



**Save the Children®**

# **Literacy Boost**

## **Dendi, Ethiopia**

# **Three-month Report**

**August 2011**

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## Executive Summary

In 2010, Save the Children began implementing the Literacy Boost program – an intervention focused on working with teachers and communities to improve children’s reading skills – in Oromia Region, Dendi District of Ethiopia.

The Literacy Boost assessment features emergent literacy and early grade reading assessments used to detail the skills present when Literacy Boost begins and to chart progress throughout the intervention. These data are also used to adapt the intervention’s teacher training and community activities. Baseline data were collected in 15 Literacy Boost schools and 5 comparison schools in October 2010, and endline data were collected in the same schools at the end of the school year in May 2011. At each of the 20 schools where data was collected, a target of 20 children in the third grade was sampled.

This study reports on the difference in learning during the 2010-2011 school year between Literacy Boost and comparison students. It is important to note that only 15 weeks of teaching had elapsed between the first training of teachers and this assessment, and only 9 and 7 weeks respectively between training sessions 2 and 3 and this assessment. Reading buddies were established 14 weeks prior to the assessment, while Book Banks were in place for only 8 weeks. The findings in this report must be interpreted in light of these short intervention times and will greatly inform activities as Literacy Boost gains steam in Ethiopia.

Background information suggests that comparison school students are of a lower socio-economic status (SES) than Literacy Boost students. Results indicate that gain scores are significantly different between Literacy Boost and comparison in concepts about print and letter knowledge, indicating that after 3 months of intervention, Literacy Boost contributed to greater learning in those first two skills. No significant difference existed between Literacy Boost and comparison students in single word reading at baseline, but Literacy Boost students scored significantly higher than comparison students at endline, indicating that Literacy Boost promoted higher end of year single word reading. Literacy Boost also promoted significantly more girls to move into the category of readers at endline.

Amongst readers (those who did not score zero in fluency), comparison students outperformed Literacy Boost peers at baseline but no longer at endline. No other significant differences were found between Literacy Boost and comparison students in fluency (words per minute correct) and accuracy, amongst readers.

The Ethiopia team set a benchmark at the 75<sup>th</sup> percentile score for each score in the baseline sample and challenged themselves to have most children reading at this level or higher by year’s end. The endline data show that Literacy Boost students reached this benchmark in Concepts About Print and amongst readers, in Fluency, but not in any other skills.

Literacy Boost promoted greater learning in letter knowledge amongst boys, and promoted higher end of year letter knowledge and single word reading amongst girls.

Finally, we find that amongst Literacy Boost students, having a reading buddy significantly predicts switching from being a non-reader to a reader and of Concepts about Print and Single Word Reading endline scores, even when controlling for SES and home literacy environment.

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## Introduction

In 2010, Save the Children began implementing the Literacy Boost program – an intervention focused on working with teachers and communities to improve children’s reading skills – in Oromia Region, Dendi District of Ethiopia. The Literacy Boost assessment features emergent literacy and early grade reading assessments used to detail the skills present when Literacy Boost begins and to chart progress throughout the intervention. These data are also used to adapt the intervention’s teacher training and community activities. Literacy Boost was implemented in 15 schools with a focus on children in grades 1 to 3. Key interventions that will be implemented in these 15 schools include:

1. a 9-module teacher training on explicit reading instruction, conducted in three phases;
2. provision of community-based Book Banks
3. establishing a Reading Buddy system in schools in which older children read to younger children;
4. conducting regular community reading awareness sessions with parents
5. conducting weekly Reading Camps run by trained Reading Camp Leaders (to be implemented)
6. conducting Story Time activities in the community (to be implemented).

At the time of this endline assessment in the week of May 23, 2011, Table I details the activities that had been implemented by Save the Children and the length of the intervention prior to the assessment.

**Table I**

Date of intervention/start	Intervention	Time to assessment
7-10 December 2010	First Training of Trainers (TOT) session conducted with three high school teachers, eight Cluster supervisors,, four Woreda Education Office staff on print rich environment, formative assessment & letter knowledge	NA
3-4 February 2011	First training of teachers 72 grade 1-3 conducted on print rich environment, formative assessment & letter knowledge	15 weeks
15 February 2011	Reading Buddy activities started, usually meet twice a week inside the school compounds.	14 weeks
12-13 March 2011	Second TOT session conducted on phonemic awareness, reading fluency	NA
26-27 March 2011	Second training of 72 grade 1-3 teachers conducted on phonemic awareness, reading fluency	9 weeks
3-4 April 2011	Third TOT session conducted on vocabulary, reading comprehension	NA
5 April 2011	Forty-five book banks with five different types of reading materials were first in use.	8 weeks
8-9 April 2011	Third training of 72 grade 1-3 teachers and 15 academic/deputy directors on vocabulary, reading comprehension.	7 weeks
9-10 April 2011	Eighty-nine community facilitators were trained in management of book bank programs.	7 weeks

It is important to note in the final column that only 15 weeks of teaching elapsed between the first training of teachers (print rich environment, formative assessment & letter knowledge) and this assessment, and only 9 and 7 weeks respectively between training sessions 2 and 3 and this assessment. Reading buddies were established 14 weeks prior to the assessment, while Book Banks were in place for only 8 weeks. The findings in this report must be interpreted in light of these short intervention times and will greatly inform activities as Literacy Boost gains steam in Ethiopia.

## Sampling Methodology

This end-line assessment includes the same 15 Literacy Boost schools and 5 comparison schools from neighboring communities that were assessed at baseline. The total sample size at end-line is 395 students, of which 295 were the same as those assessed at baseline. This means that there were 100 replaced students and that 105 students who were assessed at baseline were not assessed at end-line (the sample size at baseline was 400).

At each of the 20 schools where data was collected, a target of 20 children in the third grade was sampled. The data collection staff assessed the same randomly sampled students that were part of the baseline data collection to the extent possible. When a student from the baseline was not present at the time of the end-line assessment, another student of the same gender was randomly selected to replace the absent student. In 4 schools, the number of grade three children present at time of assessment was less than 20 and therefore all children in the grade were assessed.

In this report, we will mainly focus on the 295 students with both baseline and end-line scores in order to assess gains throughout the school year. Table 2 gives the breakdown of these 295 students by school type and by gender.

**Table 2**

	Literacy Boost schools (N=225)	Comparison schools (N=70)
Boys	115	35
Girls	110	35

### ***A note on the choice of schools***

The 20 total schools in the sample are from a selected group of 25 schools identified by Save the Children program staff as potential sites for the pilot year of Literacy Boost activities, located in the Dendi Woreda of Oromiya Regional State in Ethiopia. These initial schools were selected based on the following criteria: reflecting the project's needs: accessibility, empowered parent-teacher associations (PTAs), enrollment size, similar gender population ratios, and the number of grades offered to children at the primary level. The staff also decided to prioritize those schools that Save the Children has worked with over the past three years, typically through providing infrastructure improvement, teacher training, and capacity building for the PTAs. The number of target schools was limited to the 15 schools most alike based on the above criteria. Five comparison schools were selected from ten possible options based on being similar to target schools based on accessibility, PTA structures and history, enrollment size, and the number of grades offered, as well as socio-economic levels within the communities that they serve. All comparison schools are formal schools, none of which received or benefited from Save the Children programs but could be included into the LB program when we scale up the pilot program.

## Instruments

The assessment tool used for this endline data collection is the same as the one that was used for the baseline data collection in October 2010. Table 3 offers examples of background and home literacy indicators and offers a detailed description of reading indicators.

**Table 3**

<b>Student background</b>	<b>Examples</b>
General	Sex, age, language spoken at home, work
School-related	Distance to walk to school, repetition history
Socioeconomic status	Type of home, household size, household amenities/possessions
<b>Home Literacy Environment</b>	
Access to print	Materials present in home, types of materials
Reading at home	Presence and percentage of family members who children see read, and who read
<b>Reading Outcome</b>	<b>Description</b>
Concepts About Print	Number concepts demonstrated correctly of 10
Alphabet knowledge	Number of letters/sounds known of 62
Vocabulary/Decoding	Number of single words read correctly of 20
Fluency	Number of words in a connected text read correctly in a minute
Accuracy	Percentage of words in a connected text read correctly
Comprehension	Number of comprehension questions answered correctly after reading text aloud

In addition to these questions, the end-line assessment tool had additional items related to children's participation/use of Literacy boost activities and resources (participation in reading buddy activities and use of book banks).

These assessments were developed and pilot tested prior to baseline data collection using the Literacy Boost Toolkit Assessment Component. Many thanks to our colleagues at RTI for sharing EGRA reading passages and word lists to shorten the development process and make our efforts more cost-effective.

## A note about benchmarks

While Save the Children has used this approach to reading assessment in Malawi, Nepal, Ethiopia, the Philippines, Haiti, Mali, Vietnam, Guatemala, Uganda, Yemen, Bangladesh, and Mozambique, comparison across countries and languages is less helpful than more detailed contextual information for setting expectations of impact. For each measure used in these assessments, the baseline established the upper end of the range of scores (the 75<sup>th</sup> percentile) as a benchmark, or a reasonable estimate of what is currently possible among these children. In the presentation of each skill, this report will consider whether the groups of students in each school type met this benchmark. At the end of the results section, we will review our first months' progress in meeting these goals and consider appropriate targets for moving forward.

## Student Background

Table 4 summarizes student background data, and presents the average for the Literacy Boost and comparison schools.

**Table 4**

	LiteracyBoost N=225	Comparison N=70
Sex (% female)	50% female	49% female
Age (yrs)	10.69 (7-18)	10.54 (7-16)
Completed ECD (%)	8%	0%*
Repeated grade 1 (%)	4%	1%
Repeated grade 2 (%)	4%	6%
Repeated grade 3 (%)	4%	1%
Orommiffaa speaking (%)	99.5%	100%
Grass roof (%)	42.7%	62.8%**
Iron sheet roof (%)	57.3%	37.1%**
With electricity (%)	13%	1%**
With latrine/bathroom (%)	51%	37%*
Household appliances (of 4)	0.9 (0-4)	0.7* (0-3)
Work outside the home (%)	23%	13%
Household size (rooms)	2.93 (2-3)	2.83* (1-3)
Household size (people)	6.29 (2-13)	6.3 (2-12)
Have livestock (%)	95%	100%
Types of animals	3.8 (0-7)	3.9 (0-8)
Number of animals	15.3 (0-62)	15.1 (0-48)

(significant difference of  $p < .05$ ,  $** < .01$ )

On average, fewer comparison school students have completed ECD, have electricity, and have a latrine or bathroom at home. More comparison school students have a grass roof and comparison school students have a significantly lower number of appliances at home. This suggests that comparison school students are of a lower socio-economic status (SES) than Literacy Boost students.

## Household Literacy Environment

Table 5 shows the change in household literacy environments between baseline and end-line by group.

**Table 5**

	Literacy Boost Baseline	Comparison on Baseline	Literacy boost Endline	Comparison Endline	Literacy boost Change	Comparison Change
Household has reading materials	88%	83%	100%	96%*	+12%**	+13%*
Number of types of books	1.93	1.73	2.76	2.11**	+83%**	+38%*
Child sees any one reading ?	82%	76%	79%	76%	-3%	0%
Anyone reads to the child ?	74%	66%	70%	63%	-4%	-3%
% of hh members in school	37.7%	32.4%	33.7%	30.8%	-4%**	-2%
% of hh members seen reading in the last week	43.8%	39.2%	37.5%	31.3%*	-6%**	-8%*
% of hh members who read to child in the last week	37.1%	30.5%	31.5%	26%	-6%**	-5%

(significant difference of  $p=*.05$ ,  $**<.01$ )

In both comparison and Literacy Boost schools, students had more reading materials at home at endline than baseline (gain of 12 percentage points in Literacy Boost schools and gain of 13 percentage points in Comparison schools). The number of types of books at home is also significantly higher at endline in both types of schools, but the change in Literacy Boost schools is much bigger (83%) than in Comparison schools (38%). This could be explained by the fact that book banks were set up in March, giving Literacy Boost students better access to different book types. A possible explanation for change in both school types comes from experience sharing as well as the seasonal availability of additional income in this agrarian community. Harvest was after the baseline, so it is also possible that as parents got cash in later 2010 or early 2011 from the harvest, they purchased reading materials for their children.

On the other hand, there was a reduction in the percentage of household members seen reading in the last week in both types of school, and in the percentage of household members who read to the child in the last week. This could be explained by the fact that most Literacy Boost schools are located in the rural part of the country and that when the baseline was conducted, in October, agricultural activities were very much limited, giving more time for people to read themselves and read to their children. On the other hand, when the endline assessment was conducted, in May, farmers were highly occupied and parents might not have had time to read for themselves and to their children.



## Absence at Endline

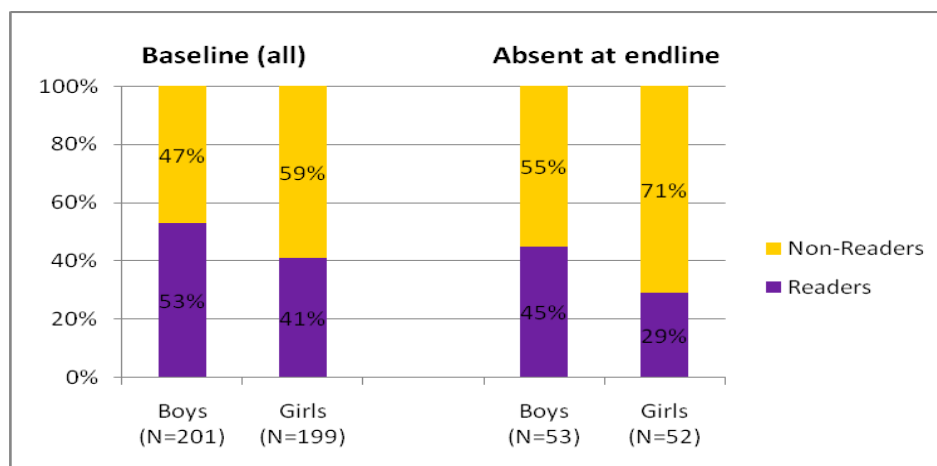
Of the 400 students that were interviewed at baseline, 105 students could not be assessed at endline. Of these 75 are Literacy Boost students (25% of all Literacy Boost students assessed at baseline) and 30 are comparison students (30% of all comparison students assessed at baseline). There is similar attrition across both types of school, Literacy Boost and Comparison, (i.e. absence was not more prevalent in one type of school vs. another) so school type is not a predictor of absence.

In terms of socio-economic level, both absent and non-absent students are similar but students who were absent at endline are older than those who were not absent (10.7 years old vs. 10.2 years old,  $p<.01$ ). They also scored significantly lower on letter knowledge at baseline (44.5 vs 49.7 letters for those absent at endline and those not absent respectively,  $p<.01$ ) and on single word reading (7.7 words and 9.7 words for those absent at endline and those not absent respectively,  $p<.05$ ). This suggests that older students and those with low learning outcomes are more at risk of leaving school or attending less frequently. Literacy Boost needs to focus on those students to ensure that they remain in school or attend regularly.

These differences between absent students and non-absent students are similar across both types of school. Since these differences are similarly distributed across both types of school, we proceed with our analysis comparing Literacy Boost and comparison schools.

In our baseline report, we had found that there was a significantly higher proportion of non-readers amongst girls than boys as seen in Figure 1. This is no longer the case at endline because there is a higher proportion of girl non-readers than boy non-readers who were absent at the time of the assessment.

Figure 1



While the difference is not significant at the .05 level ( $p=.08$ ), it is a trend worth noting. It is possible that girls who are non-readers tend to drop out of school more (although absence at endline does not necessarily indicate that the student dropped out of school). **Figure 1 (above) suggests that girl non-readers might be at a higher risk of inconsistent attendance and dropping out of school. Literacy Boost should pay particular attention to those girls in the next phase of intervention.**

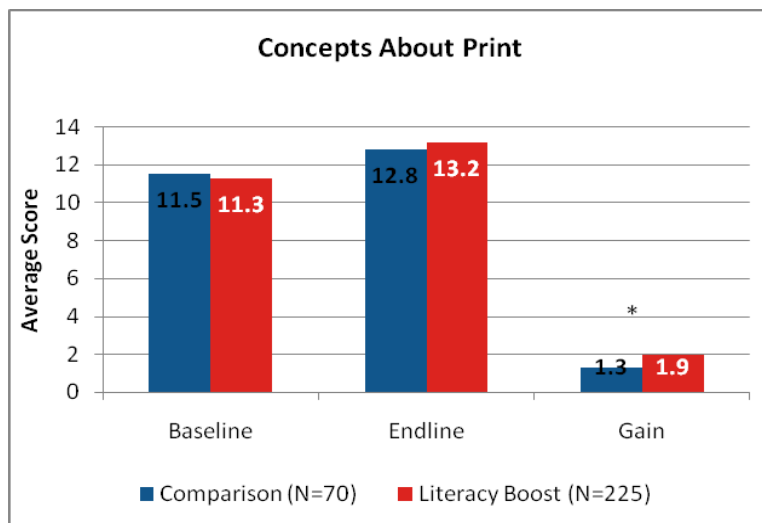
## Impact on Student Learning Outcomes

In this section we examine gain scores in each literacy skill to assess the impact of Literacy Boost on student learning outcomes. The red line in the following graphs represents the 75<sup>th</sup> percentile benchmark which was set at baseline.

### Concepts About Print

Students in both types of school scored significantly better on Concepts About Print at endline than at baseline. The mean score of comparison students is 12.8 and of Literacy Boost students 13.2 at endline, and the score gains are significantly different between comparison and Literacy Boost students (1.3 score gain and 1.9 score gain respectively). Students made the most progress in the more advanced CAP skills, specifically: pointing to the words as they are being read; showing one word and reading it; showing the first part of the story; showing the last part of the story.

Figure 2

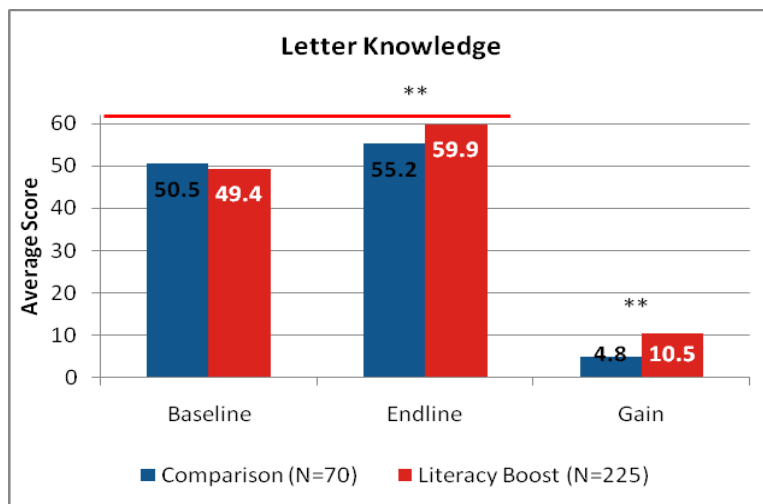


***Students in Literacy Boost schools met the benchmark and made greater progress in mastering CAP on average than comparison school peers. As gain scores between comparison and Literacy Boost schools are significantly different, we conclude that Literacy Boost promoted learning on Concepts About Print.***

### Letter Knowledge

Figure 3 shows that at baseline, Literacy Boost students identified an average of 49 letters correctly and comparison students identified an average of 50 letters correctly. The difference between the scores of Literacy Boost and comparison students was not significant. At endline, Literacy Boost students identified an average of 60 letters (a gain of 11 letters) and comparison students identified an average of 55 letters (a gain of 5 letters). Literacy Boost students therefore identified significantly more letters than comparison students between endline and baseline.

Figure 3



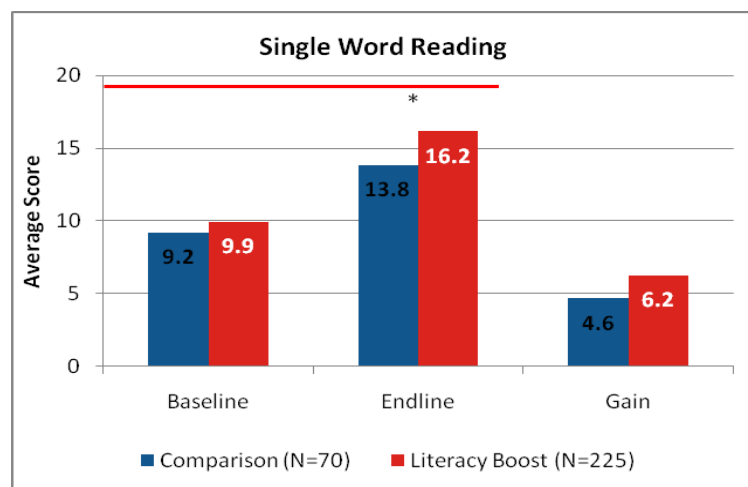
**As Literacy Boost school student scores at baseline were not significantly different from comparison school scores, we conclude that Literacy Boost promoted higher end of year letter knowledge and supported greater letter learning during the school year.** This is true among both those we are able to read and those still struggling with this more basic skill. There are, however, more letters to master before the average score meets the benchmark set at baseline (62 letters – or the whole alphabet).

Looking at specific letters, while a similar number of Literacy Boost and Comparison students identified each letter at baseline, significantly more Literacy Boost students identified each of 47 of the letters than comparison students (out of 62 letters). At endline, each letter was identified by at least 90% of Literacy Boost school students (except for “Sh” which was identified by 89% of Literacy Boost school students). In contrast, twenty letters were identified by less than 90% of Comparison school students. In general, the letter combinations/phonemes “Sh” and “Ph” still pose a challenge.

## Single Word Reading

Figure 4

At baseline, there were no significant differences in single word reading skills between Literacy Boost and comparison school students; comparison school students identified an average of 9.2 words and Literacy Boost school students an average of 9.9 words. At endline however, the difference in scores between the two school types is significant; comparison school students identified an average of 13.8 words and Literacy Boost school students an average of 16.2 words. However, the gain scores are not significantly different between Literacy Boost and comparison schools.



**As Literacy Boost school student scores at baseline were equal to comparison school scores, we conclude that Literacy Boost promoted higher end of year single word reading. As gains are not different, we cannot conclude with certainty that it supported greater learning in this skill.**

**There is also more progress to be made to meet the benchmark set at baseline.**

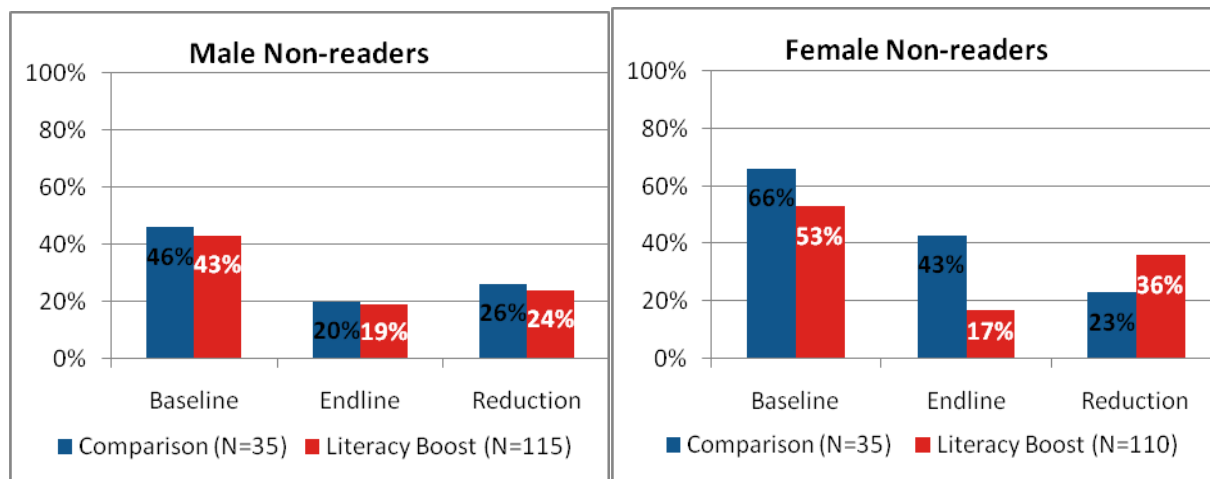
Looking more closely at particular words, in the Literacy Boost group, all words were known by 73-87% of students, while in the Comparison group all words were known by 60-77% of students. There were no significant differences between boys and girls in the Literacy Boost schools at baseline or endline, but in comparison schools boys significantly outperformed girls at endline. The most challenging words in both types of schools were: gilgala, maal, barannoo, Keenya. The team on the ground reflects that these words have longer sounds (Gaa, maa, nnoo, and Kee) as opposed to those with shorter sounds (ga, ma, nno, and ke). We learn from this finding that attention should be given to shorter and longer sounds in teacher training.

## Non-Readers

We measure oral reading fluency by asking the student to read a grade-level text aloud, and tracking what words are read correctly in a minute. If the student cannot read any words in the first minute, we identify him/her as a non-reader. Non-readers therefore have a fluency score of '0', by definition. When looking at the ability to read and comprehend a text, it is thus important to distinguish between these readers and non-readers as mean fluency scores might be confounded by the proportion of non-readers in a given sample.

Before moving on to an analysis of the higher-level literacy skills (reading fluency, accuracy and comprehension), we look at the percentage of male and female non-readers between the two school types. At baseline, the percentage of non-readers was not significantly different between the LB and control schools but at endline there are significantly more non-readers in the comparison schools (31%) than in the literacy boost schools (18%). Figure 5 shows readers vs. non-readers by gender, we see that the significant difference between comparison and Literacy Boost schools appears for girls only.

Figure 5

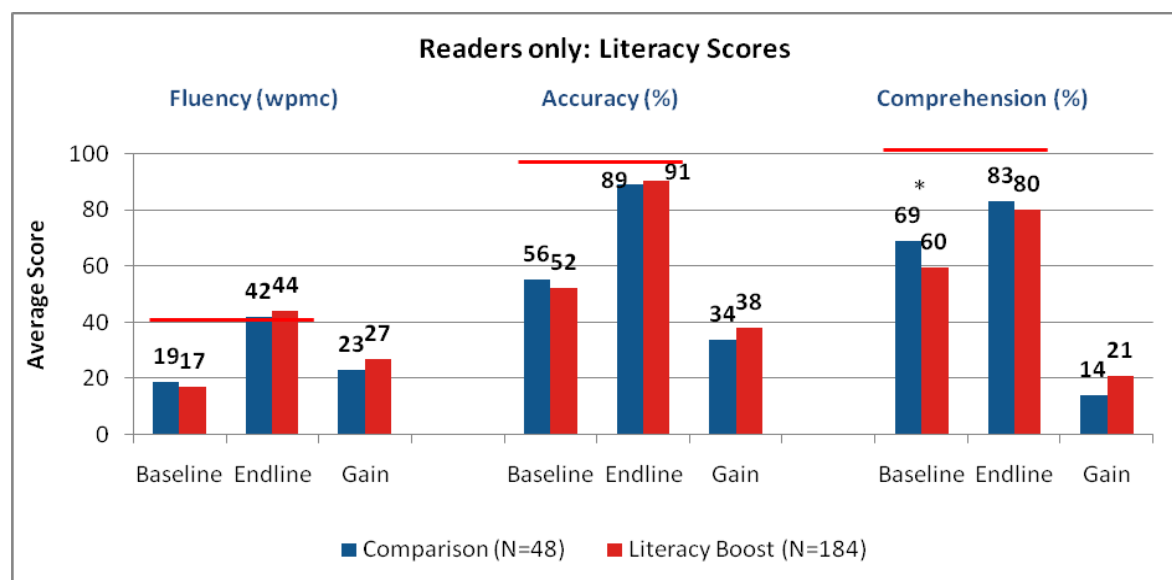


***As the proportion of female non-readers was not significantly different between comparison and Literacy Boost schools at baseline, we conclude that Literacy Boost promoted significantly more girls to move into the category of readers who have non-zero scores for fluency.***

## Readers' Fluency, Accuracy and Comprehension

Since comparison schools have a significantly higher proportion of non-readers than Literacy Boost schools and non-readers' fluency score is by definition '0', we will focus on readers only for the analyses on higher-level literacy skills in order to determine whether skills are different between comparison and Literacy Boost students amongst those who can read. Looking at readers only, we find that there is no significant difference in fluency, accuracy and reading comprehension endline scores between comparison and Literacy Boost schools as is shown in Figure 6 below. Accuracy is defined by the number of words read correctly in the entire passage divided by the total number of words in the passage (62 words), and comprehension scores are measured by asking children comprehension questions after they've read the passage (% of 5 questions correct).

**Figure 6**

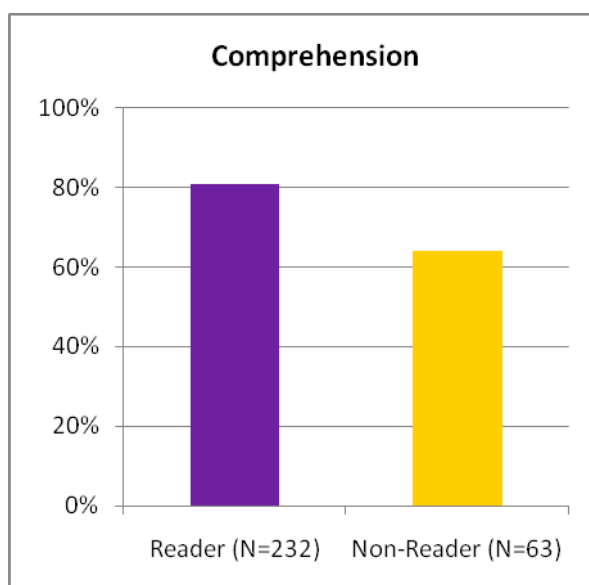


**It is worth noting that comprehension scores were significantly different at baseline between comparison and Literacy Boost schools. Since they are no longer significantly different at endline, we conclude that Literacy Boost contributed to closing this gap by the end of school year assessment.**

Readers in both school types met the fluency benchmark set at baseline (42 words read correctly in one minute) but still have progress to make in order to reach our benchmarks for accuracy and reading comprehension (98% accuracy and 100% reading comprehension).

**Figure 7**

Non-readers score '0' on fluency by definition and typically do not read the passage themselves. In order to assess their oral comprehension, interviewers read the passage to them and ask them comprehension questions afterwards. No significant difference in oral comprehension or single word reading was found between comparison and LB non-readers at baseline nor at endline. Figure 7, however, shows a significant difference between the reading comprehension of LB students (81%) and oral comprehension of comparison students (64%). Students who are struggling to read are also struggling with understanding oral texts and with expressing comprehension. In the next phase of intervention, attention should be paid to both comprehension and oral language development activities in order to develop these children's vocabulary, confidence of expression and background knowledge to demonstrate these skills.

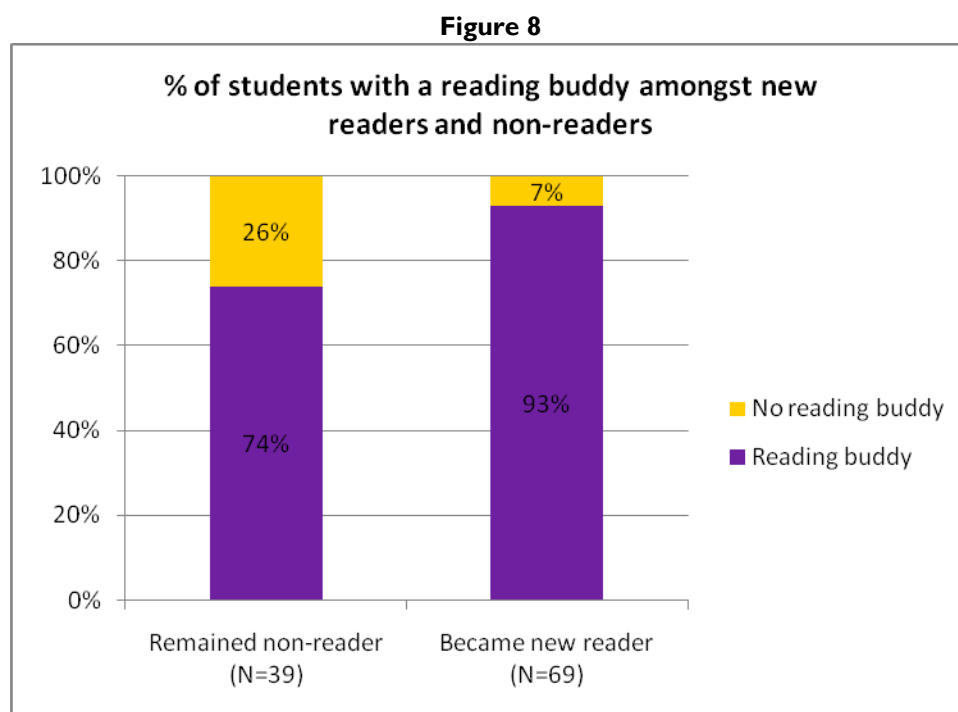


## New Readers

We identify those who were non-readers at baseline and who are now readers at endline as “new readers” and focus here on what factors are associated with becoming a new reader and whether Literacy Boost promoted the switch to becoming a new reader.

The percentage of new readers in comparison and Literacy Boost schools is 26% (N=69) and 31% (N=223) respectively. But the difference between the two types of school is not significant, so we cannot conclude that Literacy Boost definitely contributed to this switch.

Positive change in the home literacy environment (percentage of people who read at home or who read to the student at home) was not correlated with becoming a new reader, however Figure 8 shows that having a reading buddy is highly predictive of becoming a new reader ( $p=.008$ )<sup>4</sup>.



We also find that new readers score significantly better on words than non-readers at endline, a finding that is not surprising. What is notable in Table 6 below, however, is that these new readers were already different from non-readers at baseline. At baseline, new readers scored significantly higher on Letter Knowledge and Single Word Reading than the students who remained non-readers. Our findings also indicate that all new readers knew at least 46 letters and can read 6 familiar words at endline.

<sup>4</sup>Logistic regression ran with groups of students who remained non-readers and those who switched from being a non-reader to reader. Students who remained readers were excluded from this analysis.

**Table 6**

	Remained non-reader (N=60)	New reader (N=87)
Concepts About Print – Baseline	9.4	10.1
Concepts About Print – Endline	10.9	13.5**
Letter Knowledge – Baseline	34.4 (0-61)	42.9** (0-62)
Letter Knowledge – Endline	48.4 (0-62)	60.8** (46-62)
Single Word Reading – Baseline	0.75 (0-11)	2.9** (0-20)
Single Word Reading – Endline	3.1 (0-16)	17.9** (6-20)

(significant difference of  $p = ** < .01$ )

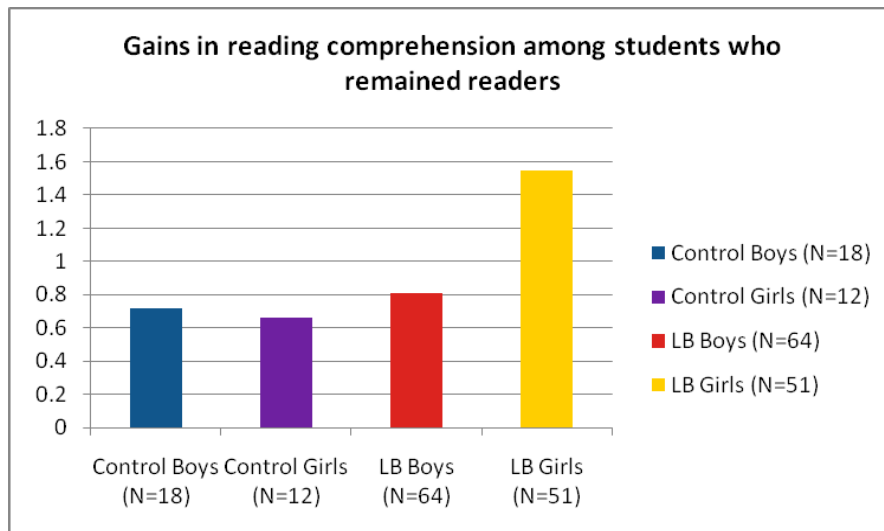
This seems to indicate that there is a threshold at which students can quickly make the switch from being a non-reader to becoming a new-reader. ***As with the attrition evidence, these data suggest the need for Literacy Boost to improve in the next phase of intervention upon the identification of and support for those who are struggling with the most basic skills.***

## Impact on Boys and Girls

### *Girls versus Boys within school types*

There are about an equal number of Literacy Boost boys and girls (110 girls and 115 boys) and comparison boys and girls (35 girls and 35 boys) assessed at endline.

In terms of literacy skills, there are significant differences between boys and girls amongst comparison students, in Letter Knowledge and Single Word Reading at endline, revealing that at the end of this school year, girls are struggling more with these skills than boys. Among Literacy Boost students there are no significant differences between boys' and girls' scores at endline except for reading comprehension, whose gain score also shows a significant difference in favor of girls.<sup>5</sup>

**Figure 9**

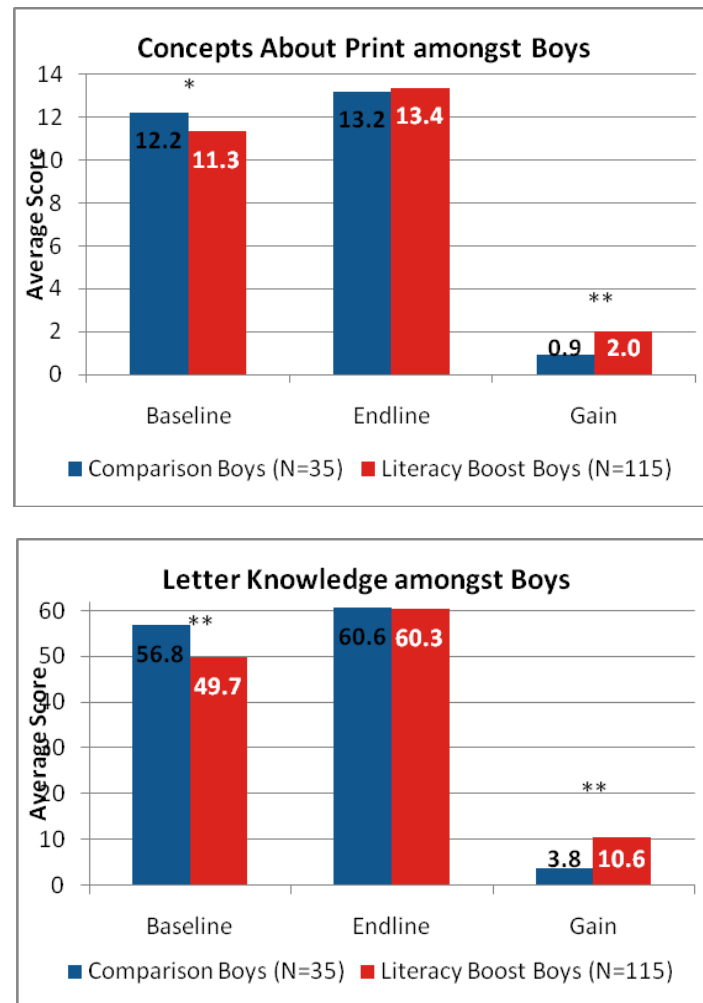
<sup>5</sup>Figure includes those that were already readers at baseline only, no new readers (but gain scores remain significantly different between Literacy Boost boys and girls when adding new readers).

Figure 9 shows a significant interaction between gender and school type ( $p=.03$ ). Girls and boys within the control group do not have significantly different gain scores in reading comprehension, but they do within the Literacy Boost group. **As Literacy Boost school girls and boys' scores at base-line were not significantly different from each other, we conclude that Literacy Boost promoted higher end of year reading comprehension and supported greater reading comprehension learning for girls during the school year.**

### **Literacy Boost Boys vs. Comparison Boys**

At baseline, Literacy Boost boys demonstrated more limited skills than comparison boys in Concepts about Print and Letter Knowledge (there were no other significant differences between types of school amongst boys). At endline, Figure 10 shows that differences were not significant anymore as Literacy Boost boys caught up with comparison boys and closed the gap that existed at baseline.

**Figure 10**



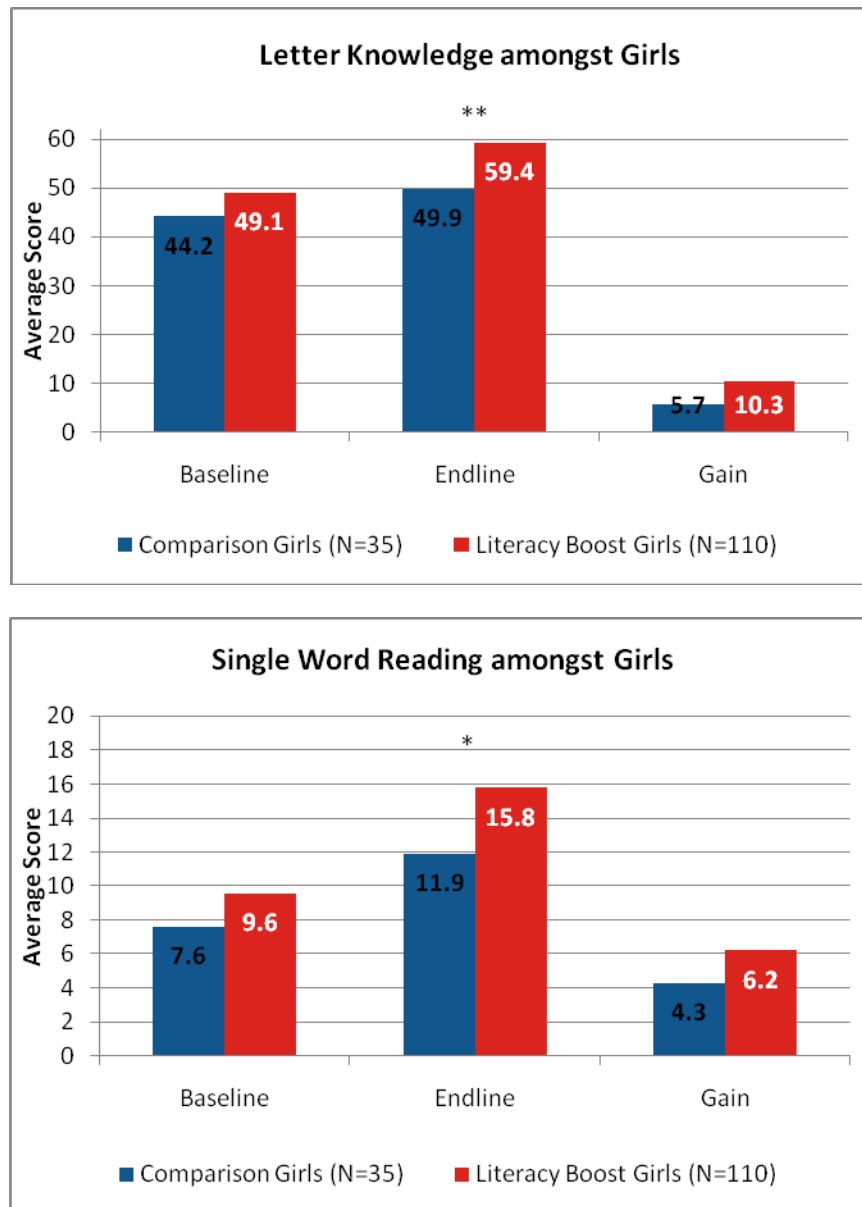
**As gain scores between Literacy Boost and comparison boys are significant ( $p < .01$ ), we conclude that Literacy Boost promoted greater learning in Concepts About Print and Letter Knowledge for boys and closed the learning gap seen at baseline.**



### ***Literacy Boost Girls vs. Comparison Girls***

At baseline, Literacy Boost girls and comparison girls did not perform differently in any of the literacy skills. At endline however, Figure 11 shows that Literacy Boost girls significantly outperformed comparison girls in Letter Knowledge ( $p<.01$ ) and in Single Word Reading ( $p<.05$ ), although gain scores are not significantly different between school types.

**Figure 11**



As Literacy Boost girls' scores at baseline were equal to comparison school girls' scores, we conclude that Literacy Boost promoted higher end of year letter knowledge and single word reading. As gains are not different, it did not support greater learning in these skills.

## Student Reading Habits

At endline, questions were added to the Literacy Boost students' student background questionnaire to gauge children's reading habits and practices. They were asked if they had a reading buddy or an older student who reads with them, if they borrowed books from the school library in a box or community Book Bank to read at home, and if they could name and summarize a favorite book or story.

**Table 7**

<b>Student Active Reading Indicators</b>	<b>Boys (N=115)</b>	<b>Girls (N=110)</b>
Read with a Reading Buddy	90%	85%
Read with a Reading Buddy three times a week	39%**	24%
Average frequency of reading with a Reading Buddy (times per month)	7.8*	6.6
Borrowed books from school library or community book bank	36%	31%
Borrow books twice a week	17%	11%
Average frequency of borrowing books (times per month)	2.4	2

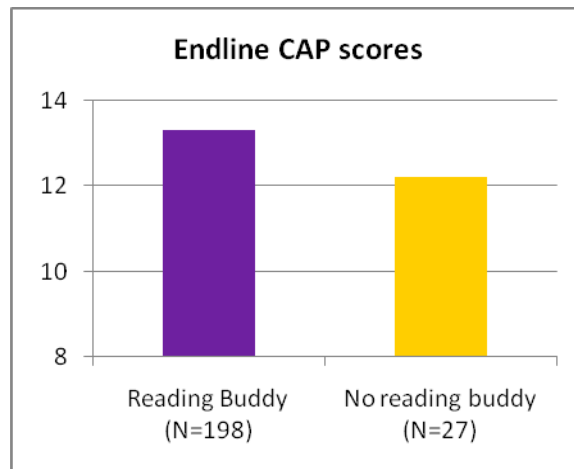
Literacy Boost students indicated that they came to know their favorite book or story by: reading it themselves (47%), having it read to them at home (45%), with a Reading buddy (14%). Significant differences between boys' and girls' reading habits exist in the frequency of participation in reading buddy activities. ***We conclude that overall boys participate in reading buddy activities more often than girls and recommend that attention be given to girls' participation during parent workshops as well as teacher trainings during the next phase of intervention.***

## Relationships between Student Background, Literacy Environment and Literacy Skills

### ***Having a Reading Buddy and Literacy Skills***

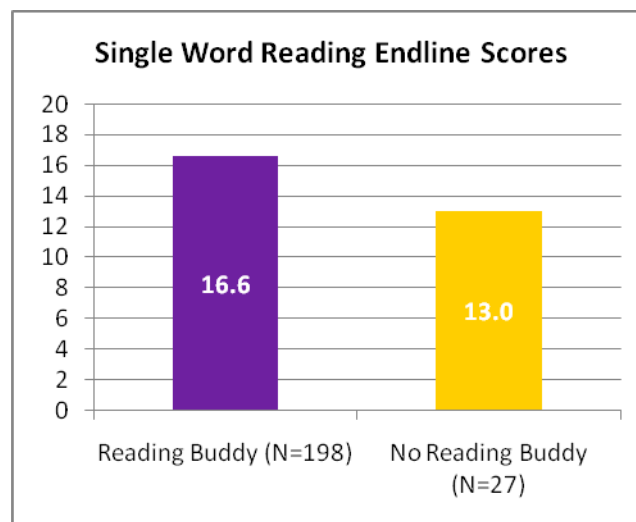
We explore relationships between the background and literacy data above with reading skills. Applying a multilevel model to account for the clustering of children in schools, we find that having a reading buddy is a significant predictor of Concepts About Print endline scores amongst Literacy Boost students. This also holds when controlling for socio-economic status as well as home literacy environment. On the other hand, within students who have a reading buddy, frequency of reading buddy activities does not predict CAP endline scores. It is important to note that these are correlation findings only; we cannot infer at this point that having a reading buddy led to higher CAP scores.

**Figure 12**



Reading Buddy is also a significant predictor of Single Word Reading scores at endline; this also holds when controlling for SES and literacy environment.

**Figure 13**



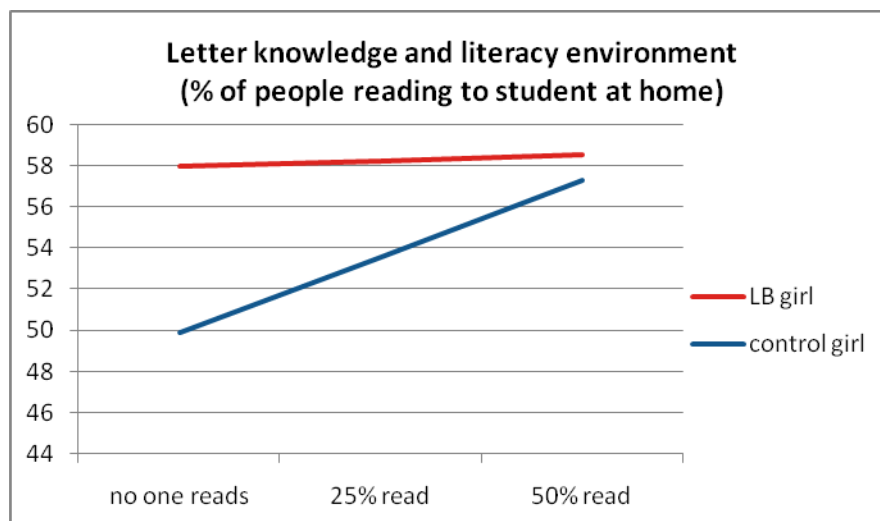
At the time of data collection for the endline assessment, Reading Buddy activities had only started for approximately 3 months. The above analyses suggest that having a reading buddy predicts higher reading skills; although these are correlational findings only, promoting these reading habits could increase literacy competencies and scores on these basic skills. Analyses of further assessments should test this again and also look at any effect of frequency of these activities. Other reading activities started later than reading buddy activities (book banks had been set up for 8 weeks at the time of the assessment) or had not started yet (reading camps) so it will be interesting to test whether attending these activities also predict higher literacy scores.

## Home Literacy Environment

Using a multi-level model to account for the clustering of students in schools, we find that significant predictors of letter knowledge are gender, type of school and the interaction between home literacy (as measured by the percentage of people reading to the student at home) and type of school. Unlike Concepts About Print and Single Word Reading, Letter Knowledge does not have as a significant predictor “having a reading buddy”.

Figure 14 shows that the predicted score in letter knowledge at endline does not change with a higher proportion of household members reading to the student at home for Literacy Boost students. On the other hand, for comparison students, the predicted letter knowledge score of a girl to whom no one reads at home is 7 points below that of a girl to whom 50% of the households reads at home. The pattern for boys is the same, except that it is shifted 3 points higher. This suggests that Literacy Boost contributes to closing the gap between students who are often read to at home and those who are not, and suggests that Literacy Boost benefits most students who are disadvantaged in terms of home literacy environment. This hypothesis should be tested in later assessments with other literacy outcomes.

Figure 14



## Conclusion

After three months of intervention, students in Literacy Boost schools have made significant gains in some literacy skills as compared to their comparison peers. More specifically, Literacy Boost students outperformed comparison students in Concepts about Print and Letter Knowledge, but did not show significant gains compared to comparison students in Single Word Reading, Fluency, Accuracy and Comprehension. Given this short intervention time, however, these results are promising, and future assessments should continue to evaluate the progress of these students as they benefit from Literacy Boost for a longer period of time.

This report can already inform and provide some recommendations for the next phase of intervention:

**Concepts about Print:** Students in Literacy Boost schools met the benchmark and Comparison students nearly so, but Literacy Boost students' gain scores were significantly higher than Comparison students (1.9 score gain and 1.3 score gain respectively). Literacy Boost students made greater progress in mastering CAP than comparison school peers, specifically in the more advanced CAP skills. We conclude that Literacy Boost promoted higher end of year average scores and learning in CAP.

**Letter Knowledge:** As Literacy Boost student scores at baseline were not significantly different from comparison student scores, but were significantly different at endline and in gain, we conclude that Literacy Boost promoted higher average letter knowledge and supported greater letter learning. There are, however, more letters to master before the average score meets the benchmark, set at 100% of the alphabet. The letter combinations/phonemes "Sh" and "Ph" are the ones that pose the greatest challenge.

**Single Word Reading:** As Literacy Boost and comparison students had similar scores at baseline and significantly different scores at endline (16.2 words for Literacy Boost students and 13.8 words for comparison students), we conclude that Literacy Boost promoted higher single word reading scores. But gains are not statistically different, so we cannot conclude with certainty that Literacy Boost promoted greater learning. More progress needs to be made to meet the benchmark. The majority of the words for which students scored lowest have longer sounds (e.g. maa), so more attention should be paid to these kinds of words in teacher training.

**Fluency, accuracy and comprehension:** Readers in both school types met the fluency benchmark set at baseline (42 words read correctly in one minute) but still have progress to make in order to reach our benchmarks for accuracy and reading comprehension (98% accuracy and 100% reading comprehension). These skills were not different on average between the school types, but comprehension scores were significantly different at baseline between comparison and Literacy Boost schools. Since they are no longer significantly different at endline, we conclude that Literacy Boost contributed to closing this comprehension gap during the intervention.

**Nonreaders:** The proportion of female non-readers (students who read 0 words in a minute) was not significantly different between comparison and Literacy Boost schools at baseline, but it is significantly lower among Literacy Boost schools at endline. We therefore conclude that Literacy Boost promoted the movement of more girls into the category of readers who have non-zero scores for fluency. The

significance of the reduction, however (36 percentage points among Literacy Boost and 23 among comparison) is not detectable in this sample, so we cannot conclude with certainty that Literacy Boost reduced the proportion of female non-readers during the intervention.

**New Readers:** Within the Literacy Boost group, having a reading buddy is highly predictive of making the switch between non-reader at baseline and reader at endline ( $p=.008$ ). This intervention was implemented for 14 weeks in Literacy Boost schools, and holds great promise for expanding reading practice and impact as the intervention continues in Year 2.

**Literacy Boost Boys and Girls:** In terms of literacy skills, among Literacy Boost students there are no significant differences between boys' and girls' scores at endline except for reading comprehension, whose gain score also shows a significant difference in favor of girls.<sup>6</sup> Literacy Boost promoted higher end of year reading comprehension and supported greater reading comprehension learning for girls during the school year.

**Literacy Boost Boys vs. Comparison Boys:** At baseline, Literacy Boost boys demonstrated more limited skills than comparison boys in Concepts About Print and Letter Knowledge (there were no other significant differences between types of school amongst boys). At endline, those differences were not significant anymore as Literacy Boost boys caught up with comparison boys and closed the gap that existed at baseline, and Literacy Boost gain scores are significantly higher comparison boys' gains. We conclude that Literacy Boost promoted greater learning in Concepts About Print and Letter Knowledge for boys.

**Literacy Boost Girls vs. Comparison Girls:** At baseline, Literacy Boost girls and comparison girls did not perform differently in any of the literacy skills. At endline however, Literacy Boost girls significantly outperformed comparison girls in Letter Knowledge ( $p<.01$ ) and in Single Word Reading ( $p<.05$ ) and we conclude that Literacy Boost promoted higher end of year letter knowledge and single word reading. As gain scores are not significantly different, we cannot conclude with certainty that Literacy Boost promoted greater learning in those skills.

**Reading Habits:** Significant differences between boys and girls' reading habits exist in the frequency of participation in reading buddy activities. We recommend that attention be given to girls' participation in these activities during parent workshops as well as teacher trainings during Year 2.

**Relationships between Student Background, Literacy Environment and Reading Skills:** We find that having a reading buddy is a significant predictor of Concepts about Print and Single Word Reading; this holds when controlling for SES and literacy environment. It is important to note, however, that these are correlation findings and do not mean that having a reading buddy caused students to score higher on those skills. We also find that the percentage of people reading to the student at home matters for comparison school students (a higher proportion of people reading to the student at home is associated with a higher endline letter knowledge score, controlling for gender) but not for Literacy Boost students, suggesting that Literacy Boost particularly benefits those who have a "poorer" home literacy environment.

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<sup>6</sup>Chart includes those that were already readers at baseline only, no new readers (but gain scores remain significantly different when adding new readers).

**Inconsistent attendance or drop out:** a high proportion of female non-readers – spread across Literacy Boost and Comparison schools – is absent at the time of the posttest. Overall, girls who are struggling to make progress in basic reading skills could be at a higher risk of inconsistent attendance and dropping out of school. Literacy Boost should pay particular attention to those girls in the next phase of intervention.

## **What we know thus far**

Overall, results to date are encouraging and show great promise for both Literacy Boost teacher training and community action activities.

We know that in 15 weeks of intervention (or less):

1. Significant impact is clear in the most basic skills – CAP and letter knowledge – those first introduced to the teachers 15 weeks prior to the assessment. Further, it is clear for both boys and girls as compared to peers in comparison schools.
2. Significant impact in single word reading is limited to raising the average score by the end of year. Greater progress needs to be made to have evidence of greater learning than in comparison schools.
3. Fluency and accuracy were not different among readers, who all made progress – but significantly fewer girls in Literacy Boost schools are now nonreaders.
4. Literacy Boost students closed a reading comprehension score gap, and promoted greater comprehension for girls.
5. Having a reading buddy predicts whether a Literacy Boost student switched from being a nonreader to a reader. It also predicts Concepts About Print and Single Word Reading scores.
6. Literacy Boost benefits those who are at a disadvantage at home in terms of home literacy environment.
7. In all schools, there are struggling readers, especially girls, whom we need to identify and support more systematically in both school attendance and basic reading skills development in Year 2.