ALL CHILDREN READING:
A GRAND CHALLENGE FOR DEVELOPMENT

Baseline Report

GraphoGame™ Teacher Training Service (GG-TTS)

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For All Children Reading: A Grand Challenge for Development

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I. Executive Summary

Recognizing that literacy is fundamental to learning, skill acquisition, and success in primary school and beyond, education stakeholders are increasing their focus on the assessment of early grade reading skills. The Early Grade Reading Assessment (EGRA) is an oral student assessment designed to measure the most basic foundational skills for literacy acquisition in the early grades: recognizing letters of the alphabet, reading simple words, understanding sentences and paragraphs, and listening with comprehension.[1] The EGRA methodology was developed under EdData II, and has been applied in more than 30 countries and 60 languages.[2]

All Children Reading: A Grand Challenge for Development (ACR GCD), a joint partnership between the United States Agency for International Development (USAID), World Vision, and the Australian Government, Department of Foreign Affairs and Trade (DFAT), has adopted the standard EGRA to systematically assess reading skills across all Round 2 grantees. The instrument is adapted according to each grantee's project context.

Agora Center, University of Jyväskylä, an ACR GCD Round 2 grantee, conducted an EGRA baseline assessment in 30 schools in the Eastern Province of Zambia. This was done in collaboration with their local partner, Centre for Promotion of Literacy in Sub-Saharan Africa (CAPOLSA), University of Zambia, and School-to-School International (STS).

The results of the baseline data collection, conclusions, and recommendations are presented in this report. Below is a summary of the key findings.

Key Findings

1. The **majority of students in this sample lack foundational reading skills needed to decode simple one- and two-syllable words**, as seen in the Nonword Reading subtask. On this subtask, more than 92 percent of students received zero scores, indicating that they could not correctly identify any of the nonwords presented.
2. **Students in the sample are unable to read with fluency**, as seen in the Oral Reading Fluency (ORF) subtask. The mean score for all students on this subtask was less than one correct word read per minute, and on the same subtask, over 87 percent of students were unable to read a single word.

[1] RTI International and International Rescue Committee. (2011). Guidance Notes for Planning and Implementing Early Grade Reading Assessments.

[2] USAID EdData II. Available at: https://www.eddataglobal.org/reading/

Table 1: Mean Results for EGRA Subtasks by Treatment Group

Subtask	Treatment (N=295)		Control (N=280)		All Students (N=575)	
	Mean	Zero Scores (n)	Mean	Zero Scores (n)	Mean	Zero Scores (n)
Orientation to Print	1.4	94	1.5	76	1.5	170
Letter-sound Knowledge	3.6	113	3.7	97	3.6	210
Nonword Reading	0.3	273	0.4	258	0.3	531
Oral Reading Fluency (ORF)	0.4	260	0.6	242	0.5	502
Reading Comprehension	0.2	282	0.2	267	0.2	549
Listening Comprehension	2.9	1	2.7	3	2.8	4

II. Project Description

The GraphoGame™ Teacher Training Service (GG-TTS) is designed to provide a cost-effective, scalable mobile-based teacher training model for supporting struggling readers. This teacher training model is designed to support the national literacy framework used by the Ministry of General Education in Zambia.

GG-TTS is based on previous research on the use of digital literacy games for supporting early grade reading skills in Zambia. The first pilot projects on the use of digital literacy games were conducted in 2005 with an early version of a computer game that was later developed into the current GraphoGame™ (GG).[3] Graduate students in Lusaka conducted additional pilot projects and found that children's orthography and spelling skills improved after playing the game for about two hours during one month of intervention.[4] Additional research was conducted in 2010 through the Reading Support for Zambia (RESUZ) project in which PhD students conducted an intervention with an early version of GG using basic Nokia phones. **The results[5] showed that the GG intervention was most effective when the teachers also used the game instead of just providing the game for the children to play.** In 2013, three implementation models testing GG playing sessions at schools and on tablets were studied[6,7], and increases in the basic reading skills of GG participants were found in all treatment groups.

[3] Richardson, U., & Lyytinen, H. (2014). The GraphoGame Method: The Theoretical and Methodological Background of the Technology-Enhanced Learning Environment for Learning to Read. *Human Technology*, 10 (1), 39-60. doi:10.17011/ht/urn.201405281859

[4] Ojanen, E., Kujala, J., Richardson, U., & Lyytinen, H. (2013). Technology-Enhanced Literacy Learning in Zambia: Observations from a Multilingual Literacy Environment. *Insights on Learning Disabilities: From Prevailing Theories to Validated Practices*, 10 (2), 103-127.

[5] Jere-Folotiya, J., Chansa-Kabali, T., Munachaka, J., Sampa, F., Yalukanda, C., Westerholm, J., Richardson, U., Serpell, R., Lyytinen. H. (2014): The effect of using a mobile literacy game to improve literacy levels of grade one students in Zambian schools. Educational Technology Research and Development, August 2014, Volume 62, Issue 4, 417-436.

[6] Walubita, G., Nieminen, L., Serpell, R., Ojanen, E., Lyytinen, H., Choopa, M., . . . Nakawala-Maumbi, M. (2015). Ensuring Sufficient Literacy Practice with Tablet Technology in Zambian Schools. In P. Cunningham, & M. Cunningham (Eds.), *IST-Africa 2015 Conference Proceedings* (pp. 421-430). IEEE. doi:10.1109/ISTAFRICA.2015.7190560

[7] Kauppinen, K-P. (2014) Investigating language acquisition in Zambia: mapping vowel confusion of a, e and i between English and ciNyanja. Unpublished Master's thesis. Department of Psychology. University of Jyväskylä. Jyväskylä. Available online https://jyx.jyu.fi/dspace/bitstream/handle/123456789/45157/URN:NBN:fi:jyu-201501271180.pdf;sequence=1

In 2014, GG was piloted with smartphones in rural schools in the Eastern province of Zambia. In this experiment, teachers from 24 schools participated in a three-day workshop on the use of GG and also received information about the new curriculum and methods of supporting struggling readers. Teachers used GG themselves and provided GG for their students either at school or by giving GG phones to students for home-use. The latter scenario provided children's adult family members the opportunity to play the game. This study did not include pre- and post-testing of the children's literacy skills, but GG's internal assessments showed increases on the Letter-sound and Word Recognition assessments for both children and adult users, as well as small increases for the teachers.[8]

Building upon previous research and lessons-learned, GG-TTS aims to benefit Grade 2 students who performed below or at minimum standards of literacy at the end of Grade 1, with the goal of providing them with an early intervention to help them catch up with their classmates that acquired adequate literacy skills in Grade 1. This goal is particularly important because students who have not acquired these skills by the end of Grade 1 may be disadvantaged as they progress in the education system. GG-TTS intends to reach this goal through Grade 2 teachers who complete the following tasks:

1. Receive training on the use of GG in their classroom.
2. Complete online training via the GG-TTS website focused on literacy instruction in mother tongue languages and supporting struggling readers.
3. Review additional materials on the GG-TTS website, as needed, on literacy instruction in mother tongue languages and on how to support struggling readers.
4. Administer GG to struggling readers in their classrooms.

GG-TTS will be implemented in 30 schools in the Katete district in the Eastern province of Zambia. Teachers participating in GG-TTS are provided with GG-equipped mobile phones to be used with their students. They are instructed to provide two GG playing sessions per week to each of the students in the treatment group. GG is used at a maximum of 15 minutes per session, which allows the teacher to use the same mobile phone with four children per hour. GG sessions are continued until the minimum recommended exposure time of three hours is reached and/or the student reaches 100 percent progress scores in all the game learning materials (identifying letter-sounds, syllables and words). Teachers are also responsible for ensuring children log in with the correct player account and for keeping track of each players' progress through the GG results analytics tool on the phones. Teachers send the game logs that are automatically saved as records to GG-TTS staff each Friday for online monitoring of the intervention. Teachers who complete their training components and who submit their GG game logs receive a certificate, which serves as an incentive to participate fully in GG-TTS.

III. Purpose

The purpose of the project is to study how GG-TTS can improve the ciNyanja literacy skills of Grade 2 students. The two main research questions are:

[8] Ojanen, E., Ronimus, M., Ahonen, T., Chansa-Kabali, T., February, P., Jere-Folotiya, J., . . . Lyytinen, H. (2015). GraphoGame – a catalyst for multi-level promotion of literacy in diverse contexts. *Frontiers in Psychology*, 6, 671. doi:10.3389/fpsyg.2015.00671

1. Does GG-TTS help improve early grade literacy instruction in ciNyanja, as measured through literacy acquisition among students?
2. Can the online GG-TTS materials (accessed via mobile phones) help rural Zambian teachers to utilize new methods for ciNyanja literacy instruction?

IV. Evaluation Design and Methodology

To measure the results of GG-TTS, an Early Grade Reading Assessment (EGRA) will be conducted in three phases: a baseline assessment, a midline assessment, and an endline assessment. The baseline was conducted at the beginning of the academic year in January 2016 and measured student reading levels at the end of Grade 1 prior to entering Grade 2. Midline data collection took place in June 2016, and endline data collection will begin in September 2016. These assessments measure reading gains at the midpoint and at the end of Grade 2 and will indicate whether the gains made at the midpoint persist to the endline.

The assessment was designed to sample Grade 2 students in 30 schools. The District office of the Ministry of Education provided a list of 135 schools in the Katete district, and the following selection criteria were applied to create the sample frame:

1. Schools offered reading instruction in ciNyanja for first and second grade students.
2. Schools did not participate in 2014 national EGRA.
3. Schools did not participate in the previous GG study (Ojanen, 2015) in the Eastern province in 2014.
4. Schools had cellular coverage by Airtel.

Out of 135, 38 schools remained eligible for selection, and 30 primary schools were selected to participate in the baseline assessment.

Instrument Development

ACR GCD has two grantees in Zambia, both of which are using the existing ciNyanja EGRA that was developed and adapted by Research Triangle Institute International (RTI) in 2014. This allows for comparability across both ACR GCD projects. In addition to the EGRA, additional assessments/surveys were included in the baseline exercise:

1. A *demographic questionnaire* for students about their language background and home environment. This questionnaire was incorporated into Tangerine, an open source software used to administer EGRA on tablets, and conducted in conjunction with EGRA.
2. *GG ciNyanja letter-sound and word recognition assessment*. The GG assessment was conducted on mobile devices following the EGRA.
3. Two *teacher questionnaires* about teacher familiarity with information and communications technology (ICT) and knowledge of language and literacy instruction.

Demographic Questionnaire. The demographic questionnaire was used to collect background information about the students. The questions included information related to the students' social economic status, ICT use in the home and the home learning environment. The purpose of the questions was to get a better understanding of the sample and the background of the students.

This information will be used to better understand EGRA results and factors that may affect a student's literacy skills.

GG ciNyanja Letter-sound and Word Recognition assessments. GG's built-in assessment tools track data over the course of the game. GG begins with Letter-sound and Word Recognition assessments, then adapts to players' answers and modifies the learning content based on the player's performance. Unlike the EGRA, the assessments do not require the child to verbally state the response. Instead, children point to the response based on auditory and visual stimuli presented on their mobile phone.

The GG assessments were conducted in tandem with the EGRA for two reasons. First, it allowed the research assistants, who are experts in the game, to introduce the game to the children, thus minimizing errors as all children were introduced to the game in the same way and played the same game levels at the beginning of the intervention. If the teachers started the game intervention with the players before the baseline, the quality of the first GG assessment would be compromised.

The second reason for using the GG assessments was to collect additional data on two foundational literacy skills tracked through the EGRA: letter-sound and word recognition skills. **The children in this project were selected because they were performing at or below minimum government standards (Red Level) at the end of Grade 1.** Measuring literacy skills can be challenging if the children are only in the beginning stages of learning to read and have not yet automatized their skills. EGRA requires children to speak in the presence of an unfamiliar adult, which can be challenging in this cultural context. It also requires students to retrieve something from memory without prompting. This may be more demanding than recognizing written items among a series of options after an auditory cue, which is how GG assessments are conducted. Conducting the two types of assessments in tandem allows for a comparison between how the two skills are tested – either through verbal responses or through identifying the correct answer on a mobile phone.

The GG Letter-sound assessment is divided into three parts with a small pause between each part. In each part, eight phoneme sounds are presented, one at a time, and all 24 letters of the ciNyanja alphabet are visible on the screen. The player must find the letter that corresponds to the sound they hear and select that letter by touching the letter on the screen.

The GG Word Recognition assessment first asks students to identify eight syllables, constructed using a consonant-vowel (CV) pattern. For each item, the game presents six options on the screen, and the player must identify the corresponding syllable among them. If the player passes the syllables section, the game advances so students are also asked to identify words of varying length (between four and seven letters).

Teacher Questionnaires. Teachers responded to two questionnaires. The purpose of administering the questionnaires was to understand the teachers' knowledge and attitudes about teaching mother tongue literacy and their use of ICT. The first questionnaire collected information about

the teachers' educational background, the teaching methods and reading instruction in their schools, and their views about literacy instruction and struggling readers. The second questionnaire centered on the type of ICT the teachers had exposure to, ICT training, their amount of internet exposure and their interaction with social media and ICT infrastructure in schools.

Sample

The sample was comprised of 575 Grade 2 students and their teachers in government schools in the Katete district of the Eastern province of Zambia.

Table 2: Total Number of Students Assessed by Group and Gender

Group	Boys	Girls	Total
Treatment	112	183	295
Control	123	157	280
Total	235	340	575

The research team randomized at the school level. Schools were randomly assigned into treatment and control schools. Fifteen schools were assigned to the treatment group and fifteen were assigned to the control group. In each school, Grade 2 classes were randomly selected depending on the number of Grade 2 classes in the school, and, in total, 37 Grade 2 teachers were included in the sample. The number of Grade 2 students selected into the project treatment or control groups was calculated using proportional sampling, and Table 2 shows the total number of students in treatment and control groups by gender.[9]

V. Fieldwork Preparation and Data Collection

Assessor Training

A total of 12 assessors were selected by CAPOLSA to conduct the baseline assessment. All had data collection experience, and some had previous experience administering GG under CAPOLSA or conducting an EGRA with other organizations. Each assessor underwent extensive interviews and background checks prior to being hired.

A GG training was held from January 14-15, 2016. An expert from the Agora Center conducted the training with assistance from the assessors that had previously worked with GG at CAPOLSA. The main goal of the training was to ensure that the assessors were able to conduct the GG assessments in less than 10 minutes so that the total assessment time for both EGRA and GG subtasks would be 30 minutes per child. During the training, each assessor received a unique GG user name so their practice could be observed to ensure they understood the game. Further, assessors also used the GG phones outside of the training session to familiarize themselves with the game. All feedback provided by assessors was incorporated into the instructions for GG

[9] The sample size in Table 2 applies to EGRA subtasks. The total number of students in the baseline sample for the GG Letter-sound and Word Recognition assessments is 567.

baseline assessments. This training session served as the model for the GG teacher training session in the GG-TTS project.

The EGRA assessor training took place from January 18-22, 2016 (see Appendix A for the EGRA Adaptation Workshop Agenda).

Inter-rater Reliability (IRR) Test

Inter-rater reliability is a measure of reliability used to assess the degree to which different assessors agree in their assessment decisions. Inter-rater reliability tests ensure that the different assessors interpret answers in the same way. Assessors may disagree within an acceptable level (10 percent), and it will have minimal effect on the EGRA score for each student. IRR tests for the GG-TTS were done prior to the baseline data collection. With the exception of one, the assessors met the 90 percent threshold for IRR on the EGRA assessment. The one assessor who scored below the threshold at 85 percent was required to continue to practice and was recommended to conduct the assessment, as he had strong performance and built rapport with students during the pilot tests.

Institutional Review Board (IRB) for Human Participants[10]

The Institutional Review Board (IRB) is responsible for ascertaining the acceptability of proposed research in terms of institutional commitments and regulations, applicable laws, standards of professional conduct and practice, and ethical and societal norms. The IRB examines subject recruitment procedures, proposed remuneration, and the informed consent process. The IRB also evaluates the potential risks and benefits to participants outlined in each protocol.

The application to conduct this study was submitted to the University of Zambia, School of Humanities and Social Sciences Research Ethics Committee (UNZAREC). The Committee reviewed the application at the end of 2015 and gave official approval in writing in February 2016 for a duration of one year.

Data Analysis

Before data analysis began, the EGRA sample was matched with the GG sample to ensure student data was available for both assessments. Records in the EGRA dataset – including the student's demographic information – were matched with the anonymous GG game log data using the school code and individual GG ID code. Originally, the EGRA dataset had more records than the GG dataset, which was due to the fact that some students started the EGRA, but did not complete it and, as a result, did not continue to the GG assessments. Over 97 percent of the students were assessed according to the GG baseline assessment protocol. Variations from protocol occurred when students were allowed to play a different reward game, though these student records were not excluded from the sample because the GG assessments were correctly conducted. The final

[10] Following The Protection of Human Subjects in Research Supported by USAID, all ACR GCD projects sought human subjects' approval through a local Institutional Review Board (IRB) to ensure there was minimal risk to the students participating in the interventions and associated assessments.

dataset includes 575 students with EGRA assessments, and, of these, only eight students are missing GG data due to the inability to conclusively match the GG ID code with the EGRA data. Data were analyzed using STATA and Excel, which resulted in graphs and frequency tables. Differences between treatment and control groups were tested for significance, and where found, these differences are noted in the results (see Section VII and Annex B). Mean scores on each subtask were compared using ANOVA and differences in the proportion of zero scores (students who scored zero on a subtask) were compared using the chi-square test for significance.[11]

Furthermore, for each subtask, decision rules were applied to exclude outliers. 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 time remaining were based on multiple factors, including the rate at which letters or words in the language tested are typically read and the mean fluency rate with and without the outlier data point(s).

Table 3: Subtask and Data Analysis Methods

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. There are three questions in this subtask.
Letter-sound Knowledge	Timed	Letter-sound Knowledge is measured as correct letter-sounds read in one minute (CLSPM). Letter-sound Knowledge 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 correct "nonwords" read in one minute. Nonword Reading measures decoding (CNWPM). Each student had the opportunity to read up to 50 one and two syllable "nonwords".
Oral Reading Fluency (ORF)	Timed	ORF is measured as correct words read in one minute. ORF is a decoding and reading fluency measure. Each student had the opportunity to read 40 words. 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 five factual questions.
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 based on a passage read to them by the assessor.

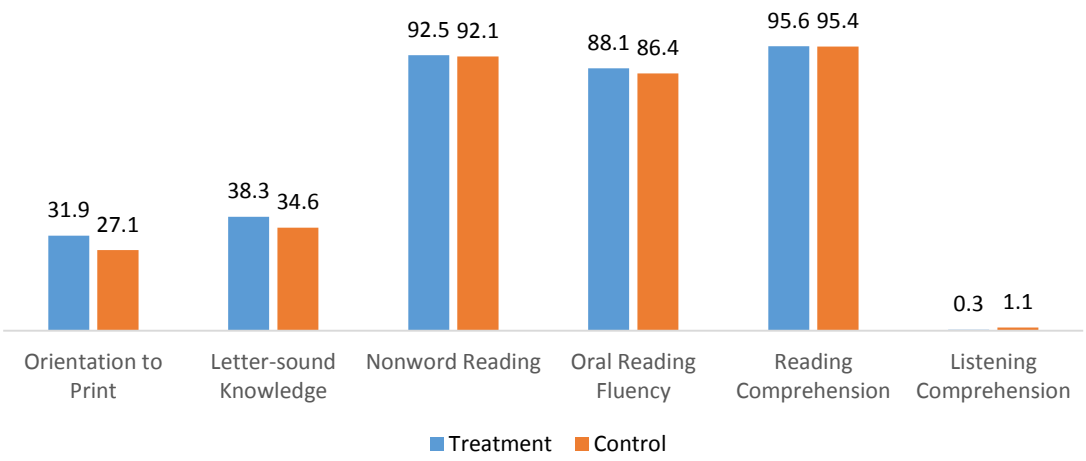
[11] ANOVA stands for Analysis of Variance. It is a statistical model that is used to analyze the differences between group means, which helps identify differences in the sample the can be generalized to the population. The chi-square test is a statistical test comparing proportions of zero-score students that were observed in the data against what was expected.

GG Letter-sound	Untimed	The GG Letter-sound assessment is measured as number of correctly identified letter-sounds on a mobile phone screen after hearing the phoneme sound in headphones. The maximum score is 24.
GG Word Recognition	Untimed	The GG Word Recognition assessment is measured as the number of correctly identified syllables and words on a mobile phone screen after hearing the syllable or word in headphones. The maximum score is 24.

VI. Summary of Findings

Overall, the results suggest that the target population lacks the foundational skills necessary to read with fluency and comprehension as measured by the EGRA. Out of a total of 295 students in the treatment group and 280 in the control group, the lowest proportion of zero scores was on the Listening Comprehension subtask, on which one student in the treatment group and three students in the control group were not able to answer any questions. Students had the highest proportion of zero scores on the Reading Comprehension subtask – 282 in the treatment group and 267 in the control group[12].

Figure 1: Percent of Zero Scores by Treatment Group



VII. Results by Group and Gender

This section reports the results from the baseline assessment by EGRA subtask, group type, and gender. Each subsection contains a description of the subtask followed by the mean score (untimed subtasks) or mean fluency rate (timed subtasks), standard deviation (SD)[13], and number of zero scores. Results are reported for treatment and control groups, as well as for boys and girls.

[12] As noted in the Instrument Development section, the children in this project were selected because they were performing at or below minimum government standards (RED Level) at the end of Grade 1.

[13] The standard deviation (SD) of the measure of interest – here, mean fluency rates – describes the spread between scores. Smaller SD values indicate that the majority of values lie close to the mean; larger SD values indicate that mean fluency rates varied and were more spread out.

Results for GG assessments are also presented below (for additional results by subtask, see Annex B).

Orientation to Print

Orientation to Print measures students' knowledge of how words are organized on a page, the direction of print (e.g., left to right), and how print materials are organized. In this subtask, students are given a text and asked to answer a series of questions demonstrating their understanding of how words on a page are organized and read. Students indicated their response to the three questions asked by pointing to the correct part of the page or by indicating the correct direction of reading.

Results for the Orientation to Print subtask are detailed in Table 4. Students in the treatment and control groups performed similarly on this subtask. **On average, students responded correctly to 50 percent of the subtask questions, and, overall, nearly one third of students were unable to answer a single question.** There were no statistically significant differences between boys and girls, nor were there any statistically significant differences between the treatment and control groups.

Table 4: Orientation to Print Score by Treatment Group and Gender

Group	Gender	N	Mean Score (Number of Questions Correct)	SD	Zero Scores (n)
Treatment	Boys	112	1.5	1.2	31
	Girls	183	1.4	1.2	63
	Total	295	1.4	1.2	94
Control	Boys	123	1.6	1.2	31
	Girls	157	1.5	1.2	45
	Total	280	1.5	1.2	76
Total: All Students		575	1.5	1.2	170

Letter-sound Knowledge

The Letter-sound Knowledge 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 Knowledge, students must identify the appropriate sounds for each letter symbol. The ability to match letters with correct sounds is critical to reading fluency and comprehension. For this subtask, each student was presented with a stimulus of 100 letters and asked to read as many of the sounds as they could in one minute.[14]

[14] 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 10 letters on the stimulus.

The mean fluency rates (correct letter-sounds per minute, or CLSPM) for this subtask are presented in Table 5. **On average, students identified 3.6 letter-sounds within one minute**, and the difference in mean fluencies were not statistically significant for treatment and control groups, nor for boys and girls.

Table 5: Letter-sound Knowledge Fluency by Treatment Group and Gender

Group	Gender	N	Mean Fluency (CLSPM)	SD	Zero Scores (n)
Treatment	Boys	112	3.2	4.2	44
	Girls	183	3.9	4.5	69
	Total	295	3.6	4.4	113
Control	Boys	123	4.0	4.1	38
	Girls	157	3.5	4.3	59
	Total	280	3.7	4.2	97
Total: All Students		575	3.6	4.3	210

Overall, about 37 percent of students were unable to identify a single letter-sound. Treatment group students had a slightly higher proportion of student who received a zero score on the subtask than control group students – 38 percent versus 35 percent, respectively.

Nonword Reading

The Nonword Reading subtask is a measure of decoding ability and is designed to present children with words that they would not be able to recognize by sight through familiarity. Many children in the early grades learn to memorize or recognize a range of familiar words by sight alone. Thus, to assess children's decoding skills, they are presented with invented (nonsense) words, which require them to sound out each letter and syllable to decode a word. During this timed subtask, the assessor presented each child with 50 nonwords and asked them to read as many as possible in one minute.[15]

Overall, the mean fluency rates (correct nonwords per minute, or CNWPM) for the Nonword Reading subtask were low for students in both treatment and control groups (see Table 6). In treatment and control schools, children could decode an average of 0.3 CNWPM. When results were compared by gender, the difference between boys' and girls' performance was not statistically significant.

[15] After one minute, the student was asked to stop. The subtask was discontinued if a student was unable to correctly read any the first 10 nonwords.

Table 6: Nonword Reading Fluency by Treatment Group and Gender

Group	Gender	N	Mean Fluency (CNWPM)	SD	Zero Scores (n)
Treatment	Boys	112	0.4	2.0	105
	Girls	183	0.2	0.9	168
	Total	295	0.3	1.4	273
Control	Boys	123	0.4	1.7	112
	Girls	157	0.4	2.3	146
	Total	280	0.4	2.0	258
Total: All Students		575	0.3	1.8	531

Students receiving zero scores on Nonword Reading were high in comparison with other subtasks. **Overall, 92 percent of students in control schools and 93 percent of students in treatment schools were not able to decode a single nonword correctly.**

Oral Reading Fluency (ORF)

Oral Reading Fluency (ORF) is a measure of overall reading competence. It is the culmination of translating letters into sounds, merging sounds to become words, linking words to become sentences, relating text to meaning, and making inferences to fill in missing information.[16] A student's ORF score is dependent on the skills in previous subtasks, since children need to have some mastery of orientation to print, letter-sounds, and decoding of nonwords to read fluently.

In this timed EGRA subtask, assessors asked students to read a 40-word ciNyanja passage aloud for one minute. As shown in Table 7, **over 87 percent of students were unable to read any words in the passage**. On average, students in both treatment and control schools were able to read 0.5 CWPM. The difference between boys' and girls' fluency was not statistically significant in neither treatment nor control groups.

Table 7: Oral Reading Fluency (ORF) by Treatment Group and Gender

Group	Gender	N	Mean Fluency (CWPM)	SD	Zero Scores (n)
Treatment	Boys	112	0.6	3.0	104
	Girls	183	0.4	1.3	156
	Total	295	0.4	2.1	260
Control	Boys	123	0.6	2.1	105
	Girls	157	0.7	3.4	137

[16] Hasbrouck, J., & Tindal, G. A. (2006). Oral reading fluency norms: A valuable assessment tool for reading teachers. International Reading Association, 636–644.

	Total	280	0.6	2.9	242
Total: All Students		575	0.5	2.5	502

Reading Comprehension

The Reading Comprehension subtask indicates how well students understood the ciNyanja passage that they read in the ORF subtask. Upon completion of the ORF subtask, assessors read aloud up to five comprehension questions based on the text and asked students to respond verbally. The number of questions asked by assessors was contingent on the amount of text the students read in the ORF subtask.[17] As a result, the zero scores shown in Table 8 reflect two types of students: (1) those who did not read enough of the passage to be asked a single question, and (2) those who read enough to be asked at least one comprehension question, but answered all questions incorrectly.

Table 8: Reading Comprehension Score by Treatment Group and Gender

Group	Gender	N	Mean Score (Number of Questions Correct)	SD	Zero Scores (n)
Treatment	Boys	112	0.0	0.3	108
	Girls	183	0.1	0.2	174
	Total	295	0.1	0.2	282
Control	Boys	123	0.1	0.3	117
	Girls	157	0.1	0.4	150
	Total	280	0.1	0.3	267
Total: All Students		575	0.1	0.3	549

Given the high proportion of zero scores on the ORF subtask, the proportion of zero scores on the Reading Comprehension subtask was also high – **approximately 95 percent of students were unable to answer a single question correctly**. On average, students were able to correctly answer 0.1 questions.

To further understand the high number of students receiving zero scores and low mean scores on the Reading Comprehension subtask, Table 9 shows the mean number of questions attempted by students. The maximum number of questions attempted by any student was four out of a potential five, indicating that no child was able to read enough text on the ORF subtask to attempt the maximum number of reading comprehension questions. On average, students attempted only 0.2 questions.

[17] For example, if a student read the first sentence of text (5 words), s/he would be asked the first comprehension question. Similarly, if a student read the whole text (40 words), s/he would be asked all five questions.

Table 9: Reading Comprehension Questions Attempted by Treatment Group and Gender

Group	Gender	N	Mean (Number of Questions Attempted)	SD	Range
Treatment	Boys	112	0.2	0.5	0-2
	Girls	183	0.2	0.5	0-2
	Total	295	0.2	0.5	0-2
Control	Boys	123	0.2	0.5	0-2
	Girls	157	0.2	0.6	0-4
	Total	280	0.2	0.6	0-4
Total: All Students		575	0.2	0.5	0-4

Listening Comprehension

The Listening Comprehension subtask is an untimed assessment of children's abilities 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, and, 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 read a short passage to the student and asked them to answer five comprehension questions[18] about what they heard.

Table 10 presents the mean number of questions answered correctly by students. **Students in both the treatment and control groups performed similarly, answering nearly three out of five Listening Comprehension questions correctly.** Zero scores were much lower than for previous subtasks, with less than one percent of students unable to answer a single listening comprehension question correctly.

Table 10: Listening Comprehension Score by Treatment Group and Gender

Group	Gender	N	Mean Score (Number of Questions Correct)	SD	Zero Scores (n)
Treatment	Boys	112	2.9	1.1	0
	Girls	183	2.9	1.1	1
	Total	295	2.9	1.1	1
Control	Boys	123	2.7	1.0	1
	Girls	157	2.7	1.1	2

[18] The first three were direct questions (answers found explicitly in the story). The fourth and fifth questions were inferential.

Total	280	2.7	1.1	3
Total: All Students	575	2.8	1.1	4

The specific number of Listening Comprehension questions that students answered correctly is shown in Table 11. In the treatment group, nearly six percent of students were able to correctly answer five questions, whereas just over three percent of students in the control group were able to correctly answer five questions. **The majority of students in both the treatment and control groups were able to answer three questions correctly.**

Table 11*:* Listening Comprehension Questions Correct by Treatment Group and Gender

Group	Number of Questions Correct	Girls N	Girls %	Boys N	Boys %	N Total	% Total
Treatment	0	1	0.6	0	0	1	0.3
	1	21	11.5	13	11.6	34	11.5
	2	48	26.2	28	25	76	25.8
	3	54	29.5	40	35.7	94	31.9
	4	48	26.2	25	22.3	73	24.8
	5	11	6.0	6	5.4	17	5.8
	Total	183	100	112	100	295	100
Control	0	2	1.3	1	0.8	3	1.1
	1	18	11.5	13	10.6	31	11.1
	2	46	29.3	37	30.1	83	29.6
	3	49	31.2	42	34.2	91	32.5
	4	37	23.6	26	21.1	63	22.5
	5	5	3.2	4	3.3	9	3.2
	Total	157	100	123	100	280	100

GG Letter-sound

On the GG Letter-sound assessment, 24 letters appear on a screen and the sounds are heard on headphones one-by-one. The assessment is presented as three sets of stimuli, always shown in the same order:
Set 1: o n s u t m l k
Set 2: a r p i b g d c
Set 3: e f y z j v h w

On the GG Letter-sound assessment, **the mean number of letter-sounds identified correctly was less than four out of a maximum possible score of 24**. On average, children identified 3.7 letter-sounds correctly compared with an average fluency rate of 3.6 on the EGRA Letter-sound Knowledge subtask, although comparative analyses have not yet been conducted to determine correlations between the two assessments. On the GG Letter-sound assessment, approximately 10 percent were not able to identify any of the letters correctly. This is significantly less than the proportion of zero scores on the EGRA Letter-sound Knowledge subtask – approximately 37 percent – which may indicate that selecting the letters on the mobile phone is easier for the

children. Again, without a more comprehensive comparative analysis, it is not possible to conclusively determine the relationship between scores on the two assessments.

Table 12: GG Letter-sound Score by Treatment Group and Gender

Group	Gender	N	Mean Score (Number of Letter-sounds Correct)	SD	Zero Scores (n)
Treatment	Boys	108	3.5	2.6	9
	Girls	182	3.9	3.0	19
	Total	290	3.7	2.8	28
Control	Boys	122	3.6	3.1	10
	Girls	155	3.7	3.4	18
	Total	277	3.6	3.3	28
Total: All Students		567	3.7	3.0	56

GG Word Recognition

On the GG Word Recognition assessment, the first eight items presented are two-letter syllables in a consonant-vowel pattern – bu, ka, li, se, yo, co, me and gi. If children make three mistakes within the first eight items, the assessment ends, and, as a result, if children receive a score of less than five, they were not presented with any words.

Table 13: GG Word Recognition Score by Treatment Group and Gender

Group	Gender	N	Mean Items Identified	SD	Zero Scores (n)
Treatment	Boys	108	2.2	3.0	21
	Girls	182	2.0	2.7	34
	Total	290	2.1	2.8	55
Control	Boys	122	2.4	3.0	19
	Girls	155	2.4	3.5	27
	Total	277	2.4	3.3	46
Total: All Students		567	2.3	3.0	101

Results in Table 13 indicate that zero scores were comparable for treatment and control groups (19 percent and 17 percent, respectively). **On average, students identified less than three items correctly out of a possible 24 items, meaning that many students did not score high enough to continue with the GG Word Recognition assessment beyond the syllables section**.

VIII. Contextual Factors

The schools in the project were visited by a CAPOLSA representative to provide information about the project. CAPOLSA requested that Head Teachers provide a list of Grade 1 Red Level children from the 2015 school year. The schools were visited and dates for the baseline assessment were set.

The baseline assessment was completed over the course of 10 days in Katete. The research assistant team was divided to three sub-teams. Each team was supervised by a team leader. Typically, each team assessed one or two schools in a day. When necessary, the teams combined their forces and worked together in a school that had a large number of students. There were various challenges encountered during the assessment process. In some schools, assessments had to be conducted outside, underneath trees because space was unavailable in the classroom buildings. In some schools, this was distracting for the both assessors and the learners because of the surrounding noise. This was especially challenging on days when it rained because assessments would be conducted in corridors. However, in some schools, indoor space was allocated to the research team for assessments.

Teacher Questionnaires

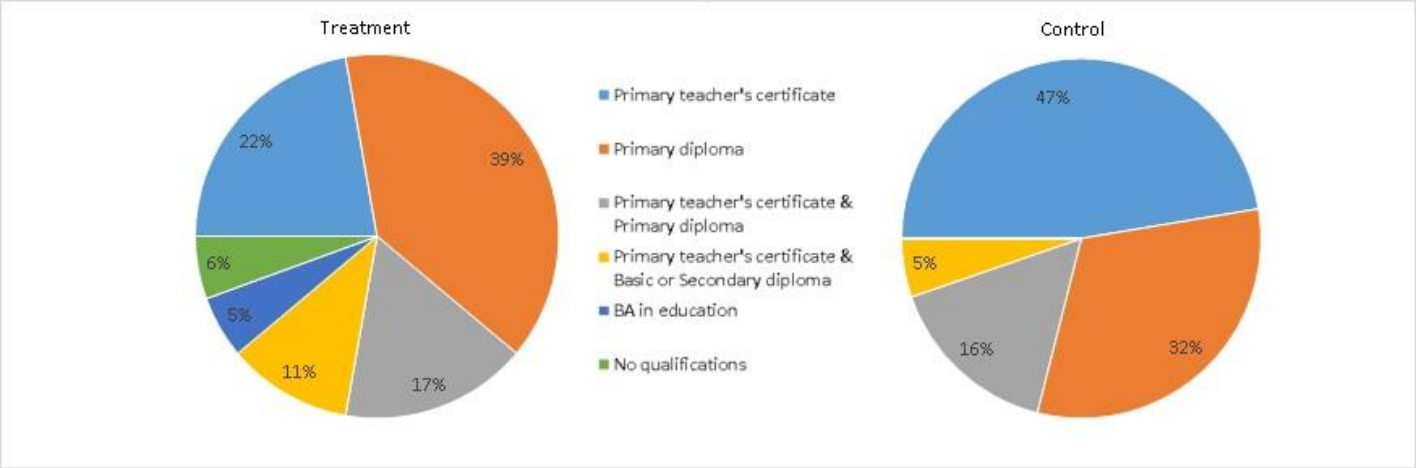
Two teacher questionnaires were administered to teachers in the sample to provide contextual details. Results in Table 14 show the average age of teachers by treatment group and by gender. This information is useful, as it provides an indication of when teachers received their primary school education. In this project, most teachers were in primary school during the late 1980's and early 1990's, which means they themselves learned to read during the language policy and curriculum which was in effect during that time. The average age for teachers across treatment groups and genders is about 35 years.

Table 14: Teachers' Age by Treatment Group and Gender

Group	Gender	N	Mean Age	SD
Treatment	Male	8	32.1	5.5
	Female	10	35.7	9.6
	Total	18	33.9	7.6
Control	Male	8	37.3	11.6
	Female	11	33.9	6.5
	Total	19	35.6	9.1
Total: All Teachers		37	34.7	8.3

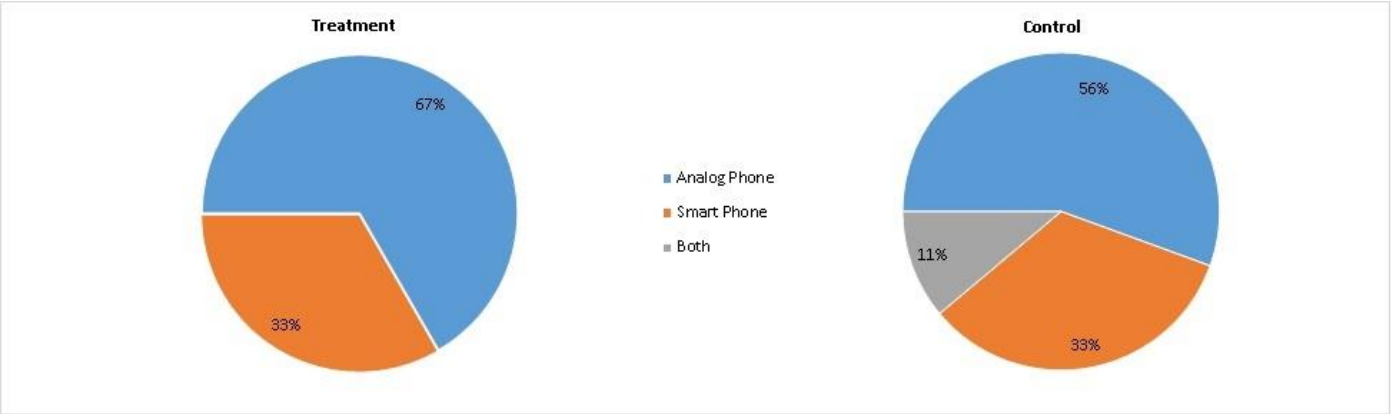
The teachers' educational background and qualifications differ minimally between treatment and control groups, as evidenced in Figure 2. Of treatment group teachers, 39 percent have a primary diploma, 22 percent have a primary teacher's certificate, and 17 percent have both. In the treatment group, 47 percent have a primary teacher's certificate, 32 percent have a primary diploma, and 16 percent have both. No teachers in the control group have a BA in education, while 5 percent in the treatment group do.

Figure 2: Educational Background of Teachers by Treatment Group



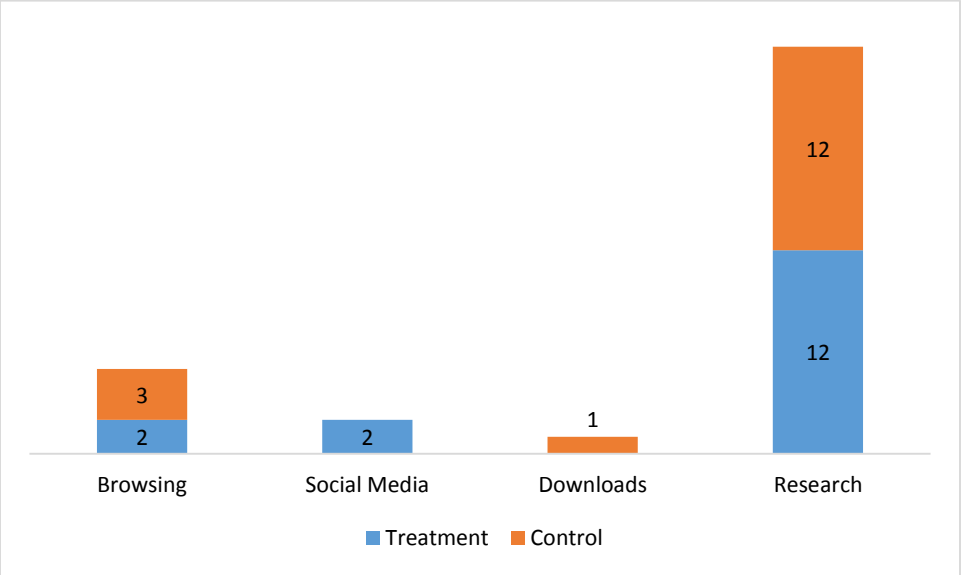
As seen in Figure 3 below, for both treatment and control groups, the majority of teachers have analog phones – 67 percent in the treatment group and 56 percent in the control group. Because GG is administered on smart phones, even though smart phones were provided for the project, this may have implications on teachers' ability to utilize the game.

Figure 3: Mobile Phone Ownership by Treatment Group



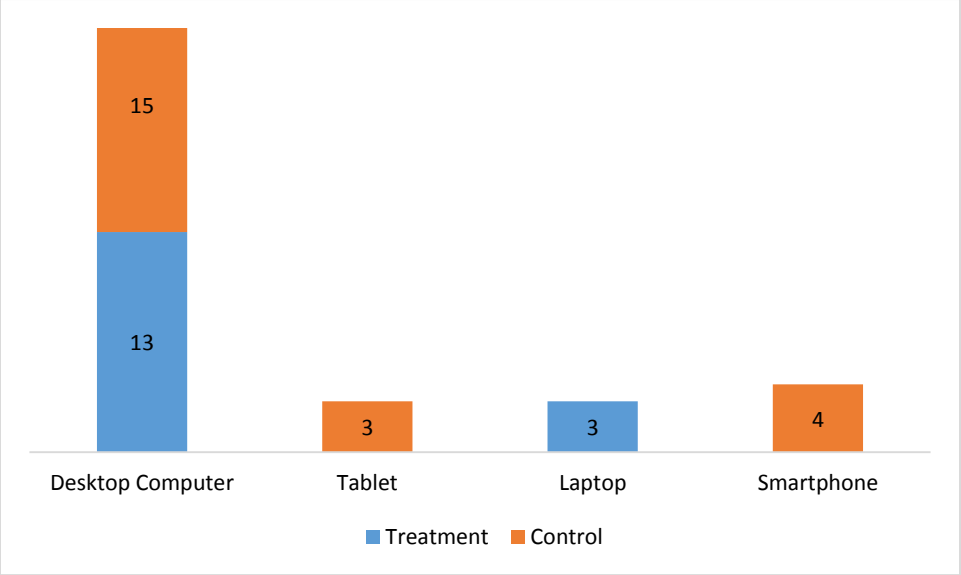
Teachers were also asked about their use of internet at baseline, as one of the components of the GG-TTS requires teachers to access online materials. Results are presented in Figure 4. A majority of the teachers reported using internet before, and equal numbers of teachers from the treatment and control groups reported using the internet for research purposes, which is the highest usage category reported. Five teachers said they use the internet for browsing, two for social media, and one for downloads.

Figure 4: Internet Use by Treatment Group



In addition to internet usage, teachers responded to questions about the type of ICT equipment they utilize in their schools. The majority of teachers who report using ICT equipment in schools use desktop computers, followed by smartphones, tablets and laptops (see Figure 5). It should be noted that seven teachers – two in the treatment group and five in the control group – reported that they did not use any type of ICT equipment in their school.

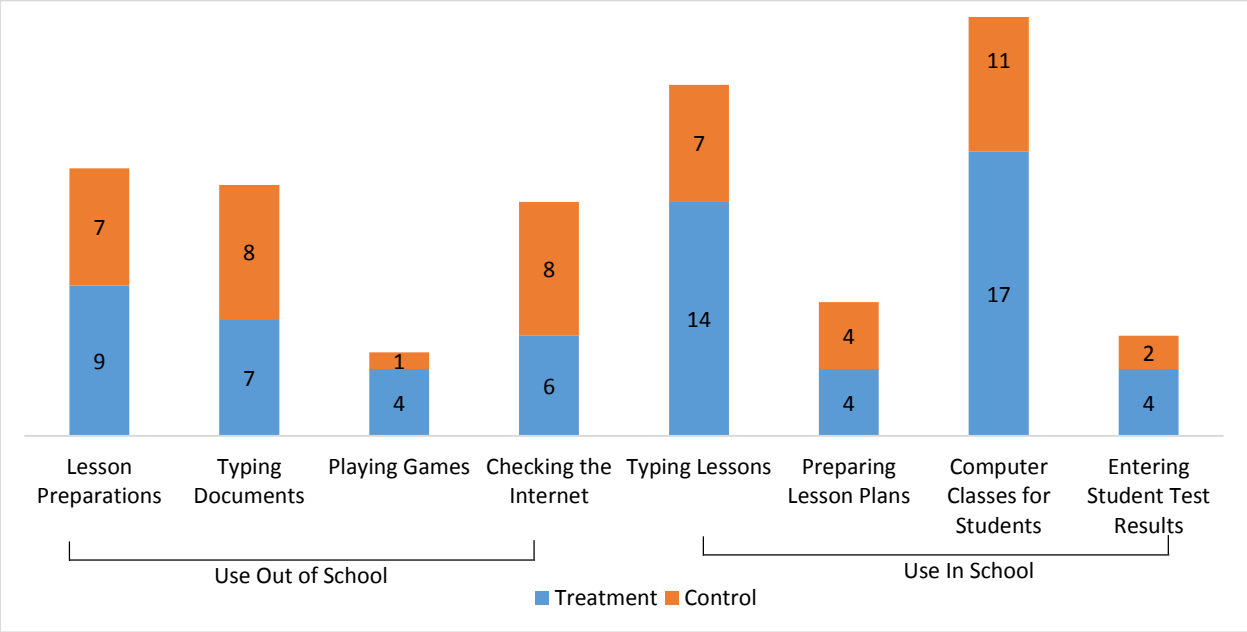
Figure 5: ICT Equipment Use in Schools by Treatment Group



Results in Figure 6 show teachers' purpose for using ICT equipment both in school and out of school. Overall, teachers use ICT equipment most often to provide computer classes for their students, followed by typing lesson plans. The most frequent reasons for ICT equipment use

outside of their schools is for lesson preparations and for typing documents. Teachers use ICT equipment least often for playing games.

Figure 6: ICT Equipment Purpose by Treatment Group



IX. Conclusions and Recommendations

The results presented in this baseline report suggest that the target population lacks the foundational skills necessary to read with fluency and comprehension. The following recommendations build on that knowledge by focusing on the key next steps to improving children's understanding of how print works as well as their letter-sound identification and decoding skills, which are needed to improve rates of fluency and comprehension.

1. **Reinforce foundational reading skills.** Work with schools and families to focus on the mechanics of reading to reinforce student knowledge of how to hold a book, which word to read first, etc. (orientation to print). Build on that with an emphasis on the basic components of reading: letter-sounds, decoding, and reading comprehension.
2. **Provide ongoing teacher training on literacy support for early grades.** Reading with fluency and comprehension is the culmination of mastering many foundational skills, which students are introduced to from the early grades. By training teachers to teach these initial skills, including orientation to print, letter-sounds, and decoding, and then transitioning into reading and listening comprehension, early grade students can build the core understanding needed to read fluently.
3. **Provide additional ICT training for teachers.** Training could help fill the gap in knowledge that teachers may be experiencing with regards to using ICT. However, more information on the specific training needs is needed. For example, specific information on their level of knowledge in the use of applications such Microsoft Word or how to search

for information on the internet should be collected. Teachers in the study indicated that they used the internet for browsing and searching for information. It will be important to know what kind of information they search for and how exactly they browse, for example what search engines they use. This will provide a more accurate understanding of the kind and extent of ICT knowledge the teachers possess. Only then can an effective, needs based, ICT training program be designed.

X. Annexes

Annex A: EGRA Adaptation Workshop Agenda

AGORA EGRA Assessor Training and Piloting Agenda
January 18 – 22, 2015

January 14-15th
Agora conducts a GraphoGame training for Research Assistants. (STS observes)

Week 1: Assessor Training

Date	Activity
Mon., Jan 18	Welcome, ACR GCD and EGRA Overview, Introduction to Tangerine and Tablets
Tues., Jan 19	Assessor Training- Surveys, Grids, and Question Tools
Wed., Jan 20	Assessor Training- Surveys, Grids, and Question Tools (Cont.)
Thurs., Jan 21	Pilot EGRA in Schools
Fri., Jan 22	Interrater Reliability and Logistics for Field Work

Week 2: Begin Data Collection

Date	Activity
Mon., Jan 25	Data collection in Katete (STS Observes)
Tues., Jan 26	Data collection in Katete (STS Observes)
Wed., Jan 27	Data collection continues independently

Annex B: Statistics by EGRA Subtask

Sample Descriptive Statistics

Distribution of gender by treatment group

Group	Sex		Total
	Male	Female	
Control	123	157	280
	43.93%	56.07%	100%
Treatment	112	183	295
	37.97%	62.03%	100%
Total	235	340	575
	40.87%	59.13%	100%

Age by treatment group

Group	N	Mean	SD	Min	Max
Control	231	9.07	1.26	7	12
Treatment	257	8.91	1.26	7	12
Total	488	8.99	1.26	7	12

The difference between control and treatment group is not statistically significant (t=1.35, d.f=486, p=0.176).

Orientation to Print

Number of correct answer by group

Group	N	Mean	SD	Min	Max
Control	280	1.53	1.18	0	3
Treatment	295	1.43	1.21	0	3
Total	575	1.47	1.19	0	3

The difference between control and treatment group is not statistically significant (t=0.98, d.f.=573, p=0.325).

Number of correct answers by gender

Group	N	Mean	SD	Min	Max
Control					
Male	123	1.62	1.19	0	3
Female	157	1.45	1.16	0	3
Treatment					
Male	112	1.51	1.19	0	3
Female	183	1.38	1.22	0	3

ANOVA results

	F	d.f.	p
Group	0.83	1, 571	0.364
Gender	2.16	1, 571	0.142
Group X Gender	0.03	1, 571	0.868

Proportion of zero score by group

	N	%
Control	76	27.14%
Treatment	94	31.86%
Total	170	29.57%

The difference between control and treatment group is not statistically significant (chi2=1.538, d.f.=1, p=0.215).

Proportion of zero score by gender

	N	%
Control		
Male	31	25.20%
Female	45	28.66%
Treatment		
Male	31	27.68%
Female	63	34.43%

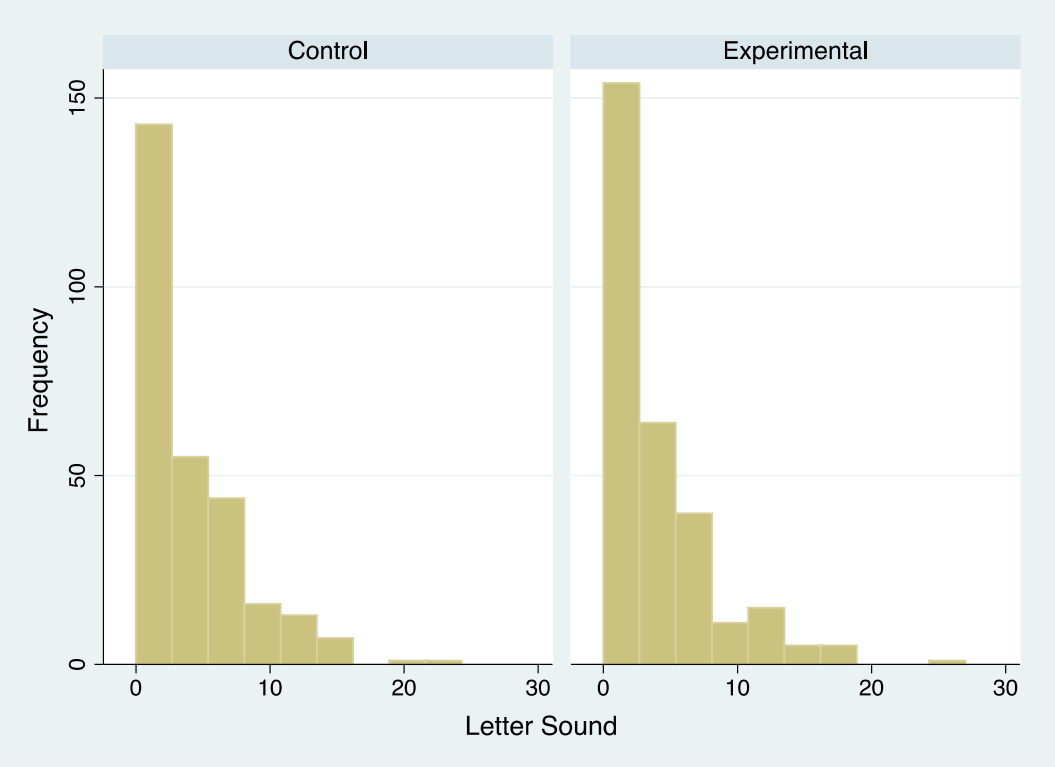
The difference between male and female is not statistically for control group (chi2=0.417, d.f.=1, p=0.518) and treatment group (chi2=1.457, d.f.=1, p=0.227).

Letter-sound Knowledge

Number of correct answers by group

Group	N	Mean	SD	Min	Max
Control	280	3.69	4.19	0	22
Treatment	295	3.59	4.42	0	27
Total	575	3.64	4.30	0	27

The difference between control and treatment group is not statistically significant (t=0.277, d.f.=573, p=0.782).



Number of correct answers by gender

Group	N	Mean	SD	Min	Max
Control					
Male	123	3.99	4.08	0	15
Female	157	3.46	4.26	0	22
Treatment					
Male	112	3.17	4.22	0	27
Female	183	3.85	4.53	0	18

ANOVA results

	F	d.f.	p
Group	0.34	1, 571	0.559
Gender	0.04	1, 571	0.838
Group X Gender	2.76	1, 571	0.097

Number of items attempted by group

Group	N	Mean	SD	Min	Max
Control	280	14.87	6.98	1	48
Treatment	295	15.51	9.11	2	100
Total	575	15.2	8.14	1	100

Number of items attempted by gender

	N	Mean	SD	Min	Max
Control					
Male	123	15.39	6.93	7	42
Female	157	14.46	7.01	1	48
Treatment					
Male	112	14.94	10.89	7	100
Female	183	15.86	7.84	2	50

Proportion of zero score by group

	N	%
Control	97	34.64%
Treatment	113	38.31%
Total	210	36.52%

The difference between control and treatment group is not statistically significant (chi2=0.831, d.f.=1, p=0.362)

Proportion of zero score by gender

	N	%
Control		
Male	38	30.89%
Female	59	37.58%
Treatment		
Male	44	39.29%
Female	69	37.70%

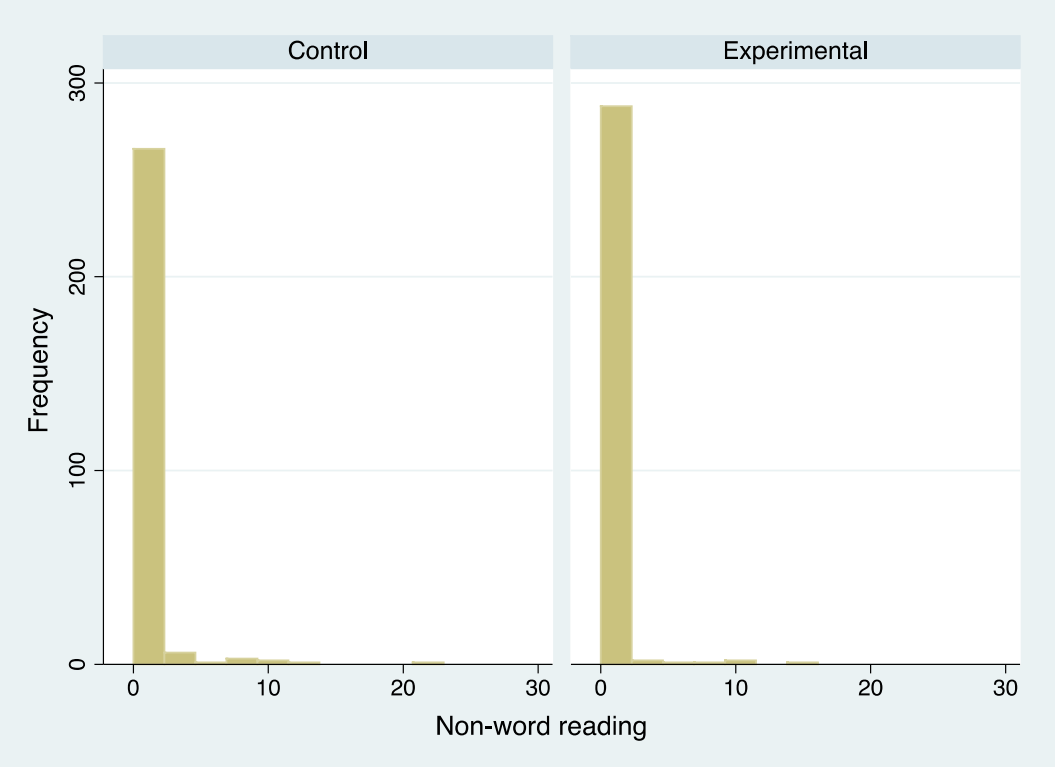
The difference between gender is not statistically significant for control group (chi2=1.361, d.f.=1, p=0.243) and treatment group (chi2=0.074, d.f.=1, p=0.786)

Nonword Reading

Number of correct answers by group

Group	N	Mean	SD	Min	Max
Control	280	0.42	2.04	0	23
Treatment	295	0.26	1.42	0	15
Total	575	0.33	1.75	0	23

The difference between control and treatment group is not statistically significant (t=1.098, d.f.=573, p=0.273)



Number of correct answers by gender

	N	Mean	SD	Min	Max
Control					
Male	123	0.39	1.68	0	13
Female	157	0.44	2.29	0	23
Treatment					
Male	112	0.38	1.99	0	15
Female	183	0.19	0.90	0	9

ANOVA results

	F	d.f.	p
Group	0.82	1, 571	0.367
Gender	0.22	1, 571	0.639
Group X Gender	0.64	1, 571	0.424

Number of items attempted by group

Group	N	Mean	SD	Min	Max
Control	280	5.31	1.59	3	23
Treatment	295	5.36	1.69	1	18
Total	575	5.33	1.65	1	23

Number of items attempted by gender

	N	Mean	SD	Min	Max
Control					
Male	123	5.30	1.38	4	17
Female	157	5.31	1.76	3	23
Treatment					
Male	112	5.44	1.96	5	18
Female	183	5.31	1.51	1	16

Proportion of zero score by group

	N	%
Control	258	92.14%
Treatment	273	92.54%
Total	531	92.35%

The difference between control and treatment group is not statistically significant (ch2=0.032, d.f.=1, p=0.857)

Proportion of zero score by gender

	N	%
Control		
Male	112	91.06%
Female	146	92.99%
Treatment		
Male	105	93.75%
Female	168	91.80%

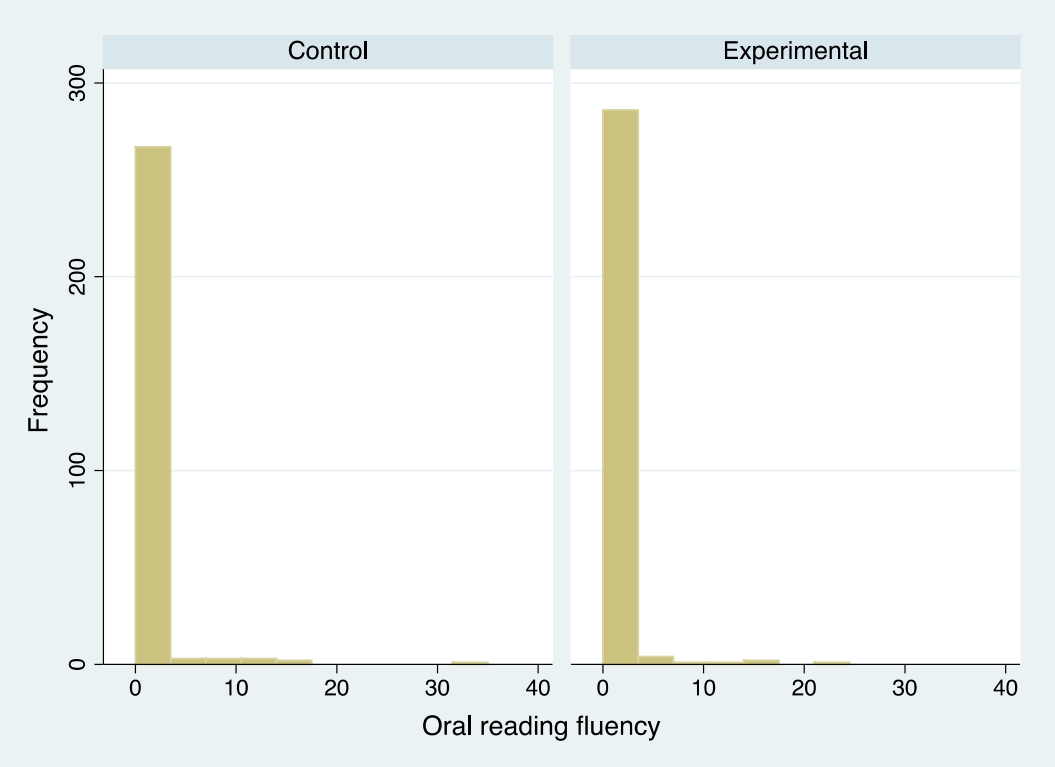
The difference between male and female is not statistically significant for control group (chi2=0.358, d.f.=1, p=0.550) and treatment group (chi2=0.382, d.f.=1, p=0.537)

Oral Reading Fluency (ORF)

Number of correct answers by group

Group	N	Mean	SD	Min	Max
Control	279	0.64	2.91	0	35
Treatment	295	0.43	2.07	0	23
Total	574	0.54	2.51	0	35

The difference between control and treatment group is not statistically significant (t=0.985, d.f.=573, p=0.325)



Number of correct answers by gender

	N	Mean	SD	Min	Max
Control					
Male	123	0.55	2.14	0	14
Female	156	0.71	3.39	0	35
Treatment					
Male	112	0.57	2.96	0	23
Female	183	0.35	1.25	0	12

ANOVA results

	F	d.f.	p
Group	0.63	1, 570	0.426
Gender	0.02	1, 570	0.879
Group X Gender	0.80	1, 570	0.371

Number of items attempted by group

Group	N	Mean	SD	Min	Max
Control	279	10.05	2.47	3	35
Treatment	295	9.87	1.78	1	23
Total	574	9.96	2.14	1	35

Number of items attempted by gender

	N	Mean	SD	Min	Max
Control					
Male	123	9.89	1.45	4	15
Female	156	10.18	3.04	3	35
Treatment					
Male	112	10.09	1.84	5	23
Female	183	9.74	1.72	1	20

Proportion of zero score by group

	N	%
Control	242	86.43%
Treatment	260	88.14%
Total	502	87.30%

The difference between control and treatment group is not statistically significant (chi2=0.378, d.f.=1, p=0.539)

Proportion of zero score by gender

	N	%
Control		
Male	105	85.37%
Female	137	87.26%
Treatment		
Male	104	92.86%
Female	156	85.25%

The difference between male and female students is not statistically significant for control group (chi2=0.211, d.f.=1, p=0.646). But it is statistically significant for treatment group (chi2=3.849, d.f.=1, p=0.050)

Reading Comprehension

Number of correct answers by group

Group	N	Mean	SD	Min	Max
Control	280	0.06	0.34	0	4
Treatment	295	0.05	0.23	0	2
Total	575	0.06	0.29	0	4

The difference between control and treatment group is not statistically significant (t=0.696, d.f.=573, p=0.487)

Number of correct answers by gender

	N	Mean	SD	Min	Max
Control					
Male	123	0.07	0.31	0	2
Female	157	0.06	0.37	0	4
Treatment					
Male	112	0.04	0.25	0	2
Female	183	0.05	0.22	0	1

ANOVA results

	F	d.f.	p
Group	0.50	1, 571	0.479
Gender	0.00	1, 571	0.949
Group X Gender	0.01	1, 571	0.905

Number of items attempted by group

Group	N	Mean	SD	Min	Max
Control	280	0.24	0.56	0	4
Treatment	295	0.19	0.47	0	2
Total	575	0.21	0.52	0	4

Number of items attempted by gender

	N	Mean	SD	Min	Max
Control					
Male	123	0.23	0.51	0	2
Female	157	0.24	0.59	0	4
Treatment					
Male	112	0.18	0.49	0	2
Female	183	0.20	0.47	0	2

Proportion of zero score by group

	N	%
Control	267	95.36%
Treatment	282	95.59%
Total	549	95.48%

The difference between control and treatment group is not statistically significant (chi2=0.019, d.f.=1, p=0.892)

Proportion of zero score by gender

	N	%
Control		
Male	117	95.12%
Female	150	95.54%
Treatment		
Male	108	96.43%
Female	174	95.08%

The difference between male and female is not statistically significant for the control group (chi2=0.027, d.f.=1, p=0.869) and the treatment group (chi2=0.299, d.f.=1, p=0.584)

Listening Comprehension

Number of correct answers by group

Group	N	Mean	SD	Min	Max
Control	280	2.74	1.06	0	5
Treatment	295	2.86	1.10	0	5
Total	575	2.80	1.08	0	5

The difference between control and treatment group is not statistically significant (t=-1.386, d.f.=573, p=0.166)

Number of correct answers by gender

	N	Mean	SD	Min	Max
Control					
Male	123	2.74	1.04	0	5
Female	157	2.74	1.08	0	5
Treatment					
Male	112	2.85	1.07	1	5
Female	183	2.87	1.12	0	5

ANOVA results

	F	d.f.	p
Group	1.75	1, 571	0.186
Gender	0.02	1, 571	0.892
Group X Gender	0.02	1, 571	0.883

Proportion of zero score by group

	N	%
Control	3	1.07%
Treatment	1	0.34%
Total	4	0.70%

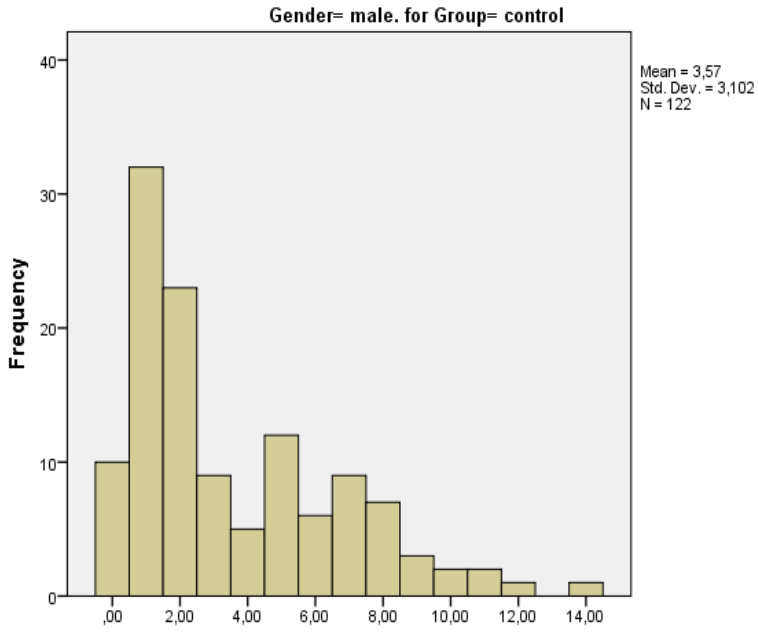
The difference between control and treatment group is not statistically significant (chi2=1.116, d.f.=1, p=0.291)

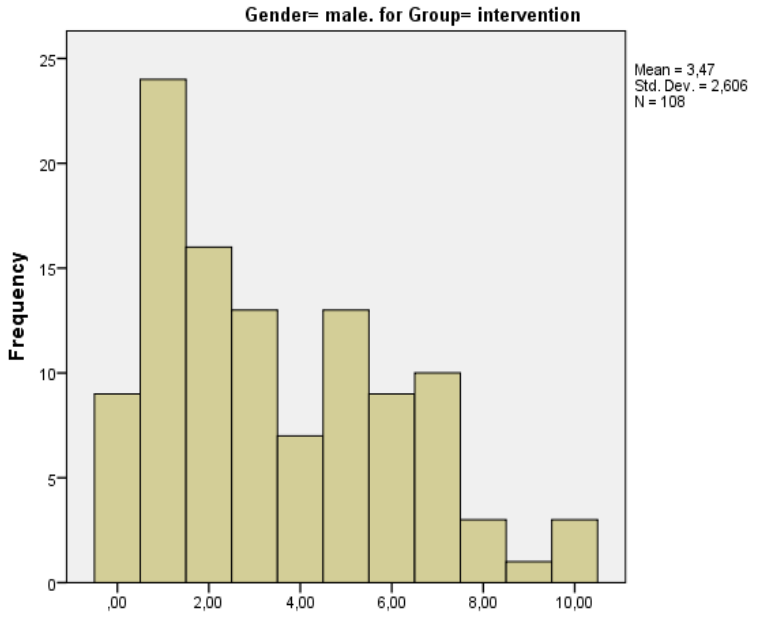
Proportion of zero score by gender

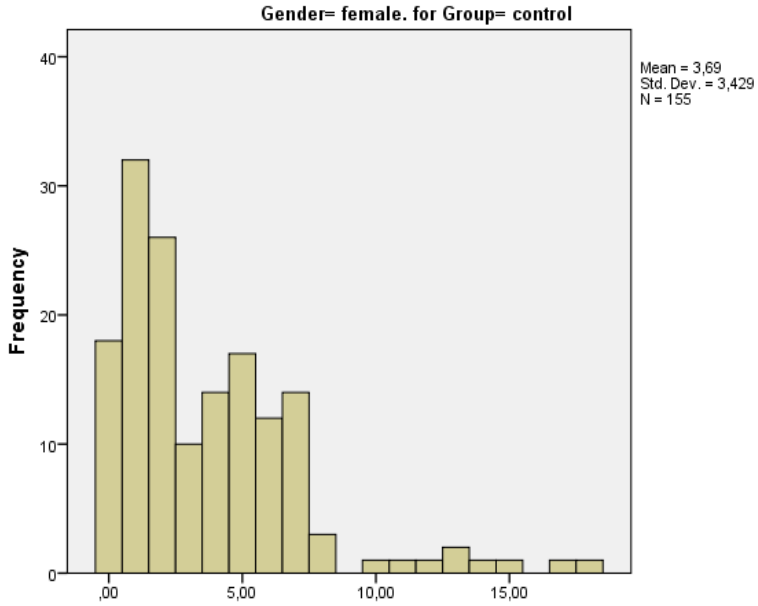
	N	%
Control		
Male	1	0.81%
Female	2	1.27%
Treatment		
Male	0	0%
Female	1	0.55%

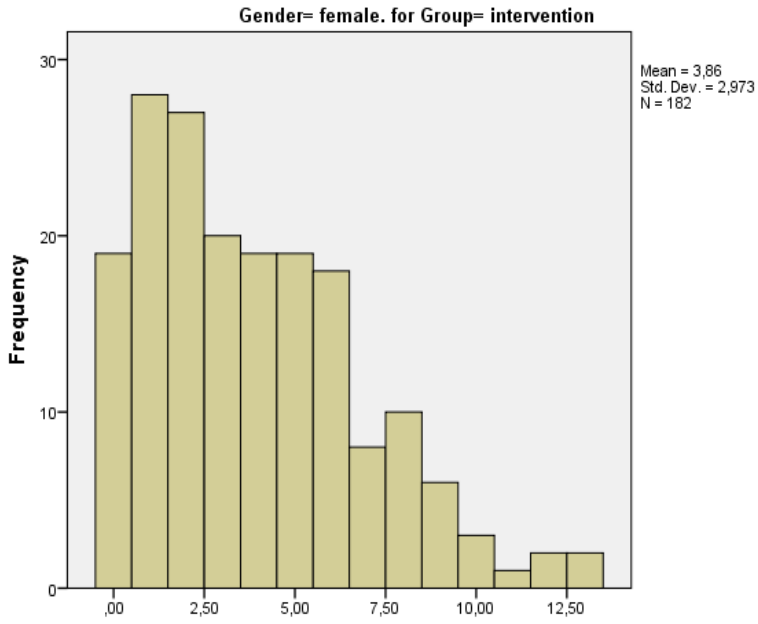
The difference between male and female is not statistically significant for the control group (chi2=0.138, d.f.=1, p=0.710) and the treatment group (chi2=0.614, d.f.=1, p=0.433)

GG Letter-sound

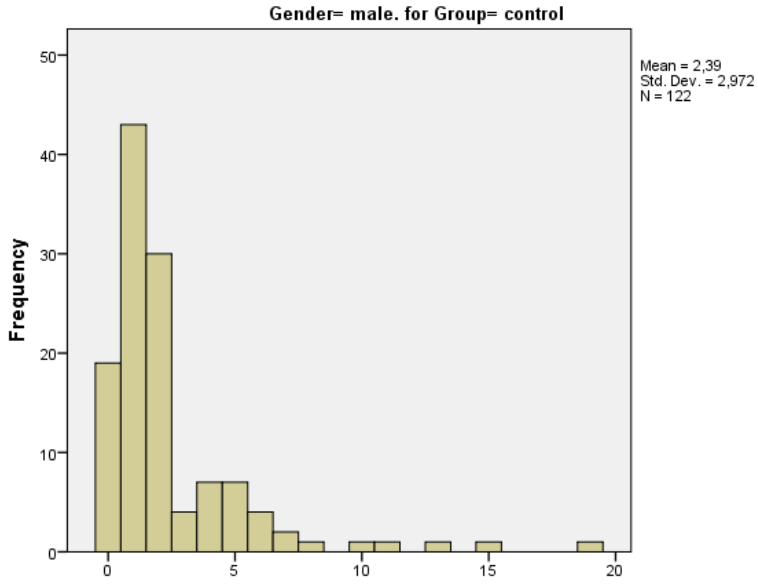


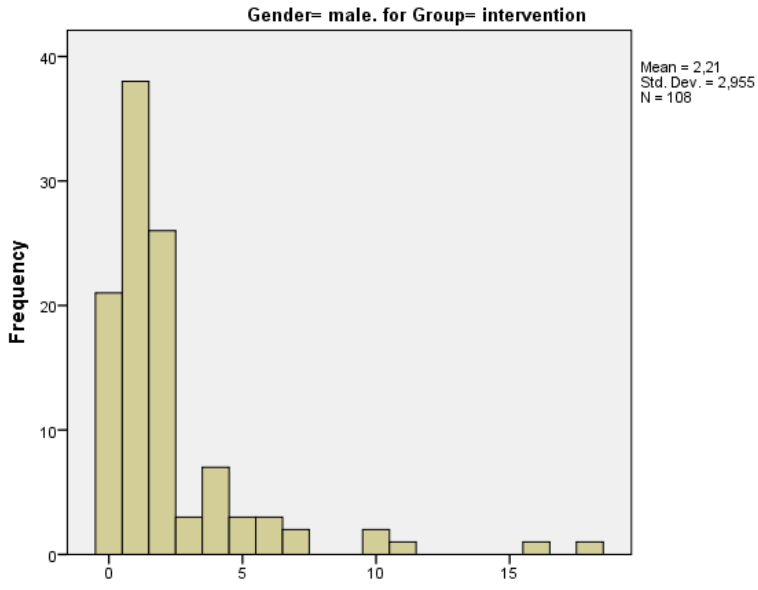

Gender= male. for Group= intervention
Mean = 3,47
Std. Dev. = 2,606
N = 108
Frequency
25
20
15
10
5
0
,00
2,00
4,00
6,00
8,00
10,00

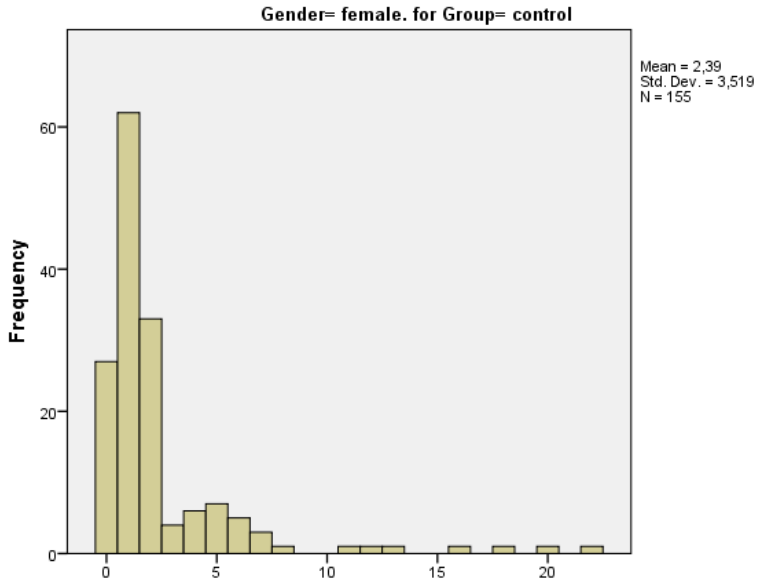

Gender= female. for Group= control
Mean = 3,69
Std. Dev. = 3,429
N = 155
Frequency
40
30
20
10
0
,00
5,00
10,00
15,00

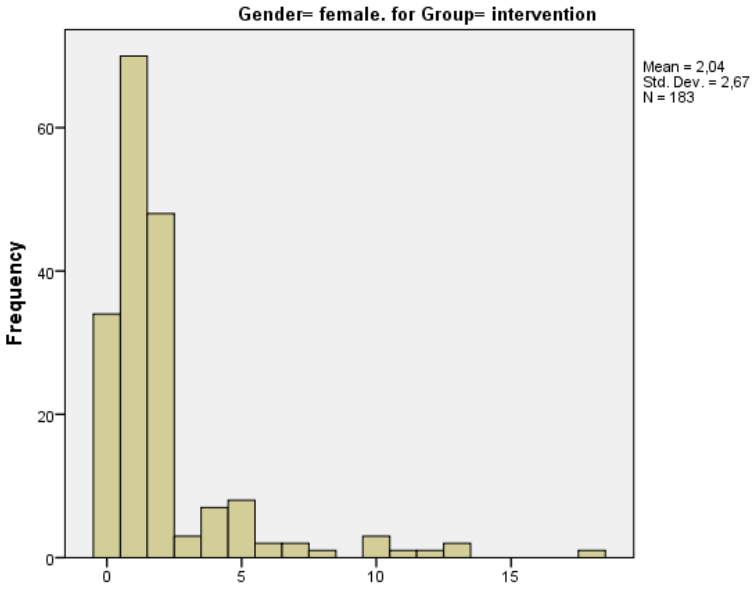


GG Word Recognition




Gender= male. for Group= intervention
Mean = 2,21
Std. Dev. = 2,955
N = 108
Frequency
40
30
20
10
0
0
5
10
15


Gender= female. for Group= control
Mean = 2,39
Std. Dev. = 3,519
N = 155
Frequency
60
40
20
0
0
5
10
15
20


Gender= female. for Group= intervention
Mean = 2,04
Std. Dev. = 2,67
N = 183
Frequency
60
40
20
0
0
5
10
15

Annex C: Item Statistics by EGRA Subtask

Orientation to Print

Variable	Difficulty	Discrimination
Item 1	.5773913	0.5445
Item 2	.5008696	0.5372
Item 3	.3965217	0.5541
Cronbach's alpha		0.724

Letter-sound Knowledge

Variable	Difficulty	Discrimination
Item 1	.2904348	0.5496
Item 2	.0452174	0.2798
Item 3	.2608696	0.4267
Item 4	.0678261	0.2983
Item 5	.0504348	0.3869
Item 6	.2469565	0.4820
Item 7	.4713043	0.5769
Item 8	.0313043	0.1854
Item 9	.266087	0.5665
Item 10	.3826087	0.5121
Item 11	.1043478	0.4127
Item 12	.0504348	0.3179
Item 13	.0730435	0.3101
Item 14	.2747826	0.6036
Item 15	.0782609	0.4324
Item 16	.0504348	0.3735
Item 17	.1808696	0.5449
Item 18	.0869565	0.4681
Item 19	.1721739	0.5737
Item 20	.0313043	0.2682
Item 21	.0278261	0.3296
Item 22	.0104348	0.3137
Item 23	.0834783	0.5298
Item 24	.0591304	0.4857
Item 25	.0556522	0.4885
Item 26	.0347826	0.3703
Item 27	.066087	0.4440
Item 28	.0086957	0.2578
Item 29	.0121739	0.2324
Item 30	.0034783	0.1220
Item 31	.0034783	0.0876
Item 32	.0017391	0.0813

Item 33	.013913	0.2155
Item 34	.0069565	0.1048
Item 35	0	0
Item 36	.0017391	0.0813
Item 37	.0069565	0.1341
Item 38	0	0
Item 39	0	0
Item 40	0	0
Item 41	0	0
Item 42	.0086957	0.1305
Item 43	0	0
Item 44	0	0
Item 45	0	0
Item 46	.0052174	0.1188
Item 47	.0069565	0.1048
Item 48	.0034783	0.1289
Item 49	0	0
Item 50	0	0
Item 51	0	0
Item 52	0	0
Item 53	0	0
Item 54	0	0
Item 55	0	0
Item 56	0	0
Item 57	0	0
Item 58	0	0
Item 59	0	0
Item 60	.0034783	0.0156
Item 61	0	0
Item 62	0	0
Item 63	0	0
Item 64	0	0
Item 65	0	0
Item 66	0	0
Item 67	0	0
Item 68	0	0
Item 69	0	0
Item 70	0	0
Item 71	0	0
Item 72	0	0
Item 73	0	0
Item 74	0	0

Item 75	0	0
Item 76	0	0
Item 77	0	0
Item 78	0	0
Item 79	0	0
Item 80	0	0
Item 81	0	0
Item 82	0	0
Item 83	0	0
Item 84	0	0
Item 85	0	0
Item 86	0	0
Item 87	0	0
Item 88	0	0
Item 89	0	0
Item 90	0	0
Item 91	0	0
Item 92	0	0
Item 93	0	0
Item 94	0	0
Item 95	0	0
Item 96	0	0
Item 97	0	0
Item 98	0	0
Item 99	0	0
Item 100	.0017391	0.0255
Cronbach's Alpha		0.870

Nonword Reading

Variable	Difficulty	Discrimination
Item 1	.04	0.6555
Item 2	.0295652	0.7885
Item 3	.0243478	0.6639
Item 4	.0573913	0.5873
Item 5	.0121739	0.4847
Item 6	.026087	0.7687
Item 7	.0226087	0.7435
Item 8	.0208696	0.7992
Item 9	.0226087	0.7588
Item 10	.013913	0.7842
Item 11	.013913	0.7276
Item 12	.0052174	0.5081

Item 13	.0069565	0.7021
Item 14	.0069565	0.7021
Item 15	.0069565	0.7021
Item 16	.0086957	0.7173
Item 17	.0052174	0.6094
Item 18	.0034783	0.5394
Item 19	.0017391	0.5238
Item 20	.0017391	0.5238
Item 21	.0017391	0.5238
Item 22	.0017391	0.5238
Item 23	.0017391	0.5238
Item 24	0	0
Item 25	0	0
Item 26	0	0
Item 27	0	0
Item 28	0	0
Item 29	0	0
Item 30	0	0
Item 31	0	0
Item 32	0	0
Item 33	0	0
Item 34	0	0
Item 35	0	0
Item 36	0	0
Item 37	0	0
Item 38	0	0
Item 39	0	0
Item 40	0	0
Item 41	0	0
Item 42	0	0
Item 43	0	0
Item 44	0	0
Item 45	0	0
Item 46	0	0
Item 47	0	0
Item 48	0	0
Item 49	0	0
Item 50	0	0
Cronbach's alpha		0.934

Reading Comprehension

Variable	Difficulty	Discrimination
Item 1	.0452174	0.3328
Item 2	.0069565	0.5099
Item 3	.0017391	0.4587
Item 4	.0017391	0.4587
Item 5	0	0
Cronbach's alpha		0.482

Listening Comprehension

Variable	Difficulty	Discrimination
Item 1	.1826087	0.0962
Item 2	.9669565	0.0822
Item 3	.6208696	0.1512
Item 4	.5426087	0.2001
Item 5	.4904348	0.1144
Cronbach's alpha		0.2728

Annex D: Baseline EGRA Instrument

Baseline Egra Jan 2016

Last Updated: 1453650233000

Enumerator Name

Start Time

Date

Time

GG_ID

SchoolName

StudentID

Verbal Consent

It is important to establish a playful and relaxed rapport with the child. The child should perceive the assessment almost as a game to be enjoyed rather than a severe situation. It is important to read the directions slowly and clearly. After you have finished, thank the child for their time and effort.

Uli bwanji. Dzina langa ndine…….. ndipo ndikhala ku……..... Ndingakonde kukuuza za moyo wanga. Good morning. My name is ____ and I live in _____. I'd like to tell you a little bit about myself.

[Number and ages of children; favourite sport, radio or television program, etc.]

1. **Kodi umakonda kucita ciani ngati siuli mu sukulu?** What do you like to do when you are not in school?

   [Wait for response; if pupil is reluctant, ask question 2, but if they seem comfortable continue to verbal consent].

2. **Kodi ndi masewera otani amene umakonda kusewera?** What games do you like to play?

(READ THE FOLLOWIG WORD-FOR-WORD)

Ndifuna kukuuza cifukwa cake ndabwera kuno lero. Ndigwira nchito pa sukulu yama phunziro apamwamba ya mu Zambia (University of Zambia). Ndipo tikufuna kumvetsetsa mmene ana amaphunzirira kuwerenga. Iwe wasankhidwa mwamwai. Let me tell you why I am here today. I work with the University of Zambia and we are trying to understand how children learn to read. You were picked by chance.
Ndifuna thandizo lako pa nkhaniyi. Koma suyenera kutengako mbali ngati sufuna. We would like your help in this. But you do not have to take part if you do not want to.

Ife tizachita sewero la kuwerenga. Ine ndizakufunsa kuwerenga malembo, mau ndi ka nthano kakafupi mokweza mau. Ndizakufunsanso kuzindikira ndi kuyankha mafunso ocepa. We are going to play a reading game. I am going to ask you to read letters, words and a short story out loud.

Mwakugwiritsa nchito lamya iyi , ndizaiemba mayakho ako . I am going to use this "phone" to record your answers.
Zimene tizachita pano si mayeso ndipo sizidzakhudza maphunzilo ako pasukulu lino. This is NOT a test and it will not affect your grade at school.
Ndizakufunsanso mafunso ena monga kumene umayeselera kuwerenga ndiponso ngati ukonda kuwerenga. I will also ask you other questions about where you practice reading and whether you like it.

Kaciwirinso, sungatengeko mbali ngati sufuna kutero. Tikayamba kufunsa mafunso, ngati siufuna kuyankha funso ungakhale cete, zilibwino cabe. Once again, you do not have to participate if you do not wish to. Once we begin, if you would rather not answer a question, that's all right.
Kodi uli ndi mafunso alionse? Do you have any questions?

Kodi uvomela kutengako mbali musewero iyi? Would you like to participate?

Kodi wakonzeka kuti tiyambe? Are you ready to get started?

(If verbal consent is not given, thank the child and move on to the next child.)

Check box if verbal consent is given: ☐

Demographics

Name

Age

☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12 ☐ Other

Grade

☐ G2 ☐ Other

Sex

☐ Male ☐ Female

Student Language Information

1. Nanga Cinyanja umvela? (Do you understand ciNyanja?)

☐ sinimvela olo pang'ono (no) ☐ nimvela pang'ono (a little) ☐ nimvela maningi (yes- a lot)

2. Nanga Cinyanja ukamba? (Do you speak ciNyanja?)

☐ sinikamba olo pang'ono (no) ☐ nikamba pang'ono (a little) ☐ nikamba maningi (yes- a lot)

3. Umakamba chitundu bwanji namakolo ako kunyumba? (What language do you speak with your parents at home?)

☐ Nyanja ☐ Bemba ☐ Tonga ☐ Lozi ☐ Luvale ☐ Lunda ☐ Kikaonde ☐ English ☐ Other

4. Ngati usewera na anzako kunyumba, mumakamba chitundu bwanji? (When you are playing with your friends at home, what language do you use?)

☐ Nyanja ☐ Bemba ☐ Tonga ☐ Lozi ☐ Luvale ☐ Lunda ☐ Kikaonde ☐ English ☐ Other

5. Umakamba chitundu bwanji kambiri ngati ukamba na a teacher kusukulu? (What language do you speak with your teacher at school?)

☐ Nyanja ☐ Bemba ☐ Tonga ☐ Lozi ☐ Luvale ☐ Lunda ☐ Kikaonde ☐ English ☐ Other

Continue/Abort

Continue

☐ Continue

Continue/Abort2

Continue

☐ Continue

Orientation to Print

Show the child a story passage in the pupil stimuli packet. Read the instructions in the gray boxes below, provide the child 10 seconds to respond, recording the child's response before moving to the next instruction. If the child doesn't respond in the 10 seconds, mark as no response and move on.

Sindifuna kuti uwerenge tsopano. Pa pepala iri, ungayambire kuti kuwerenga? Ndionetse ndi cala cako.

[I don't want you to read this now. On this page, where would you begin to read? Show me with your finger.]

([Child puts finger on the top row, left-most word])

☐ Correct ☐ Incorrect ☐ No response

Tsopano ndionetse mbali imene udzawerenga motsatira.

[Now show me in which direction you would read next.]

([Child moves finger from left to right.])

☐ Correct ☐ Incorrect ☐ No response

Ukafika kotsirizira kwa mzere, udzawerenga kuti motsatira?

[When you get to the end of the line, where would you read next?]

([Child moves finger to left-most word of second line])

☐ Correct ☐ Incorrect ☐ No response

Letter Sound Knowledge

Pano ndili ndi tsamba limene liri ndi malembo a alifabeti ya muchinyanja. Coonde ndiuze MAMVEKERO a malembo a alifabeti amene ungathe kuwerenga. Usanene maina ake. Koma mvekero zake. Here is a page full of letters of the Chinyanja alphabet. Please tell me the SOUNDS of as many letters of the alphabet as you can. Not their names, but their sounds.

[point to the letter A] **Mwacitsanzo, mvekero la lembo ili ndi /a/.** For example, the sound of this letter is /a/.

[point to the letter p] **Tiye tiyese: ndiuze mvekero la lembo ili:** Let's practice: Tell me the sound of this letter.

Correct: Cabwino, mvekero la lembo ili ndi /p/ Good, the sound of this letter is /p/.

Incorrect: Mvekero la lembo ili ndi /p/ The sound of this letter is /p/.

[point to the letter L] **Tsopano tiye tiyese lembo lina. Ndiuze mvekero la lembo ili.** Now let us try another one. Tell me the sound of this letter.

Correct: Cabwino, mvekero la lembo ili ndi /l/. Good, the sound of this letter is /l/.

Incorrect: Mvekero la lembo ili ndi /l/. The sound of this letter is /l/.

[point to first letter] **Ndikanena kuti "yamba", uyambire apa ndi kupitiriza mopingasa tsamba ili. Lata pa lembo lirilonse ndipo ndiuze mvekero la lembo limenelo mmau okweza. Uwerenge mwamsanga ndiponso modekha. Ndizakhala cete ndi kumvelera iwe pamene uli kuwelenga. Ngati wafika pa lembo limene sudziwa, pitiriza kupita ku lembo lotsatira. Ika cala cako pa lembo loyamba. Wakonzeka? Yamba**. When I say "Begin," start here and go across the page. Point to each letter and tell me the sound of that letter in a loud voice. Read as quickly and carefully as you can. I will remain silent and listen while you read. If you come to a letter you do not know, go on to the next letter. Put your finger on the first letter. Ready? Begin.

m	N	K	I	d	k	A	J	m	u
C	d	b	o	L	I	U	K	A	w
G	n	a	e	s	E	A	D	I	g
I	r	A	a	v	f	A	T	W	i
D	a	t	L	N	a	A	M	i	Y
t	u	z	N	i	I	N	k	e	O
u	Z	P	i	U	N	i	M	i	I
A	p	A	a	B	W	T	k	c	M
a	w	N	m	E	R	a	A	h	a
n	A	o	I	O	n	a	U	T	S

Time Remaining

Autostop? ☐

Non-word Decoding

Apa pali mau opangidwa mcinyanja. Ndifuna kuti uwerenge mau amene ungakwanitse kuwerenga, Uwerenge mau awa osati masipelo. Here are some made-up words in Chinyanja. I would like you to read as many as you can. Do not spell the words, but read them.

[point to the word "oli"] **Mwacitsanzo, liu lopangidwa ili ndi: "oli"** For example, this made-up word is: "oli".

[point to the word "koki"] **Tiye tiyese: conde werenga liu ili.** Let's practice: Please read this word.

Correct: **wacita bwino. Liu ili ndi "koki"** Good, This made-up word is "koki."

Incorrect: **Liu lopangidwa ili ndi "koki"** This made-up word is "koki."

[point to the word "cota"] **Tsopano tiye tiyese liu lina: conde werenga liu ili:** Now let us try another one. Please read this word.

Correct: **wacita bwino, liu lopangidwa ili ndi "cota"** Good, This made-up word is "cota."

Incorrect: **Liu lopangidwa ili ndi "cota"** This made-up word is "cota."

[point to first word] **Ndikanena kuti "yamba" uyambire apa ndipo uwerenge mopingasa patsamba ili. Lata liu lirilonse ndipo uliwerenge mokweza mau. Uwerenge mofulumira ndi mosamala mmene ungakwanitsire. Ndizakhala cete ndi kumvelera iwe pamene uli kuwelenga. Ngati wapeza liu limene sudziwa, pita ku liu lotsatira. Ika cala cako pa liu loyamba. Wakonzeka? Yamba**. When I say "Begin," start here [point to first word] and read across the page [point]. Point to each word and read it in a loud voice. Read as quickly and carefully as you can. I will remain silent and listen while you read. If you come to a word you do not know, go on to the next word. Put your finger on the first word. Ready? Begin.

nipe	atapi	gelu	kelo	mdzimu
ninane	wondi	umbe	rizi	ninda
ledesi	fikiraku	tomo	ngalo	zirama
yu	ane	mwane	mukudi	dzimo
liraku	ia	anuli	wekusera	dzimoli
cofukwa	udi	kubu	anauna	mtisinaka
wera	eka	diko	amoi	kasuci
ateta	lia	nacho	komi	labo
menepa	ncheto	ndaako	nthua	balo
mtanyama	mtutu	ndokonda	mtingi	ko

Time Remaining

Autostop? ☐

Oral Passage Reading

Show the child the story in the pupil stimuli booklet. Say:

Apa pali ka nthano kakafupi. Ndifuna kuti uwerenge mokweza, mofulumira komanso mosamala. Ukatsiriza kuwerenga, ndizakufunsa mafunso onena za nkhani imene wawerenga. Ndikanena kuti " yamba," uwerenge bwino kwambiri mmene ungakwanisire. Ndizakhala cete ndi kumvelera iwe pamene uli kuwelenga. Ngati wapeza liu limene sudziwa, pita ku liu lotsatira. Ika cala cako pa liu loyamba. Wakonzeka? Yamba. Here is a short story. I want you to read it aloud, quickly but carefully. When you finish, I will ask you some questions about what you have read. When I say "Begin," read the story as best as you can. I will remain silent and listen while you read. If you come to a word you do not know, go on to the next word. Put your finger on the first word. Ready? Begin.

Amai	anapita	kumsika	m'masana	tsiku
lina.	Anasiya	mwana	ndi	mkulu
wake	Dolika.	Anzake	a	Dolika
anabwera	kudzamtenga	pamodzi	ndi	mwanayo.
Dolika	ndi	anzake	anaphunzitsa	mwana
kuyimba.	Anamuphunzitsa	nyimbo	ya	alifabeti.
Atabwerako	kumsika	amai,	anapeza	mwana

ali	kuyimba.	Amai	anakondwera	kwambiri.

Time Remaining

Autostop? ☐

Reading Comprehension

Tsopano ndidzakufunsa mafunso ocepa onena za nthano imene wawerenga. Yesa kuyankha mafunso mmene ungakwanisire. Now I am going to ask you a few questions about the story you just read. Try to answer the questions as well as you can.

1. Ndani anapita kumsika? ((Amai))

☐ Correct ☐ Incorrect ☐ No response

2. Mwana anatsala ndi ndani? ((Dolika, kapena azake a Dolika, Dolika ndi Azake))

☐ Correct ☐ Incorrect ☐ No response

3. Kodi mwana anaphunzitsiwa kucita ciani? ((Kuyimba, Kuyimba nyimbo ya alifabeti))

☐ Correct ☐ Incorrect ☐ No response

4. Kodi mwana anadziwa bwanji kuyimba nyimbo ya alifabeti? ((Dolika ndi anzake anamphunzitsa,anzake a Dolika anamuphuzitsa, Dolika anamuphuzitsa))

☐ Correct ☐ Incorrect ☐ No response

5. N'cifukwa ciani amai anakondwera? ((Mwana anali kuyimba))

☐ Correct ☐ Incorrect ☐ No response

Listening Comprehension

Do not allow the child to look at the passage or the questions. Say,

Ndidzakuwerengera ka nthano/nkhani mokweza KAMODZI ndipo pambuyo pake ndidzakufunsa mafunso. Conde umvetsere mosamalira ndipo uyankhe mafunso mmene ungakwanitsire. Wakonzeka? Tiye Tiyambe.

Patsiku Lolemba, Mangani anapita kusukulu.

Ananyamula mabuku ndi nyama m'chola cake.

Pamene anali kuyenda, anapeza galu wamkulu panjira.

Anafuna kuthawira pathengo koma anagwa pansi.

Yunifomu yake inada ndipo galu anatenga nyama yake.

Mangani anathawira kunyumba.

Pamene anafika kunyumba, m'bale wake anamubwereka yunifomu yake. Anakondwera.

1. Ndi tsiku liti pamene Mangani anapita kusukulu? (Pa Lolemba)

☐ Correct ☐ Incorrect ☐ No response

2. Ananyamula ciani mu chola cake? (Mabuku, Nyama, Mabuku ndi nyama)

☐ Correct ☐ Incorrect ☐ No response

3. N'ciani cimene anapeza panjira? (Anapeza galu wamkulu)

☐ Correct ☐ Incorrect ☐ No response

4. Ndi cifukwa ciani Mangani anathawa galu? (Anaopa kuti galu angamulume, nyama, Anaopa, Galu wamkulu, kapena zonse izi (or all of these))

☐ Correct ☐ Incorrect ☐ No response

5. Ndi cifukwa ciani m'bale wake anamubwereka yunifomu Mangani? (Cifukwa yunifomu yake inada, Anagwa)

☐ Correct ☐ Incorrect ☐ No response

Student Survey

1. Kodi iweyo kapena wina wace panyumba panu ali ndi lamya(foni) (Do you or anyone in your house own a phone?)

☐ Inde (Yes) ☐ Iyai (No)

2. Kodi ndiwe wobvomerezeka kugwiritsira nchito lamya lo(foniyo?) (Are you allowed to use the phone for calling or playing games?)

☐ Inde (Yes) ☐ Iyai (No)

3. Kodi komputala wa pathebulu kapena komputala pamendo kapenso kapena wamanja alipo panyumba panu? (Do you have a computer, laptop, or tablet in your household?)

☐ Inde (Yes) ☐ Iyai (No)

4. Kodi muli ndi kanema wa zithunzithunzi pa nyumba yanu? (Is there a television in your home?)

☐ Inde (Yes) ☐ Iyai (No)

5. Kodi muli ndi malaiti panyumba panu? (Do you have electricity in your home?)

☐ Inde (Yes) ☐ Iyai (No)

6. Kodi muli ndi zowerenga panyumba monga? (Do you have reading materials at home?)

☐ Inde (Yes) ☐ Iyai (No)

7. Zowerenga zabwanji? (What type of materials?)

☐ mabuku (books) ☐ magazini (magazines) ☐ baibolo (Bible) ☐ manyuzipepa (newspaper)

8. Kodi muli ndi zowerenga zolembedwa mu chilankhulidwe chanu? (Do you have any reading materials in local languages?)

☐ Inde (Yes) ☐ Iyai (No)

9. Kodi kuli aliyense kunyumba yemwe amakuwerengerako zowerengea werengazi? (Does anyone at home read to you?)

☐ Inde (Yes) ☐ Iyai (No)

10. Ngati aliko yemwe akuwerengerako ndi? (If yes, who reads to you?)

☐ Amai (mother) ☐ Atate (father) ☐ mkulu wako (elder) ☐ ngono wako (younger) ☐ Ambuye amuna (Grandfather)

☐ Ambuye akazi (Grandmother)

11. Muli ndi madzi a ku mpopi? (Do you have running water inside your house at home?)

☐ Inde (Yes) ☐ Iyai (No)

12. Kodi muli ndi chimbudzi ca mnyumba ? (Do you have a toilet inside your house?)

☐ Inde (Yes) ☐ Iyai (No)

End Time

Date

Time

Annex E: Teacher Questionnaires

ACR GCD AGORA/CAPOLSA
READING INSTRUCTION IN ZAMBIAN SCHOOLS
TEACHER QUESTIONNAIRE

This research is being conducted in selected schools in Zambia. You are one of the teachers requested to participate in the GraphoGame Teacher Training Workshop organised by the Universities of Zambia and Jyväskylä of Finland under the All Children Reading: A Grand Challenge for Development with partner USAID, World Vision and the Australian Government.

Would you be willing to answer some questions? If yes, please sign here.

_____

Your identity will not be revealed in any way during the research process and no individual information will be reported. This data will be kept in a very safe location in the University when this research process is complete. Please be truthful in answering the questions and give your personal opinion when needed.

ID code (filled by CAPOLSA later):
Name :
Province :
District :
School :
Contact number :
Email address :

SECTION A: PERSONAL BACKGROUND INFORMATION

Please tick your preferred response in the boxes provided.

1. What is your gender?

   1. Female 2. Male

2. Date of birth :_____

3. What is your mother tongue (first language you mastered as a child)? _____

4. What language did you first learn to read in?

   English Local language Both

5. If your response to the above question is local language, please specify which local language_____

6. When you were in primary school, in what grade were you able to read stories? _____

7. What is the total number of years you have been teaching? _____

8. How long have you been teaching the current grade/class in months/years? _____

SECTION B: EDUCATIONAL QUALIFICATIONS
Tick your preferred response in the boxes provided.

9. Indicate which of the following teacher education qualifications you have.
(where appropriate you may tick more than 1 box)

1. Pre-school teachers' certificate
2. Primary Teachers' certificate
3. Advanced Primary Teacher certificate
4. Primary diploma
5. Certificate in Special Education
6. Diploma (Basic or Secondary)
7. Special Education Diploma
8. Advanced Diploma
9. Bachelor's Degree with Education
10. Bachelor's Degree
11. Special Education Degree
12. Masters degree
13. None
14. Other: _____

10. Are you registered as a student and studying to obtain an additional qualification?

1. Yes 2. No

11. If yes, what course are you studying? _____

12. Have you ever attended any reading/literacy workshop that taught you how to teach children to read?

1. Yes 2. No

13. If yes, please specify which programme you attended. _____

_____

14. What was the duration of the training in days/months/years? Indicate actual duration _____

15. Which of the following reading programmes was contained in your earlier teacher training course? You can choose more than one response.

1. NBTL 2. ROC 3. SITE
4. Other Specify: _____

16. During the past 3 years, have you participated in education workshops or projects organized by any international or non-governmental organizations (NGOs)?

1. YES 2. NO

17. If you have responded yes to the above question, please indicate the workshop you attended. _____

18. Has your school been sponsored by or participated in NGO projects that have been implemented in your school during the past three years?
YES NO

19. If yes, please indicate which NGO. _____

20. Have you received any orientation on the current National Literacy Framework?

1. Yes 2. No

21. If yes, when did you receive the training? _____

22. How long was the training? _____

23. How well do you think you understood the training you received on the National Literacy Framework/Primary Literacy Program?

Very well
Relatively well
Not sure
Not at all

SECTION C: TEACHING METHODS/READING INSTRUCTION

24. Have you been able to implement the new National Literacy Framework/Primary Literacy Program in your classroom?

1. Yes 2. No

25. Which aspect of the Literacy Framework do you think you implement very well?

.....

.....

.....

.....

26. Which aspect of the Literacy framework would you like to receive additional training in?

.....

.....

.....

27. What instructional method are you using to teach initial literacy to grade 2 learners using ciNyanja?

1) Look and say method
2) Phonics method
3) Syllabic method

28. How well are the current teaching methods addressing the reading problems of learners in your school?

- Very well
- Relatively well
- Not sure

- Not at all

29. Which of the following order do you use to teach literacy instruction?

- Words, syllables, phonemes

- Phonemes, syllables, words
- Syllables, words, Phoneme

30. How much attention is given to the teaching of letter-sound in your school? Choose only one option.

1. Substantial time spent for teaching and everyone's knowledge is assessed regularly during teaching
2. Substantial time used to teach, but little assessment of mastery
3. Instructing starts from larger units (such as syllables)
4. Letter-sounds teaching is not needed
5. This aspect of reading instruction is much less relevant than other issues associated with the instruction of basic reading skill

31. How does your school help learners who experience challenges in acquiring basic reading skills? You may choose more than one

I. Nothing
II. Providing some individually tailored support
III. Extra lessons
Iς. Remedial work
ς. Computer based training
ςI. Engaging reading experts

32. What is the best way to help children in early grades to read in local languages? Rank the answers in order from 1-4, from the most effective way to the least effective way. 4 being the most effective and 1 being the least effective.

1. Look at pictures and read words or sentence
2. Repeat words after the teacher has said them out loud
3. Teach the sounds of the letters
4. Guide pupils to recognise words and sentences in songs and poems or stories

33. How familiar are you with letter sounds in ciNyanja? Select one answer.

1. I don't know because I do not need letter-related knowledge in my teaching
2. I know the letter names used in English (/ei/, /bii/, /cii/.)
3. I can pronounce most of the letter-sounds
4. I know the letter names specific to the instructed writing system
5. I can pronounce all the letter-sounds of my native languages
6. I can pronounce the sounds of all those local languages which are spoken among my typical pupils

34. How much time is allocated to the teaching of literacy in your school time table per week? Indicate number of hours_____

35. Do you think the time allocated to teaching of reading in your school is adequate for most learners to acquire accurate reading skills before the end of first grade?

1. Yes 2. No

SECTION D: LANGUAGE USE

36. In which local language can you best instruct your learners basic initial reading skills? You can choose more than one option if necessary.

3) ciTonga
4) kiiKaonde
5) iciBemba
6) ciNyanja
7) Luvale
8) Lunda
9) siLozi
10) None

37. In which language were you trained to teach initial literacy? You can choose more than one option if necessary.

Zambian Languages English language Both

38. How much of the personal reading materials you read outside the school environment is written in the language you teach the grade 2 learners to read?

1) Very little
2) Less than one page per typical day
3) 1-3 pages in a typical day
4) More than 3 pages of book size on average per day

39. Which activities in your everyday life do you often use local language in written form outside your work? You can choose more than one activity.

- Text messages
- Notes to family members
- Email or other messages in the internet
- Shopping list
- Notes in calendar, journal or diary
- Taking notes at church
- None

40. Have you tried to write teaching materials in the local language in your school? You may choose more than one.

1) Yes, I have made word lists or literacy posters for children
2) Yes, I have written short stories by myself
3) Yes, I have translated stories from English to local language
4) No, I don't know the language well enough

5) No, I don't have time to write my own teaching materials

SECTION E: READING

41. Why do you think children in most Zambian primary schools still read below the grade level despite the introduction of numerous reading programmes? You may choose more than one.

1. No access to reading materials
2. Limited contact time between teachers and learners
3. Use of inappropriate instructional methods
4. Poor home environment
5. Illiterate parents or guardians
6. Language policy

7. Other_____

42. From your experience as a teacher of literacy, what are some of the problems learners experience when learning to read?

1. They find it difficult to learn letter sounds
2. They find it difficult to learn syllables
3. They cannot blend syllables to form words
4. They have difficulties reading whole words
5. They are not familiar with the local language

43. What do you think are some of the reasons why learners experience the problems you have indicated in the above question? You can choose more than one option.

1. They have no interest in reading
2. They have no materials to read at school
3. They have no reading support from their families
4. Other_____

44. Do you think learners struggling to read can be helped?

1. YES 2. NO

45. If your answer to the above question is yes, how do you think children struggling to read can be helped?

1. By giving them more time to learn
2. By giving them remedial work to do after school
3. By taking them for assessment
4. By involving their parents

SECTION F: TEACHING READING IN ZAMBIAN LANGUAGES
Choose your preferred response by circling the number next to the statement of your choice

46. Why is it important to teach children how to read in the local languages? You can choose more than one response

1. Because it's easier for children to learn how to read a local language even if it is not the first language of the child.
2. Because teaching a language that is familiar to the child is easier for them to learn to read.
3. Because the local languages are superior to English.
4. Because English is not an important language.

5. Because the learners need to improve their local language use to help preserve their culture.

47. What is the greatest advantage of teaching children to read in the local languages?

1. Local languages have shorter words making it easier to learn to read.
2. Local languages are many so teachers can choose from a variety of languages.
3. Sounds, syllables and words in the local languages are pronounced exactly as they are written.
4. Sounds, syllables and words in the local languages are pronounced and written in many different exciting ways.
5. Sounds, syllables and words are easier for beginner readers in the local languages.

48. The use of the phonics based approach is better than the whole word reading approach because..... (you can choose more than one response).

1. Phonics approach is more fashionable.
2. Phonics approach focuses mainly on letters, words do not need to be taught.
3. Phonics is recommended worldwide for languages like the local languages in Zambia.
4. Phonics makes it easier to translate the spoken language into written form.
5. Phonics makes it easier to translate written language into spoken form.

49. When teaching reading in local language, what should the teacher start with.....

1. Consonants.
2. Vowels.
3. Both consonants and vowels.
4. All the simple words in the language.
5. Only words that they are familiar with the child.

50. What do you understand by the word "blending"?

1. Joining sounds together to make syllables.
2. Forming larger words from shorter ones in the local language.
3. Ability to decode words in the local language.
4. Ability to check that words are correctly connected in the local languages.
5. Ability to recognize words.

SECTION G: SUPPORTING STRUGGLING LEARNERS
Circle your preferred response

51. Why is it important to identify children with reading difficulties as early as possible? You can choose more than one response.

1. To tell the child that because of their learning difficulty they will never succeed in school.
2. To be able to provide activities that will help the child as soon as possible.
3. The earlier the teacher discovers the problem the earlier it is known if the child is worth educating.
4. The earlier the teacher discovers and tells the parents, the earlier it is possible to give the parents information about supporting their child's learning.
5. The earlier the child knows about the problem they have, the sooner they learn how to practice the skills they need to overcome their difficulties.

52. Which one of the following **are** useful in identifying learners with reading difficulties? You can choose more than one response.

1. Checking if the child has a hearing problem.
2. Checking if the child is afraid of reading tasks.
3. Observing the reading speed of the child.

4. Check that the child knows the connections between letters and spoken sounds.
5. Check that the child has made errors with similar looking letters like b and d.

53. What is phonological awareness?

1. The ability to manipulate spoken language and identify sounds.
2. The ability to recognise words.
3. The ability to comprehend texts.
4. The ability to put together different syllables to make a word.
5. The ability to know the letters of the alphabet.

54. Which of the following is a very important foundational skill for reading in ciNyanja?

1. Speaking in ciNyanja fluently.
2. Knowledge of the letter-sound connections of the alphabet in ciNyanja.
3. Knowledge of simple words in ciNyanja.
4. Knowledge of syllables in English.

55. When the child has attained fluency in reading then it means that.....

1. The child is able to read long pieces of texts.
2. The child is able to memorise long stories.
3. The child is able to read at a fast pace without making mistakes.
4. The child is able to read texts which have un-familiar words in them.
5. The child is able to recite the alphabet very quickly

56. Which of the following can be signs of reading difficulties

1. Poor letter knowledge.
2. Poor comprehension skills.
3. Poor motivation to read.
4. Poor decoding skills.
5. Poor writing skills.

SECTION H: READING STORIES

57. Why do you think listening to stories is important for learners?

_____
_____
_____
_____

58. Name any three ways you think the vocabulary of a learner can be increased.

_____
_____
_____
_____
_____
_____

59. Briefly explain how you would conduct a literacy lesson to grade one learners using story telling.

_____
_____
_____
_____
_____

60. Briefly explain one literacy game that can be used to teach literacy to learners.

_____
_____
_____
_____
_____
_____
_____

Thank you for participating

AGORA/CAPOLSA ICT TEACHER QUESTIONNAIRE

This questionnaire is a continuation from the demographic questionnaire you have just responded to. Do you wish to continue responding to this questionnaire? If yes, please sign just below:

_____

ID:
Name:
Province:
District:
School:
Contact number:

SECTION A: PERSONAL BACKGROUND INFORMATION
Tick your preferred response in the boxes provided.

1. Do you have a mobile phone? 1. Yes 2. No

2. If yes, what kind of phone do you have?

1. An MTN phone
2. An Airtel phone
3. A Zamtel phone
3. An analog phone (Nokia, Samsung LG etc, with no internet access)
4. A smart phone (Nokia, Samsung, LG, iphone etc)

3. Do you have a facebook account? 1. Yes 2. No

4. If yes, how often do you visit Facebook?
1. At least once a day
2. At least once every week
3. At least once every fort night
4. At least once a month
5. Never

5. Do you have WhatsApp on your phone? 1. Yes 2. No

6. If yes, how often do you use WhatsApp?

1. At least once a day
2. At least once every week
3. At least once every fort night
4. At least once every month
5. Never

7. Have you ever attended any computer lessons? 1. Yes 2. No

8. If yes, what was the training focused on? _____

_____

_____

9. Do you own any of the following gadgets?

1. Desk computer
2. Tablet
3. Laptop
4. Smart Phone

10. Have you ever used the internet before? 1. Yes 2. No

11. If yes, what do you use the internet for? _____

12. Have you ever used any ICT related technology for educational purposes, e.g. preparing lessons or teaching? 1. Yes 2. No

13. What exactly did you use the technology for?

1. Typing documents
2. Playing games
3. Checking for information on the internet
4. Nothing

14. Do you think ICT training for teachers should be included in the teacher training curriculum? 1. Yes 2. No

SECTION B: SCHOOL INFRASTRUCTURE AND ICT TRAINING

15. Do you use any ICT infrastructure in your school? 1. Yes 2. No

16. If yes, which ICT infrastructure does your school have?

1. Desk computer
2. Tablet
3. Lap top
4. Smart Phone

17. Is any of the above mentioned infrastructure (chosen in 2) used for educational purposes e.g. teaching or preparing lessons in your school? 1. Yes 2. No

18. If yes, what specifically is the technology in your school used for?

1. Typing documents
2. Preparing lesson plans
3. Computer classes for learners
4. Entering student results from tests
5. Nothing

19. Does the school provide internet services to its members of staff?

1. Yes 2. No

20. Has your school organised any training in the use of computers?

1. Yes 2. No

21. What did the training focus on?

1. We did not receive any training
2. We received training on how to operate a computer
3. We received training on the use of Microsoft applications (e.g. word, excel etc.)
4. We received training on how to use the computer for our work
5. We received training on how to search for information on the internet

22. If you have not received training on the use of ICT like the use of computers in your work, would you like to receive such training?

1. Yes 2. No

23. Have you been exposed to any computer training within your school, which was conducted by an NGO or Government? 1. Yes 2. No

24. If yes, what was the training focused on?
_____

_____

_____

_____

25. What did you like the most about training?
_____

_____

_____

_____

26. What didn't you like about the training?
_____

_____

_____

_____

27. What do you think learned in the training that was very useful for your work?

_____

_____

_____

_____

_____