cas de non-réponse ou d'hésitation de sa part, après 3 secondes, relancer la question. Si l'élève ne réponds pas, marquer la case « Pas de réponse » et passez au prochain item.

1. « ba » daɲɛ bɛ damiɛ ni mankan jumɛn ye ? « ba » ? (/b'/)

   ☐ A ka ɲi   ☐ A man ɲi   ☐ jaabi ma di

2. « di » daɲɛ bɛ damiɛ ni mankan jumɛn ye ? « di » ? (/d'/)

   ☐ A ka ɲi   ☐ A man ɲi   ☐ jaabi ma di

3. « gafe » daɲɛ bɛ damiɛ ni mankan jumɛn ye ? « gafe » ? (/g'/)

   ☐ A ka ɲi   ☐ A man ɲi   ☐ jaabi ma di

4. « Umu » daɲɛ bɛ damiɛ ni mankan jumɛn ye ? « Umu » ? (/uuu'/)

   ☐ A ka ɲi   ☐ A man ɲi   ☐ jaabi ma di

5. « so » daɲɛ bɛ damiɛ ni mankan jumɛn ye ? « so » ? (/ssss'/)

   ☐ A ka ɲi   ☐ A man ɲi   ☐ jaabi ma di

6. « pili » daɲɛ bɛ damiɛ ni mankan jumɛn ye ? « pili » ? (/p'/)

   ☐ A ka ɲi   ☐ A man ɲi   ☐ jaabi ma di

7. « kɔ » daɲɛ bɛ damiɛ ni mankan jumɛn ye ? « kɔ » ? (/k'/)

   ☐ A ka ɲi   ☐ A man ɲi   ☐ jaabi ma di

8. « malo » daɲɛ bɛ damiɛ ni mankan jumɛn ye ? « malo » ? (/k'/)

   ☐ A ka ɲi   ☐ A man ɲi   ☐ jaabi ma di

9. « ɲɛ » daɲɛ bɛ damiɛ ni mankan jumɛn ye ? « ɲɛ » ? (/ɲ'/)

   ☐ A ka ɲi   ☐ A man ɲi   ☐ jaabi ma di

10. « walan » daɲɛ bɛ damiɛ ni mankan jumɛn ye ? « walan » ? (/w'/)

   ☐ A ka ɲi   ☐ A man ɲi   ☐ jaabi ma di

Le son de la lettre

Siginidenw ni siginidenkuluw filɛ ka ɲɛ. Siginiden ninnu kalan i k'u mankan fɔ n ye. Misali la, nin siginiden in :
[Indiquer le "a": dans la ligne des exemples] Ale bɛ kalan /a/ i n'a fɔ "naji" daɲɛ kɔnɔ.

An k'a waleya sisan. Nin siginiden in kalan *[Indiquer le "l" dans le rang des exemples]*:

Si l'élève répond correctement, dites: A ka ɲi kosɛbɛ, siginiden in bɛ kalan /l/ i n'a fɔ "lɛfɛ" daɲɛ kɔnɔ.

Si l'élève ne répond pas correctement, dites: Ayi, siginiden in bɛ kalan /l/ i n'a fɔ "lɛfɛ" daɲɛ kɔnɔ.

An ka misali wɛrɛw lajɛ. Nin siginiden in kalan *[Indiquer le "aa" dans le rang des exemples]*:

Si l'élève répond correctement, dites: A ka ɲi kosɛbɛ, siginiden in bɛ kalan /aa/ i n'a fɔ "naani" daɲɛ kɔnɔ.

Si l'élève ne répond pas correctement, dites: Ayi, siginiden in bɛ kalan /aa/ i n'a fɔ "naani" daɲɛ kɔnɔ.

An ka misali wɛrɛw lajɛ tun. Nin siginiden in kalan *[Indiquer le "en" dans le rang des exemples]*:

Si l'élève répond correctement, dites: A ka ɲi kosɛbɛ, siginidenkulu in bɛ kalan /en / i n'a fɔ « den » daɲɛ kɔnɔ.

Si l'élève ne répond pas correctement, dites: Ayi, siginidenkulu in bɛ kalan /en/ i n'a fɔ « den » daɲɛ kɔnɔ.

I y'a faamu wa? An bɛ se ka taa a fɛ ? Ni ne ko "a daminɛ", i kɛtɔ ka siginiden fɛn o fɛn kalan, i b'i bolo da o kan.
I b'u kalanni daminɛ numanfɛ ka taa kininfɛ sira ni sira. I y'a faamu kosɛbɛ wa? I bolo da sigiden fɔlɔ kan.
I labɛnnen don wa? I b'a lajɛ k'u kalan ka ɲɛ teliya la. A damiɛ!

b	a	u	l	s	o	ɔ	L	u	c
k	d	nj	h	t	e	l	ii	m	ɔ
r	u	c	ns	p	ee	ɛ	n	e	b
n	an	ɛ	L	ɔn	t	M	oo	l	g
nt	o	uu	h	u	d	W	r	g	l
k	nc	s	f	a	n	An	a	k	nf
ɛ	w	on	L	ng	s	np	in	a	s
j	a	ɛn	l	ɛɛ	p	nb	y	a	ɔ
m	ŋ	z	nk	b	e	U	L	d	aa
g	a	r	ɲ	ɔc	o	K	un	l	en

Time Remaining	
Autostop?	☐

Mots inventés

Daɲɛ dɔw filɛ, lala i ma deli ka minnu ye. Nka ne tun b'a fɛ i k'a lajɛ k'u kalan. Misali la, daɲɛ fɔlɔ in bɛ kalan « gɛ »
[Indiquer le mot « gɛ » avec le doigt] I bɛ se ka segin daɲɛ fɔlɔ in kalanni kan wa ?

[Après sa réponse, ou après 3 secondes dans le cas de non-réponse, montrez-lui comment faire.]

Daɲɛ in dun ? *[indiquer le mot « zii » avec le doigt].* I bɛ se k'o kalan wa ?

[Après sa réponse, ou après 3 secondes dans le cas de non-réponse, montrez-lui comment faire.]

Nin dun ? *[indiquer le mot « hu » avec le doigt].* I bɛ se k'o kalan wa ?

[Après sa réponse, ou après 3 secondes dans le cas de non-réponse, montrez-lui comment faire.]

I y'a faamu wa ? N bɛ min nɔfɛ i y'o faamu wa? Ni ne ko "a daminɛ", i bɛ siraw ta kelen kelen k'u kalan k'a daminɛ numanfɛ ka taa kininfɛ. N'i sera sira dɔ laban na, i b'o nɔkanta daminɛ. I labɛnnen don wa? I b'a lajɛ k'u kalan ka ɲɛ teliya la. A daminɛ!

zi	fe	do	lu	tee
laa	bii	kee	mo	sawa
ki	gibɔ	lezo	fuki	cuto
gamo	Luba	yow	basɔ	pifo
pa	kiwɔ	zaa	yenu	jowe
guu	Mire	maja	dɛca	nsɔ
yɛbu	lina	ɲipɛ	tansa	yonpe
wɛn	Mudo	sipu	poora	ŋasi
zuso	wɛɛ	Loo	lunan	njew
ɲope	Nbeli	luro	pini	leko

Time Remaining	
Autostop?	☐

Lecture du texte

Sisan, n b'a fɛ i ka maana in kalan. I b'i kan bɔ kosɛbɛ A lajɛ i k'a kalan ka ɲɛ teliya la; o kɔ ne bɛ ɲininkali dɔw kɛ i la. Ni ne ko i k'a daminɛ, i b'a daminɛ yan *[Mettez la feuille de la Section 5 devant l'élève (F/5). Montrez du doigt le premier mot du passage]*. I labɛnna wa ? An k'a daminɛ. *[Faites démarrer le chrono en appuyant sur le bouton START / STOP]*

Ami	ye	kalanden	ye.	A
kɔrɔkɛ	tɔgɔ	ye	Musa.	Jiri
caman	b'a	ka	foro	la.
Mangoro,	buyagi	ani	papaye	bɛ
sɔrɔ	yen.	Sugu	don,	a
b'a	ka	wotoro	fa	jiriden
na.	A	kelen	tɛ	se
k'a	ka	jiriden	bɛɛ	feere.
A	kunna	ka	di	Ami
bɛ	yan.	U	bɛ	jiriden
bɛɛ	feere.			

Time Remaining	
Autostop?	☐

Questions de Compréhension

[Reprendre le texte]

Sisan, i bɛna ɲininkali damadɔ jaabi maana in kan.

1. Ami ye mun ye ? ([kalanden, Musa dɔgɔnin])

   ☐ Correct   ☐ Incorrect   ☐ Pas de réponse

2. Mun bɛ Musa ka foro la ? ([jiri, mangoro, buyagi, lenburu ni papaye])

   ☐ Correct   ☐ Incorrect   ☐ Pas de réponse

3. Musa bɛ jiridenw ta mun na ? ([wotoro])

   ☐ Correct   ☐ Incorrect   ☐ Pas de réponse

4. Jɔn kelen tɛ se ka jiriden bɛɛ feere ? ([Musa])

   ☐ Correct   ☐ Incorrect   ☐ Pas de réponse

5. Ami bɛ mun kɛ ? ([Ami bɛ Musa dɛmɛ, Ami b'a kɔrɔkɛ dɛmɛ.])

   ☐ Correct   ☐ Incorrect   ☐ Pas de réponse

Compréhension à l'audition

Sisan, ne bɛna maana kelen kalan i ye siɲɛ kelen. O kɔ, n bɛ ɲininkali damadɔ k'i la maana in kan. I bɛ maana in lamɛn kosɛbɛ. I bɛ tila ka ɲininkaliw jaabi i fɛrɛ ma' I sɔnna wa? N b'a fɛ i ka min kɛ i y'o faamu wa? An k'a daminɛ. A lamɛn kosɛbɛ:

Sitan ka kalanyɔrɔ bɛ sugu kɛrɛfɛ.

A ni a ka so ka jan dɔɔnin.

Dɔgɔkun tile fɔlɔ o tile fɔlɔ, a taatɔ u ka kalanyɔrɔ la, a b'i jɔ ka bonbon san Yakuba ka bitiki kɔnɔ.

Sɔgɔmada in na, Yakuba bɛ nakɔ la.

Sitan selen bitigi la, a y'a sɔrɔ a tun da tugulen don.

A nisɔngoyara kosɛbɛ.

A ka kan ka taa kalanyɔrɔ la.

Sira la a ni Yakuba bɛ bɛn a bɔtɔ nakɔ la.

A bɛ lenburuba di Sitan ma.

A nisɔndiyara.

1.	Sitan ka kalanyɔrɔ bɛ min ? ([Sugu kɛrɛfɛ])		
	☐ Correct	☐ Incorrect	☐ Pas de réponse
2.	Sitan bɛ mun san sira la ? ([Bɔnbɔn])		
	☐ Correct	☐ Incorrect	☐ Pas de réponse
3.	Yakuba bɛ min Sɔgɔmada in na ? ([Nakɔ la.])		
	☐ Correct	☐ Incorrect	☐ Pas de réponse
4.	Jɔn ye lenburuba di Sitan ma ? ([Yakuba])		
	☐ Correct	☐ Incorrect	☐ Pas de réponse
5.	Dɔgɔkun don jumɛn Sitan bɛ bonbon san ? ([Ntɛnɛn.])		
	☐ Correct	☐ Incorrect	☐ Pas de réponse

Annex C: **Student Questionnaire**

Intervention Comparison Part 1

Sisan An bɛ na ɲininkali dɔ w k' i la I yɛrɛ kunkan aw ka so kan an'I kalanjɛ kan.

Maintenant, nous allons vous poser quelques questions à propos de toi, de ta famille, et de la lecture.

1. Kalanyɔrɔ la, karamɔgɔ bɛ bamanankan fɔ i ye wa?
    A l'école, est-ce que ton maitre te parle en Bamanankan?

    ☐ Ɔwɔ   ☐ Ayi   ☐ N t'a dɔn   ☐ Jaabi ma di

2. Kalanyɔrɔ la, i teriew bɛ bamanankan fɔ i ye wa?
    A l'école, est-ce que tes amis te parlent en Bamanankan?

    ☐ Ɔwɔ   ☐ Ayi   ☐ N t'a dɔn   ☐ Jaabi ma di

3. Kalanyɔrɔ la, i ni teriew bɛ bamanankan fɔ wa?
    A l'école est-ce que tu parles avec tes amis en Bamanankan?

    ☐ Ɔwɔ   ☐ Ayi   ☐ N t'a dɔn   ☐ Jaabi ma di

4. So, i ni balimakɛw ni balimamusow bɛ bamanankan fɔ wa?
    A la maison, est-ce que tu parles avec tes frères et soeurs en Bamanakan?

    ☐ Ɔwɔ   ☐ Ayi   ☐ N t'a dɔn   ☐ Jaabi ma di

5. So, i ni balikuw bɛ bamanankan fɔ wa?
    A la maison, est-ce que tu parles avec les adultes en Bamanakan?

    ☐ Ɔwɔ   ☐ Ayi   ☐ N t'a dɔn   ☐ Jaabi ma di

6. Kalanyɔrɔ la, gafew bɛ yen minnu sɛbɛnnen don bamanakan na wa?
    A l'école, y a-t-il des livres, magazines/journaux en Bamanakan?

    ☐ Ɔwɔ   ☐ Ayi   ☐ N t'a dɔn   ☐ Jaabi ma di

Intervention Comparison Part 2

7. Arajo bɛ aw ka so wa?
As-tu une radio à la maison?

☐ Ɔwɔ ☐ Ayi ☐ N t'a dɔn ☐ Jaabi ma di

8. Telewizon bɛ aw ka so wa?
As-tu une télévision à la maison?

☐ Ɔwɔ ☐ Ayi ☐ N t'a dɔn ☐ Jaabi ma di

9. Telefɔni bɛ aw ka so wa?
Y a-t-il un téléphone/portable à ta maison?

☐ Ɔwɔ ☐ Ayi ☐ N t'a dɔn ☐ Jaabi ma di

10. Kuran bɛ aw ka so wa?
As-tu de l'éléctricité/courant à la maison?

☐ Ɔwɔ ☐ Ayi ☐ N t'a dɔn ☐ Jaabi ma di

11. Sokɔnɔɲɛgɛn bɛ aw ka so wa?
As-tu une toilette dans ta maison?

☐ Ɔwɔ ☐ Ayi ☐ N t'a dɔn ☐ Jaabi ma di

12. Nɛgɛso bɛ aw ka so wa?
Y a-t-il un vélo ou un moto à ta maison?

☐ Ɔwɔ ☐ Ayi ☐ N t'a dɔn ☐ Jaabi ma di

13. Bolimafɛn bɛ aw ka so wa?
Y a-t-il un véhicule motorisé à ta maison (un voiture, un camion, un 4x4 ou un tracteur)?

☐ Ɔwɔ ☐ Ayi ☐ N t'a dɔn ☐ Jaabi ma di

14. Kunun wulafɛ, e ye wati joli kɛ sokɔnɔbaaraw la ?
Hier soir, combien de temps as-tu passé en faisant des tâches menagères (à la maison)?

☐ Ɔwɔ ☐ Ayi ☐ N t'a dɔn ☐ Jaabi ma di

15. I ba bɛ kalan kɛ bamanankan na wa?
Ta mère, lis-t-elle en Bamanankan?

☐ Ɔwɔ ☐ Ayi ☐ N t'a dɔn ☐ Jaabi ma di

16. I fa bɛ kalan kɛ bamanankan na wa?
Ton père, lis-t-il en Bamanankan?

☐ Ɔwɔ ☐ Ayi ☐ N t'a dɔn ☐ Jaabi ma di

Intervention Comparison Part 3

17. Mɔgɔ bɛ aw ka so, min bɛ nsiirinw kalan i ye wa?
    Est-ce qu'il y a quelqu'un chez toi (parent, frère/soeur, grandparent) qui te lis des contes ou des histoires?

    ☐ Ɔwɔ   ☐ Ayi   ☐ N t'a dɔn   ☐ Jaabi ma di

18. Mɔgɔ bɛ aw ka so, min b'i dɛmɛ k'i ka kalansodegeliw kɛ wa?
    Est-ce qu'il y a quelqu'un chez toi (parent, frère/soeur, grandparent) qui t'aide avec tes devoirs scolaires?

    ☐ Ɔwɔ   ☐ Ayi   ☐ N t'a dɔn   ☐ Jaabi ma di

19. Siɲɛ joli, i ni ka sokɔnɔmɔgɔ dɔ bɛ kalanɟɛ kɛ?
    A quelle fréquence lis-tu avec un membre de ta famille chez toi?

    ☐ Don o don   ☐ Tuma ni tuma   ☐ Abada   ☐ Jaabi ma di

20. Aw ka so kɔnɔ, jon de b'i dɛmɛ tuma ni tuma kalanɟɛ la walima k'i ka degeliw kɛ?
    Chez toi, qui t'aide le plus souvent avec la lecture ou tes devoirs?

    ☐ Mansa kelen   ☐ Balimakɛ walima   ☐ Dukɔnɔmɔgɔwɛrɛ (mɔkɛ,   ☐ N tɛ dɛmɛ sɔrɔ kalanɟɛ
    walima fila   balimamuso   mɔmuso, tɛnɛnmuso   ni delgeliw la so
                                                           walima benkɛ)

    ☐ Jaabi ma di

21. Kalanɟɛ kɛli ka di e ye so wa?
    Aimes-tu lire chez toi?

    ☐ Ɔwɔ   ☐ Ayi   ☐ N t'a dɔn   ☐ Jaabi ma di

22. Kalanɟɛ kɛli ka di e ye Kalanyɔrɔ la wa?
    Aimes-tu lire à l'école?

    ☐ Ɔwɔ   ☐ Ayi   ☐ N t'a dɔn   ☐ Jaabi ma di

23. Kalanyɔrɔ la, e kelen bɛ gafew kalan siɲɛ joli?
    A l'école, à quelle fréquence lis-tu des livres silencieusement tout(e) seul(e)?

    ☐ Don o don   ☐ Tuma ni tuma   ☐ Abada   ☐ Jaabi ma di

24. Kalanyɔrɔ la, karamɔgɔ bɛ ɲinikaliw k'i la i ka gafe kalannenw kan wa?
    A l'école, est-ce que ton maitre te pose des questions concernant ce que tu lis?

    ☐ Ɔwɔ   ☐ Ayi   ☐ N t'a dɔn   ☐ Jaabi ma di

25. N'i ma se ka yɔrɔ minnu kalan, karamɔgɔ b'i dɛmɛ k'olu kalan wa?
    Ton maitre, est-ce qu'il t'aide si tu ne peux pas lire quelque chose?

    ☐ Ɔwɔ   ☐ Ayi   ☐ N t'a dɔn   ☐ Jaabi ma di

26. Karamɔgɔ b'i bila sɛbɛnni na siɲɛ joli kalanyɔrɔ la?
    A quelle fréquence ton maitre te demande d'écrire à l'ecole?

    ☐ Don o don   ☐ Tuma ni tuma   ☐ Abada   ☐ Jaabi ma di

Interventions A & B

27. Siyɛn joli dɔgɔkun kɔnɔ, i bɛ taa bɔ dugu gafemarayɔrɔ la ?
    Combien de fois par semaine est-ce que tu visites la bibliothèque communautaire?

    ☐ Don bɛɛ ☐ Don damadɔ dɔgɔkun kɔnɔ ☐ Ne tɛ taa bɔ dugu gafemarayɔrɔ la ☐ Jaabi ma di

28. I n'a ka denbaya mɔgɔ jumɛn bɛ to ka taa ɲɔgɔn fɛ dugu gafemarayɔrɔ la ?
    Qui dans ta famille va à la bibliothèque communautaire avec toi?

    ☐ Mansa kelen walima fila ☐ Kɔrɔkɛ walima kɔrɔmuso ☐ Denbaya mɔgɔ wɛrɛ (mɔkɛ, mɔmuso, tɛnɛmuso, bɛnkɛ) ☐ Ne kelen de bɛ to ka taa

    ☐ Jaabi ma di

29. Yala i bɛ maana minnu kalan dugu gafemarayɔrɔ, olu ka di i ye wa ?
    Aimes-tu les histoires que tu lis à la bibliothèque communautaire?

    ☐ Ɔwɔ ☐ Ayi ☐ N t'a dɔn ☐ Jaabi ma di

30. Yala i b'a fɛ ka to ka taa dugu gafemarayɔrɔ la hali ni lakɔli bilala wa?
    Est-ce que tu veux continuer à aller à la bibliothèque communautaire même si l'année scolaire se termine?

    ☐ Ɔwɔ ☐ Ayi ☐ N t'a dɔn ☐ Jaabi ma di

Intervention A

31. Yala « stepping stone » « tabulɛti » ka di i ye walasa ka kalanjɛ dege wa?
Aimes-tu utiliser "Stepping Stone" pour apprendre?

☐ Don o don ☐ Tuma ni tuma ☐ Abada ☐ Jaabi ma di

32. Yala i delila ka maanaw kalan tabulɛti walima telefɔni dɔ kan yaani « stepping stone » ka na wa?
As-tu lu des histoires sur un téléphone ou tablette avant "Stepping Stone"?

☐ Ɔwɔ ☐ Ayi ☐ N t'a dɔn ☐ Jaabi ma di

33. Yala maanaw kalanni ka nɔgɔn « stepping stone » kan wa?
Est-ce que c'est facile de lire des histoires sur "Stepping Stone"?

☐ Ɔwɔ ☐ Ayi ☐ N t'a dɔn ☐ Jaabi ma di

34. Yala maanaw lamɛnni ka nɔgɔn « stepping stone » la wa?
Est-ce que c'est facile d'écouter des histoires sur "Stepping Stone"?

☐ Ɔwɔ ☐ Ayi ☐ N t'a dɔn ☐ Jaabi ma di

35. Yala « stepping stone » maanaw ka di i ye wa?
Aimes-tu les histoires sur "Stepping Stone"?

☐ Ɔwɔ ☐ Ayi ☐ N t'a dɔn ☐ Jaabi ma di

36. Yala a ka d'i ye ka baara kɛ ni « stepping stone » ye hali ni lakɔli bilala wa?
Aimerais-tu continuer à utiliser "Stepping Stone" même si l'année scolaire se termine?

☐ Ɔwɔ ☐ Ayi ☐ N t'a dɔn ☐ Jaabi ma di

37. Yala i kelen bɛ baara kɛ « stepping stone » la wa?
Est-ce que tu utilises "Stepping Stone" seul(e)?

☐ Ɔwɔ, tuma caman ☐ Ayi, tuma caman ☐ A t'a dɔn ☐ Jaabi ma di

38. Yala a ka d'i ye ka baara kɛ ni « stepping stone » ye hali ni lakɔli bilala wa?
Est-ce que tu utilises "Stepping Stone" chez toi sur un portable appartenant à ta famille?

☐ Ɔwɔ ☐ Ayi ☐ N t'a dɔn ☐ Jaabi ma di

39. Yala a' ka denbaya mɔgɔ wɛrɛw bɛ baara kɛ ni « stepping stone » ye a' ka so, walima dugu kafemarayɔrɔ la wa?
Est-ce que d'autres membres de ta famille utilisent "Stepping Stone" à la maison ou à la bibliothèque?

☐ Ɔwɔ, mansa kelen ☐ Ɔwɔ, kɔrɔkɛ kelen walima kɔrɔmuso kelen ☐ Ɔwɔ, denbaya mɔgɔ kelen wɛrɛ (mɔkɛ, mɔmuso, tɛnɛmuso, bɛnkɛ) ☐ Ɔwɔ, denbaya mɔgɔ caman

☐ Ayi ☐ Jaabi ma di

Annex D: **Student Questionnaire Results and Composites**

Table D.1: **Language Exposure Composite**

Questions and Response Options		Group					
		Intervention A		Intervention B		Comparison	
		Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)
At school, does your teacher speak to you in Bamanankan?	No	7	3.1	13	6.0	8	28.6
	Yes	215	96.4	205	94.0	109	20.6
	Don't know	1	0.4	0	0.0	0	0.0
At school, do your friends speak to you in Bamanankan?	No	5	2.2	1	0.5	3	33.3
	Yes	218	97.8	217	99.5	115	20.9
	Don't know	0	0.0	0	0.0	0	0.0
At school, do you speak to your friends in Bamanankan?	No	3	1.3	1	0.5	3	42.9
	Yes	220	98.7	218	99.5	115	20.8
	Don't know	0	0.0	0	0.0	0	0.0
At home, do you speak to your siblings in Bamanankan?	No	2	0.9	1	0.5	2	40.0
	Yes	219	99.1	218	99.5	116	21.0
	Don't know	0	0.0	0	0.0	0	0.0
At home, do you speak to the adults in your home in Bamanankan?	No	3	1.4	1	0.5	3	42.9
	Yes	219	98.6	217	99.5	115	20.9
	Don't know	0	0.0	0	0.0	0	0.0
At school, are there books, magazines, or newspapers in Bamanankan?	No	7	3.2	18	8.3	10	28.6
	Yes	214	96.4	199	91.7	104	20.1
	Don't know	1	0.5	0	0.0	3	75.0

Table D.2: **Socioeconomic Status Composite**

Questions and Response Options		Group					
		Intervention A		Intervention B		Comparison	
		Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)
At your house, do you have a radio?	No	22	9.8	21	9.6	13	23.2
	Yes	203	90.2	198	90.4	105	20.8
	Don't know	0	0.0	0	0.0	0	0.0
At your house, do you have a television?	No	69	30.7	67	30.6	38	21.8
	Yes	156	69.3	152	69.4	80	20.6
	Don't know	0	0.0	0	0.0	0	0.0
At your house, do you have a telephone or mobile phone?	No	1	0.4	4	1.8	0	0.0
	Yes	224	99.6	215	98.2	118	21.2
	Don't know	0	0.0	0	0.0	0	0.0
At your house, do you have electricity?	No	25	11.1	15	6.8	0	0.0
	Yes	200	88.9	204	93.2	118	22.6
	Don't know	0	0.0	0	0.0	0	0.0
Do you have a toilet inside your house?	No	7	3.1	3	1.4	0	0.0
	Yes	217	96.9	216	98.6	118	21.4
	Don't know	0	0.0	0	0.0	0	0.0
At your house, do you have a bicycle or motorcycle?	No	12	5.3	16	7.3	2	6.7
	Yes	213	94.7	203	92.7	115	21.7
	Don't know	0	0.0	0	0.0	0	0.0
At your house, do you have four-wheeler (a car, truck, 4x4 tractor)?	No	50	22.2	43	19.6	27	22.5
	Yes	175	77.8	176	80.4	91	20.6
	Don't know	0	0.0	0	0.0	0	0.0
Last night, how much time did you spend on household chores (at home)?	None	50	22.4	46	21.0	25	20.7
	Some	117	52.5	103	47.0	58	20.9
	A lot	56	25.1	70	32.0	34	21.3
Can your mother read in Bamanankan?	No	66	29.3	92	42.2	51	24.4
	Yes	150	66.7	123	56.4	64	19.0
	Don't know	9	4.0	3	1.4	2	14.3
Can your father read in Bamanankan?	No	55	24.6	93	42.5	40	21.3
	Yes	162	72.3	124	56.6	76	21.0
	Don't know	7	3.1	2	0.9	2	18.2

Table D.3: **Family Reading Support Composite**

Questions and Response Options		Group					
		Intervention A		Intervention B		Comparison	
		Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)
Does someone from home (parent, sibling, grandparent) read stories to you?	No	79	35.1	64	29.4	52	26.7
	Yes	146	64.9	154	70.6	66	18.0
	Don't know	0	0.0	0	0.0	0	0.0
Does someone from home (parent, sibling, grandparent) help you with your school work?	No	42	18.8	37	16.9	24	23.3
	Yes	182	81.3	182	83.1	93	20.4
	Don't know	0	0.0	0	0.0	1	100.0
How often do you read with a family member at home?	Never	35	15.6	36	16.6	28	28.3
	Sometimes	158	70.2	146	67.3	70	18.7
	Every day	32	14.2	35	16.1	20	23.0
At home, who most often helps you with your reading or homework?	I usually do not get help with reading or homework at home	39	17.4	36	16.4	26	25.7
	One or both parents	56	25.0	29	13.2	17	16.7
	Brother or sister	117	52.2	142	64.8	68	20.8
	Other family member (grandparents, aunts, uncles)	12	5.4	12	5.5	7	22.6

Table D.4: **Teacher Reading Support Composite**

Questions and Response Options		Group					
		Intervention A		Intervention B		Comparison	
		Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)
At school, does your teacher ask you questions about what you are reading?	No	14	6.3	9	4.2	23	50.0
	Yes	208	92.9	206	95.4	91	18.0
	Don't know	2	0.9	1	0.5	0	0.0
Does your teacher help you when you are unable to read something?	No	15	6.7	2	0.9	13	43.3
	Yes	209	93.3	214	98.6	100	19.1
	Don't know	0	0.0	1	0.5	1	50.0
How often does your teacher asks you to write in school?	Never	0	0.0	1	0.5	0	0.0
	Sometimes	139	62.3	130	60.5	75	21.8
	Every day	84	37.7	84	39.1	42	20.0

Table D.5: **Disposition to Reading Composite**

Questions and Response Options		Group					
		Intervention A		Intervention B		Comparison	
		Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)
Do you like reading at home?	No	2	0.9	1	0.5	1	25.0
	Yes	223	99.1	218	99.5	117	21.0
	Don't know	0	0.0	0	0.0	0	0.0
Do you like reading at school?	No	0	0.0	0	0.0	0	0.0
	Yes	224	100.0	219	100.0	118	21.0
	Don't know	0	0.0	0	0.0	0	0.0
At school, how often do you read books quietly by yourself?	Never	8	3.6	1	0.5	11	55.0
	Sometimes	182	80.9	182	83.5	90	19.8
	Every day	35	15.6	35	16.1	16	18.6

Table D.6: **Technology Use Composite**

Questions and Response Options		Intervention A	
		Frequency	Percentage (%)
Do you like using the Stepping Stone app to learn?	No	1	0.4
	Yes	224	99.6
	Don't know	0	0.0
Have you read stories on a phone or tablet before the Stepping Stone app?	No	146	65.2
	Yes	78	34.8
	Don't know	0	0.0
Is reading stories on the Stepping Stone app easy?	No	9	4.0
	Yes	210	93.8
	Don't know	5	2.2
Is listening to stories on the Stepping Stone app easy?	No	6	2.7
	Yes	214	95.1
	Don't know	5	2.2
Do you like the stories on the Stepping Stone app?	No	2	0.9
	Yes	220	98.2
	Don't know	2	0.9
Do you want to continue using the Stepping Stone app even though the school year is over?	No	2	0.9
	Yes	221	98.7
	Don't know	1	0.4
Do you use the Stepping Stone app on your own?	Mostly No	83	37.2
	Mostly Yes	137	61.4
	Don't know	3	1.3
Do you use the Stepping Stone app at home on your family's mobile phone?	No	25	11.3
	Yes	192	86.5
	Don't know	5	2.3
Do other family members use the Stepping Stone app at home or at the library?	No	113	50.2
	Yes, a parent	37	16.4
	Yes, a brother or sister	59	26.2
	Other family member (grandparents, aunts, uncles)	13	5.8
	Yes, many different family members	3	1.3

Table D.7: **Engagement in Program Composite**

Questions and Response Options		Group			
		Intervention A		Intervention B	
		Frequency	Percentage (%)	Frequency	Percentage (%)
How often do you visit the community library in a week?	I don't visit the library	30	13.3	23	10.6
	A few days each week	174	77.3	172	78.9
	Every day	21	9.3	23	10.6
Which of your family members goes to the community library with you?	I usually go by myself	67	33.5	73	36.7
	One or both parents	12	6.0	13	6.5
	Brother or sister	114	57.0	110	55.3
	Other family member (grandparents, aunts, uncles)	7	3.5	3	1.5
Do you like the stories you read at the community library?	No	4	1.9	3	1.4
	Yes	202	95.3	200	95.2
	Don't know	6	2.8	7	3.3
Do you want to continue going to the community library even though the school year is over?	No	9	4.0	7	3.3
	Yes	213	94.7	199	93.4
	Don't know	3	1.3	7	3.3

Annex E: EGRA Descriptive Statistics and Additional Tables

Table E.1: Orientation to Print (Correct out of Six)

Group	N/n	Baseline			Endline			Mean Gain
		Mean	SD	Zero Score (%)	Mean	SD	Zero Score (%)	
Intervention A	225	1.8	1.6	27.6%	3.7	1.3	0.4%	1.8
Intervention B	219	2.8	1.7	13.7%	4.2	1.1	0.5%	1.5
Comparison	118	1.9	1.7	28.8%	3.6	1.4	2.5%	1.7
Total: All Students	**562**	**2.2**	**1.7**	**22.4%**	**3.9**	**1.3**	**0.9%**	**1.7**

Table E.2: Initial Sound Identification (Correct out of Ten)

Group	N/n	Baseline			Endline			Mean Gain
		Mean	SD	Zero Score (%)	Mean	SD	Zero Score (%)	
Intervention A	225	1.2	2.2	52.9%	5.4	3.7	6.2%	4.2
Intervention B	219	3.2	3.8	31.5%	5.8	3.7	4.1%	2.6
Comparison	118	1.9	2.9	44.1%	3.0	3.4	23.7%	1.0
Total: All Students	**562**	**2.1**	**3.2**	**42.7%**	**5.1**	**3.8**	**9.1%**	**2.9**

Table E.3: Letter Sound Identification (CLSPM)

Group	N/n	Baseline			Endline			Mean Gain
		Mean	SD	Zero Score (%)	Mean	SD	Zero Score (%)	
Intervention A	225	4.6	7.9	50.7%	22.1	13.5	3.6%	17.5
Intervention B	219	13.6	13.5	25.1%	25.1	14.3	2.3%	11.5
Comparison	118	9.6	9.5	24.6%	14.6	8.9	3.4%	4.9
Total: All Students	**562**	**9.2**	**11.4**	**35.2%**	**21.6**	**13.6**	**3.0%**	**12.5**

Table E.4: **Nonword Reading (CNWPM)**

Group	N/n	Baseline			Endline			Mean Gain
		Mean	SD	Zero Score (%)	Mean	SD	Zero Score (%)	
Intervention A	224	1.2	3.5	83.9%	10.6	10.3	25.3%	9.4
Intervention B	219	6.5	8.7	52.1%	14.5	11.1	16.4%	8.0
Comparison	118	1.6	3.6	78.0%	4.7	6.9	43.2%	3.1
Total: All Students	**561**	**3.4**	**6.6**	**70.2%**	**10.9**	**10.7**	**25.6%**	**7.6**

Table E.5: **ORF (CWPM)**

Group	N/n	Baseline			Endline		
		Mean	SD	Zero Score (%)	Mean	SD	Zero Score (%)
Intervention A	225	1.0	3.5	89.3%	16.8	19.1	21.8%
Intervention B	219	7.0	11.2	62.6%	22.9	20.7	10.5%
Comparison	118	1.1	3.2	84.7%	6.0	8.3	27.1%
Total: All Students	**562**	**3.4**	**8.0**	**77.9%**	**16.9**	**19.1**	**18.5%**

Table E.6: **Reading Comprehension (Correct out of Five)**

Group	N/n	Baseline			Endline		
		Mean	SD	Zero Score (%)	Mean	SD	Zero Score (%)
Intervention A	225	0.0	0.2	96.9%	0.8	1.3	66.7%
Intervention B	219	0.3	0.7	83.1%	1.3	1.5	45.2%
Comparison	118	0.0	0.1	99.2%	0.2	0.6	87.3%
Total: All Students	**562**	**0.1**	**0.5**	**92.0%**	**0.9**	**1.3**	**62.6%**

Table E.7: **Listening Comprehension (Correct out of Five)**

Group	N/n	Baseline			Endline		
		Mean	SD	Zero Score (%)	Mean	SD	Zero Score (%)
Intervention A	225	1.7	1.5	31.6%	3.4	1.1	0.9%
Intervention B	219	2.4	1.5	15.1%	3.7	1.0	0.5%
Comparison	118	1.9	1.3	16.1%	3.0	1.1	5.9%
Total: All Students	**562**	**2.0**	**1.5**	**21.9%**	**3.4**	**1.1**	**1.8%**

Table E.8: **Average Gain Scores by Group and Grade**

Subtask	Grade at Baseline																	
	Grade 1						Grade 2						Grade 3					
	Intervention A n = 95		Intervention B n = 69		Comparison n = 36		Intervention A n = 76		Intervention B n = 82		Comparison n = 48		Intervention A n = 54		Intervention B n = 68		Comparison n = 34	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Orientation to print (correct out of six)	2.5	0.2	2.6	0.2	2.3	0.3	1.6	0.2	1.1	0.2	1.6	0.3	1.1	0.2	0.9	0.2	1.2	0.3
Initial sound identification (correct out of ten)	5.2	0.4	4.9	0.4	2.8	0.6	2.8	0.4	2.5	0.5	0.4	0.5	4.4	0.5	0.4	0.5	0.1	0.5
Letter sound identification (CLSPM)	22.8	1.3	18.0	1.5	11.7	1.6	12.7	1.5	10.2	1.4	2.7	1.2	14.8	1.8	6.3	1.8	0.8	1.6
Nonword reading (CNWPM)	9.7	1.0	8.5	1.1	3.8	1.4	10.0	1.2	8.6	1.0	1.8	0.7	8.2	1.1	7.0	0.9	4.1	1.0

Table E.9: **Average Gain Scores by Group and Gender**

Subtask	Intervention A		Intervention B		Comparison	
	Girls *n = 111*	Boys *n = 114*	Girls *n = 112*	Boys *n = 107*	Girls *n = 56*	Boys *n = 62*
Orientation to print (correct out of six)	1.6	2.0	1.5	1.5	1.8	1.6
Initial sound identification (correct out of ten)*	3.5	4.9	2.9	2.3	1.3	0.8
Letter sound identification (CLSPM)**	16.5	18.4	14.4	8.4	5.7	4.2
Nonword reading (CNWPM)**	10.0	8.9	9.7	6.3	2.4	3.7

*   significant at p<.05 among Intervention A students

**   significant at p<.05 among Intervention B students

Table E.10: **Mean Scores by Group and Gender at EGRA Instrument 1 at Baseline – ORF, Reading Comprehension, and Listening Comprehension**

Subtask	Intervention A		Intervention B		Comparison	
	Girls *n = 111*	Boys *n = 114*	Girls *n = 112*	Boys *n = 107*	Girls *n = 56*	Boys *n = 62*
Oral reading fluency (CWPM)	1.5	0.5	6.5	7.6	1.4	0.9
Reading comprehension (correct out of five)	0.0	0.0	0.3	0.3	0.0	0.0
Listening comprehension (correct out of five)	1.7	1.6	2.5	2.3	1.8	1.9

Table E.11: **Mean Scores by Group and Gender at EGRA Instrument 2 at Endline – ORF, Reading Comprehension, and Listening Comprehension**

Subtask	Intervention A		Intervention B		Comparison	
	Girls *n = 111*	Boys *n = 114*	Girls *n = 112*	Boys *n = 107*	Girls *n = 56*	Boys *n = 62*
Oral reading fluency (CWPM)	20.5	13.3	25.7	20.0	5.5	6.4
Reading comprehension (correct out of five)	1.0	0.5	1.5	1.1	0.1	0.2
Listening comprehension (correct out of five)	3.5	3.3	3.7	3.8	3.1	2.9

Table E.12: **Zero Scores by Group and Gender at Endline**

Subtask	Intervention A		Intervention B		Comparison	
	Girls *n = 111*	Boys *n = 114*	Girls *n = 112*	Boys *n = 107*	Girls *n = 56*	Boys *n = 62*
Orientation to print (correct out of six)	0.9%	0.0%	0.0%	0.9%	3.6%	1.6%
Initial sound identification (correct out of ten)	9.0%	3.5%	3.6%	4.7%	21.4%	25.8%
Letter sound identification (CLSPM)	4.5%	2.6%	1.8%	2.8%	1.8%	4.8%
Nonword reading (CNWPM)	25.2%	25.4%	13.4%	19.6%	44.6%	41.9%
Oral reading fluency (CWPM)	22.5%	21.1%	10.7%	10.3%	26.8%	27.4%
Reading comprehension (correct out of five)	59.5%	73.7%	38.4%	52.3%	87.5%	87.1%
Listening comprehension (correct out of five)	0.9%	0.9%	0.9%	0.0%	7.1%	4.8%

Annex F: EGRA Reliability Results

Table F.1: Reliability Results for EGRA Instrument 1 at Baseline

Subtask	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Orientation to print (correct out of six)	0.549	0.807
Initial sound identification (correct out of ten)	0.667	0.786
Letter sound identification (CLSPM)	0.830	0.786
Nonword reading (CNWPM)	0.792	0.782
Oral reading fluency (CWPM)	0.717	0.782
Reading comprehension (correct out of five)	0.539	0.816
Listening comprehension (correct out of five)	0.509	0.817
	EGRA Coefficient Alpha	**0.820**

Table F.2: Reliability Results for EGRA Instrument 2 at Endline

Subtask	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Orientation to print (correct out of six)	0.393	0.829
Initial sound identification (correct out of ten)	0.564	0.821
Letter sound identification (CLSPM)	0.687	0.807
Nonword reading (CNWPM)	0.840	0.770
Oral reading fluency (CWPM)	0.814	0.756
Reading comprehension (correct out of five)	0.738	0.775
Listening comprehension (correct out of five)	0.238	0.849
	EGRA Coefficient Alpha	**0.827**