



Save the Children®

Literacy Boost

Metro Manila

Endline Report

March 2015

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Executive Summary

This report examines the results of a learner background survey and reading assessment conducted in Metro Manila prior to beginning the Literacy Boost intervention and again after a year of implementation. The baseline survey and reading assessment covered 940 Grade 2 learners in two schools in Caloocan North, 500 from 25 sections of an intervention school and 440 from 22 sections of a control school. The follow up gathered data again from 754 of these children. The intervention school received Literacy Boost and the comparison school received no intervention. This report explores: the comparability of the learners in Literacy Boost and comparison schools at endline, the skills profiles at endline and gains from the baseline, equity in learning by gender, poverty, home literacy and other characteristics. The findings will inform targeting of further intervention.

Findings

After one year of full Literacy Boost programming in Metro Manila, there were very few changes in home literacy environment other than an increase in textbooks at home, and also a reported increase in religious materials. The numbers of children reporting being read to at home, and children's reading materials such as stories and coloring books, actually dropped statistically significantly for Literacy Boost students. The reasons are unclear, but one possibility is that awareness and discrimination of literacy materials is increasing for these children.

- **Recommendation 1: Continue to prioritize working with communities and family to increase home literacy environments.**

Few Literacy Boost students reported using book banks or attending reading camps. Reasons for underutilization should be investigated; however home environment is likely significant, as over half of students who attended reading camps reported missing days due to housework or parental permission.

- **Recommendation 2: Ensure that communities and families are actively supporting Literacy Boost reading and literacy opportunities for their children**

In terms of reading skills at endline, learners in the Literacy Boost school had higher gains in English most used words and Filipino and English fluency than the comparison school and gains in the other subtests that were statistically significantly greater than baseline, but not statistically greater than the comparison school's progress, although gains were equal to or greater than the comparison school. Literacy Boost students are also rapidly transitioning from non-readers or beginner readers to emergent readers, although more quickly in Filipino than English, which is to be expected given that Tagalog is the home and community language of most students. Importantly, students who are readers in both Filipino and English have higher Filipino achievement than students who are Filipino readers only. This finding is supported by language and reading acquisition research which consistently shows that reading skills in a known language support reading development in additional languages. Students need Filipino reading skills to develop English reading skills.

- **Recommendation 3: Ensure that all students are acquiring solid reading skills in Filipino.**
- **Recommendation 4: For students struggling in English, attend to any difficulties in Filipino before addressing English-specific reading difficulties.**

Specific items on subtests were clearly much more difficult than others. Examples include identifying how a story progresses, Filipino letters, the words 'read these sentences' and 'pook', and inferencing and literal reading comprehension items. These difficulties represent areas for priority attention in instruction, as, for example, knowing how stories develop and Filipino letters are fundamental to reading, and difficult common words may indicate lack of attention in the curriculum. Very importantly, the gains on evaluating and summarizing items are impressive, but higher order thinking skills must be taught alongside teaching children to build meaning from passages rooted in the information in the passage.

- **Recommendation 5: Deal with issues that stand out on subtests as much more difficult than other items testing the same topics, especially foundational issues that should no longer be challenging to the majority of students**
- **Recommendation 6: Ensure students are acquiring reading skills that enable them to build meaning rooted in the passage, as well as integrating higher order thinking skills.**

The final section of the analysis deals with equity and struggling students. Taking only Literacy Boost students present at baseline and endline, students from disadvantaged backgrounds were not predicted lower endline scores or fewer gains. However girls score significantly better than boys on several subtests, meaning that the program has to date benefitted girls more than boys. Additionally, students with weak home literacy environments were predicted lower endline scores and less progress in Filipino reading skills, while those that have not attended ECD were predicted fewer gains in English reading skills. Finally, struggling students are more likely to be boys and of low socio-economic status. Such students have lower gains in almost all subcomponents of the assessment than their more skilled peers.

- **Recommendation 7: Promote reading skills as a complementary part of boys' gender identity, to boys, teachers and families**
- **Recommendation 8: Continue to support developing home literacy environments.**
- **Recommendation 9: Continue to support teacher education and development, to ensure that struggling students (along with non-struggling students) receive good quality classroom instruction.**

I. Introduction

This report examines the results of a student background survey and reading assessment conducted in Metro Manila prior to beginning the Literacy Boost intervention and again after a year of implementation. The baseline survey and reading assessment took place in July 2013, covering 940 Grade 2 learners from 25 sections of one large urban school receiving the Literacy Boost intervention and 22 sections of Camarin D Elementary School (CADES) receiving no Literacy Boost intervention. Both schools are located in the Caloocan district of Manila in the Philippines. The follow up in July 2014 gathered data again from 754 of these children as well as 49 additional children, who were now in Grade 3. This report explores: the comparability of the learners in Literacy Boost and comparison schools, the skills profiles at baseline and endline, equity in learning by gender, poverty, home literacy and other characteristics. These results will inform targeting of further intervention.

The Literacy Boost program includes teacher training, community reading activities, and age-appropriate local language material creation to support emergent literacy skills among early-grade children. These skills include concepts about print, letter awareness, single word reading of most used words, reading fluency, reading accuracy, and reading comprehension. As part of Literacy Boost, learners are periodically assessed in each of these skills through an adaptable assessment tool to inform programming and estimate program impact. The data gathered from these schools is analyzed to present a snapshot of the emergent literacy skills of grade 3 students in these schools to inform the adaptation of Save the Children's Literacy Boost program to this context.

The key research questions to be explored in this report include:

1. How has the sample of learners changed over time?
 - Are the learners who were able to be found at endline different than those who were not able to be found? If so, how?
 - Did the attrition rate differ between Literacy Boost and comparison learners?
2. Of the students who were able to be found at endline, how comparable are baseline background characteristics and reading skills among Literacy Boost learners versus comparison learners?
3. What can the endline assessment tell us about students' reading skills?
 - What does this mean for continuing Literacy Boost programming in this area?
4. Did the Literacy Boost program exhibit impact on learners' reading skills?
 - For which types of learners was impact the greatest/least?
 - Does this impact result in more equitable outcomes for traditionally disadvantaged groups?
5. How does learners' development of reading skills over time vary by learner background and community literacy environment?
 - What does this mean for targeting Literacy Boost's various intervention components?

To investigate these questions, this report first describes the context and implementation history of Literacy Boost in Caloocan North. Next, this report gives an overview of the research methods used; including sampling, measurement, and analysis. The report will then analyze the attrition of the sample over time and

how intervention and comparison groups have or have not remained statistically similar. The report will then present results from an impact analysis investigating the extent to which Literacy Boost appears to have improved learners' reading skills. After this, learners' endline scores for each of the reading skills will be analyzed to determine which skills learners have mastered and which require additional improvement. Finally, the report will investigate any correlations between baseline-endline reading skill development and student background or community literacy environment variables using multilevel regression analysis.

II. Context

The urban district of Caloocan North is located in the northern part of the Metro Manila area in the Philippines. The vast majority of the population speaks Filipino (Tagalog)¹ as their native language. Caloocan is one of the more economically disadvantaged in the Metro Manila area. During periodic typhoons, schools are disrupted, property damaged, and residents killed in flooding throughout the area. Other challenges faced by elementary school students in this area include being in large classes, having short contact time with teachers (approximately 4 hours per day), and exposure to violence in the community in addition to extremes of pollution and a generally unsanitary environment.

III. Implementation History

The Literacy Boost program in the Philippines began September 2012 for Caloocan North starting with the Cielito Zamora Memorial School (CZMS) as a pilot site. In February 2013 an agreement was signed with the Department of Education- Caloocan. In July 2013, an endline assessment was conducted for CZMS, and at the same time baseline data for two new schools were collected: Pag-asa Elementary School (PAES) and Camarin D Elementary School (CADES). Actual implementation started August 2013 with Reading Awareness facilitator training. Reading Camp facilitators training took place in January 2014 and Reading Camps and Reading Awareness sessions were held between March and May 2014. The endline assessment took place in July 2014. Complete details of implementation can be found in Table I.

Table I. Implementation Timeline and Outputs. Caloocan North.

Date	Activity	Output
Feb. 6, 2013	Memorandum Of Agreement held @ DepEd - Caloocan	Signing of MOA for Literacy Boost
July 2013	Baseline assessment Grade 2 students assessed on literacy concepts	- 940 students assessed, 500 from 25 sections of the intervention school and 440 from 22 sections of the control school
August 30, September 6, 20 & 27, Oct. 5, 2013	Reading Awareness Facilitators Training	26 adults equipped to facilitate Reading Awareness sessions for parents in Caloocan
Nov. 8 -9, 15-16 and 26, 2013		Additional 28 facilitators equipped to handle Reading Awareness sessions (13 GPTA officers and 15 Master Teachers of Pag-asa Elementary School)

¹ This report will use the term Filipino, as the reading assessment used is based on the grade 2 Filipino textbook. The differences between Filipino and Tagalog are minor, as Filipino is essentially a formalized version of Tagalog.

Jan. 18 – 19, 25-26, 2014	Reading Camp Facilitators Training	56 community members equipped to facilitate Reading Camps in 19 sites in Caloocan
March 16, 2014	Reading Camp Sessions	Reading Camp Sessions in 7 sites
March – May 2014	Reading Awareness Sessions	500 parents of struggling readers from grades 1 – 3 learned how to support their children with school work and provide activities at home to encourage them to read. These parents completed the Reading Awareness sessions in May 2014.
July 2014	Endline assessment Grade 3 students tested on literacy concepts	- 803 students assessed, 426 (420 repeated) from 24 sections of the intervention school and 377 (334 repeated) from 19 sections of the control school

IV. Methods

IV.1. Sampling

The sample for the baseline assessment encompassed 940 Grade 2 students, divided between 25 sections in the same large urban school of Pag Asa Elementary School, set to receive the Literacy Boost intervention (n of learners = 500), and 22 sections in the large urban school of Camarin D. Elementary School (CADES), receiving no Literacy Boost intervention (n of learners = 440).

Both Pag Asa and CADES schools are currently receiving the same School Health and Nutrition interventions from Save the Children, although CADES is a Kids Shine partner school for Save the Children sponsorship.

In the baseline study, 20 children in Grade 2 were sampled from each of the 47 sections. Ten boys and ten girls were randomly selected where there were more than 20 children present in a section on the day of assessment. These children were followed up one year later in the endline study. Where substantial numbers of children could not be found, additional children who had been in school for at least the past year were randomly sampled from the same school.

IV.2. Instruments and Measurement

For both the baseline and endline student assessments, all students in the sample were asked about their background characteristics (age, household possessions, household building materials, health indicators). Students were also asked about their family members and their reading habits (who they had seen reading in the week prior to the assessment, who had read to them).

After collecting this background data, all students were also given a literacy test composed of six components administered through five sub-tests: concepts about print, letter awareness, single word recognition (reading of most used words), reading fluency & accuracy (words per minute read correctly and total percentage of passage read correctly; both within the same sub-test), and a set of comprehension questions linked to the fluency & accuracy passage. The same set of comprehension questions were administered for both those students who could read independently (reading comprehension) and those who could not and thus had the assessor read to them (listening comprehension). Children who could read independently (readers) were defined as those who could read at least five words correct in the first 30 seconds of the fluency & accuracy sub-test and finish the full passage. Those children who could not read independently (nonreaders) were those

who either read less than five words correct in the first 30 seconds of the fluency & accuracy passage or who could not finish reading the passage.

The most used words, fluency & accuracy, and comprehension sub-tests were conducted in both Filipino and English, the former being the native language of nearly all of the students. All assessment instructions were given in Filipino.

Table 2. Assessment Instruments

Student background	Examples
General	Sex, age, language spoken at home, work
School-related	Mode of transit to school, repetition history
Socioeconomic status	Type of home, household size, household amenities/possessions
Home Literacy Environment	
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 have someone read to them
Community Reading Activities	
Participation in community reading activities	Use of school library, and book banks, participation in reading camps.
Reading Outcome	Description
Concepts about Print	Familiarity with books (e.g. cover, direction of text); 10 items
Alphabet knowledge	Number of letters/sounds known of 28, upper and lower case
Fluency	Number of words in a connected text read correctly in a minute (Filipino and English)
Accuracy	Percentage of words in a connected text read correctly (Filipino and English)
Comprehension	Ten comprehension questions answered correctly after reading a text aloud (Filipino and English) ²

IV.3. Analysis

This report will use comparison of means through clustered t-tests to assess the comparability of intervention and comparison groups. This report will also consider relationships between reading skills and background factors using multilevel regression models that account for clustering in schools.

V. Student Descriptive Statistics

V.1. Presence at Endline

Out of the 940 students who were surveyed in the baseline assessment, 754 were present at endline (80%). In total 186 students could not be found, 80 from the Literacy Boost school and 106 at the comparison school. The remaining database contains 420 students at the Literacy Boost school and 334 students at the comparison school. Therefore the Literacy Boost sample suffered 16% attrition compared to the comparison sample experiencing 24% attrition, a discrepancy that a logistic regression model and also t-test indicate is statistically significant. An additional multilevel regression analysis controlling for gender, ECD attendance, socioeconomic and home literacy variables shows that attrition seems to be generally random in the Literacy

² If students could not read the text, the enumerator read it to the student and then the student answered the questions as listening comprehension items. For the English text, if any student could not understand the questions, then the enumerator asked them in Filipino.

Boost school, although children in the highest SES quintile were more likely to be present at endline. However in the comparison school, chances of attrition were higher for boys.

V.2. Student Background Characteristics

At endline, students were 8 years old on average and 51% were female. In terms of assets, almost all children live in households with electricity (94%), a TV (91%) and a cell phone (96%). However only 37% of children live in households with a fridge and 27% with a computer. Among children who were present at baseline and endline, at baseline most children walked to school (71%) or travelled by passenger tricycle (20%), and 98% spoke Tagalog at home³.

The Literacy Boost sample appears to be slightly more at risk than the comparison sample. More Literacy Boost than comparison students walk to school, an indicator that is significantly negatively correlated with the socio-economic status index based on household assets and positively correlated with more housework. Literacy Boost students possess slightly lower household assets and are more likely to do housework, but spend more time playing than comparison students. It also appears that the Literacy Boost sample of students participated in fewer years of ECD, is slightly older and is more likely to have repeated a grade than the comparison sample. **When conducting impact analysis it is important to take into account the variables in which the groups are different and control for them.** All other characteristics were equal amongst groups.

Table 3. Student Background by Sample Group

Variable	LB	Control	Significance	Total	N
% Female	51%	50%		51%	803
Age in years	8.5	8.3	*	8.4	795
% Speaks Tagalog at home [^]	98%	98%		98%	754
Travel to school % Walks [^]	77%	64%	***	71%	752
% Passenger tricycle [^]	17%	25%	**	20%	752
% Previously attended ECD	85%	85%		85%	799
Years of ECD	1.5	1.8	*	1.7	521
Years in School	3.1	3.1		3.1	506
% Has repeated a grade	22%	15%	**	19%	790
# of household members	3.2	3.2		3.2	803
# of household assets	4.0	4.0		4.0	803
% electricity	92%	96%	**	94%	800
% TV	89%	93%		91%	800
% radio	64%	57%	*	60%	800
% cell phone	97%	94%		96%	800
% refrigerator	38%	34%		37%	800
% computer	26%	28%		27%	800
Work/chores index	32	29	**	31	803

³ These data were collected only at baseline.

Types of work	% housework	99%	89%	***	94%	802
	% childcare	55%	51%		53%	802
	% for money	6%	4%		5%	802
Study index		51	49		50	803
Play index		25	20	***	23	803
SES index (ses)		12	12		12	800

* Statistically significant difference between Literacy Boost and comparison groups at the 5% level, ** at the 1% level, *** at the 0.1% level

^ For students present at both baseline and endline only, because these data were collected only at baseline.

Health indicators for the sample are normal on average. The only statistically significant health differences between Literacy Boost and comparison students are that comparison students were less likely to have eaten breakfast and appear to have eaten a slightly smaller breakfast on the day of assessment than Literacy Boost students, and are also less likely to have eaten in the past four hours than Literacy Boost students.

Table 4. Student Health Indicators by Sample Group

Variable	LB	Control	Significance	Total	N
Ate breakfast on day of assessment	97%	91%	***	94%	803
Size of breakfast	2.3	2.2	**	2.3	750
Had eaten within last 4 hours	77%	67%	**	73%	726
Ill on day of assessment	3%	5%		4%	582
Pain on day of assessment	9%	10%		9%	788
Height in centimeters	125	123		124	801
Weight in kilograms	23	26		24	801

* Statistically significant difference between Literacy Boost and comparison groups at the 5% level, *** at the 0.1% level

V.3. Home Literacy Environment

An important aspect of reading development concerns the home literacy environment (HLE). How are children exposed to the printed word in the home? How much access do they have to books and print to practice their nascent reading skills? Many Literacy Boost activities are centered on helping parents and communities to enhance the HLE. As such, it is important to measure where learners' HLE begins and how it changes over time.

Figure 1 presents the changes of reading materials at home and Figure 2 the changes in home literacy habits. Both figures are for those students present at both baseline and endline for Literacy Boost and Comparison students.

At endline, 92% of children in the Literacy Boost school had textbooks at home compared to 77% at baseline, an increase of 15 percentage points and statistically significant. Children at the comparison school also increased possession of textbooks at home, from 93% to 98%. The percentages of children reporting religious materials at home also increased for both schools. However, stories and coloring books at home decreased in

both schools, for example from 53% to 45% for stories in the Literacy Boost school. All of these described changes were statistically significant.

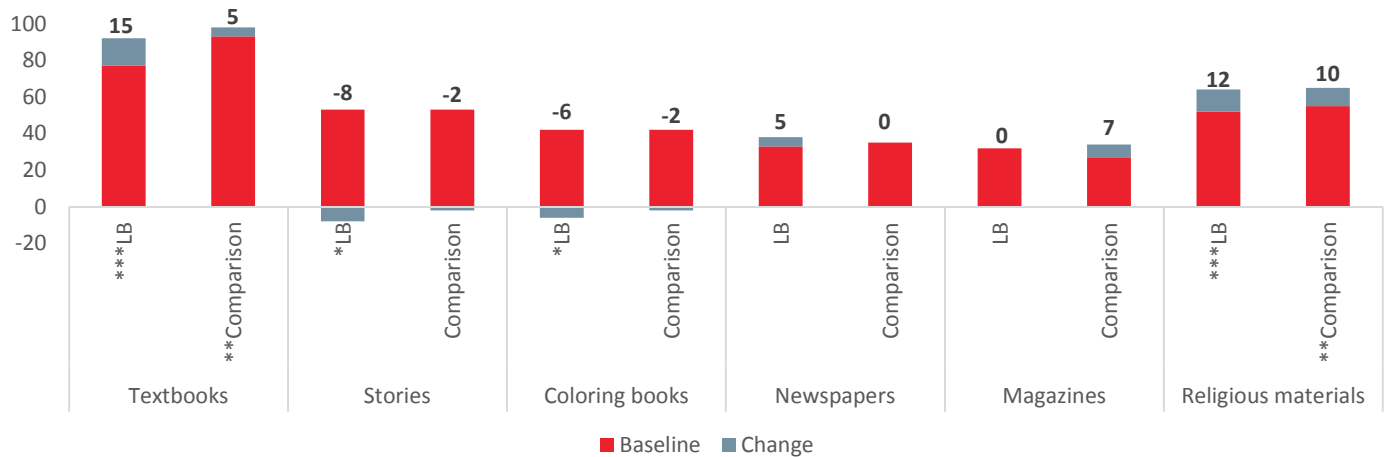


Figure 1. Baseline and Change in Home Literacy Environment - Reading Materials

Little change was observable for the schools in the percentage of students who have people engaging in literacy activities at home with them. The only statistically significant change was a drop in both the LB and comparison school in the percentage of students who have someone read to them. As the drop is the same for LB and comparison students, this drop may be due to decreased communal reading as the children get older.

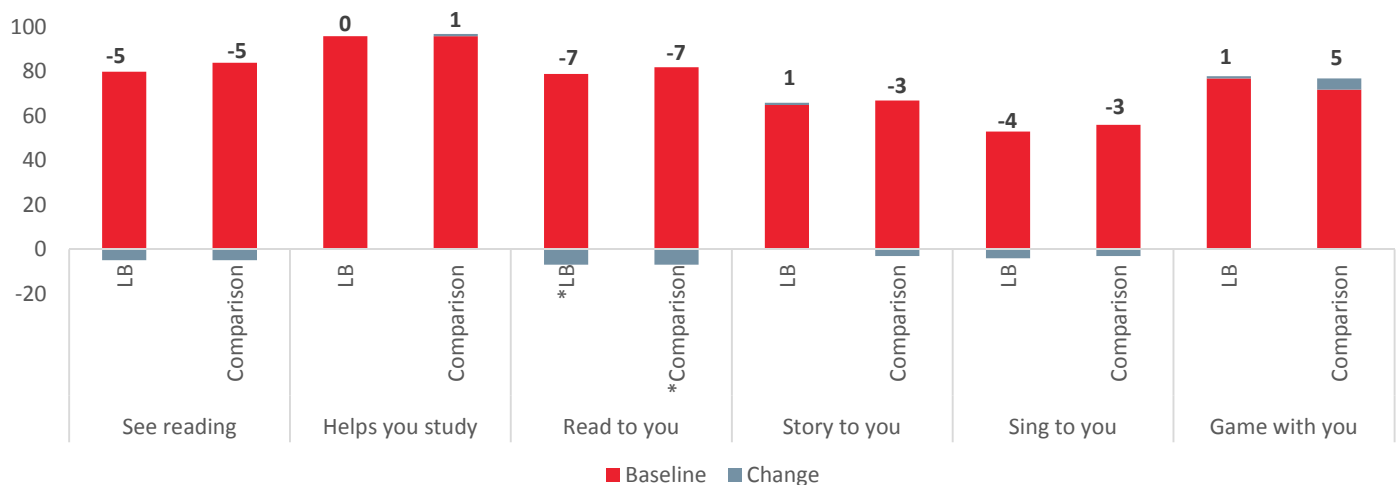


Figure 2. Baseline and Change in Home Literacy Environment – Family Literacy Activities

As the trends were the same in both schools, it is unlikely that Literacy Boost has had an effect, positive or negative, on availability of reading material or on literacy activities at home. It is unexplained why the availability of stories and coloring books decreased in LB schools. Perhaps it is due to increased awareness among children of what different types of reading materials are. **Literacy Boost should continue to focus on enhancing the amount of child-friendly reading materials in the homes of learners, and on helping families engage in literacy-supporting activities.**

V.4 Use of Literacy Boost literacy resources

The numbers of LB students reporting use of mobile book banks and participation in reading camps was not very high. Due to sample size, only descriptive analyses are reported below.

V.4.A. Book banks

At endline 4% (n=18) of LB students reported using LB book banks. One student in the comparison school also reported using book banks. Of the LB students who used book banks, 16 of them reported borrowing books between one and five times a week, with an average of 2.3 times a week, and 10 of them could name their favourite book. **Book banks appear underutilized and they should be promoted. The book banks should also contain appropriate materials for the children they are aimed at.**

V.4.B. Reading camps

For reading camps, 10% (n=43) of LB students reported attending camp. Thirteen students from the comparison school also reported attended reading camps. LB children’s responses are discussed here. Children reported attending anywhere between once and always, but on average they reported ‘sometimes’. Story time was by far the favorite activity at reading camp, with 63% of children naming this activity as their favorite (see Table 5). Of the children that reported participating in reading camps, 49% (n=21) made materials to take home, and half always made these materials while the other half sometimes made materials. When asked what they learnt at the reading camps, two thirds of children (n=29) mentioned learning to read in their answer. **The reading camps clearly communicated an emphasis on reading and stories. Positive communal reading experiences are very important at this age, and children should be encouraged to attend, while ensuring the camps are enjoyable as well as substantial.**

About half the children reported usual attendance of between 10 and 20 children, although estimates ranged from 1 to 60. Eighty four percent (n=36) of the LB children who attended reading camps reported missing a session, the most common reasons being housework (n=13) or parental permission (n=6). **The program should continue to show families the importance of reading camps and other literacy activities.**

Table 5. Reading Camp Percentages (LB Students)

Favourite activity at reading camp		Reasons for missing reading camp	
Activity	Percentage	Reason	Percentage
Cannot name an activity	7	Housework	36
Sing and dance	9	Parental permission	17
Journal	14	Sick	8
Make and Take	7	Lazy	3
Story	63	Don't know	3
n=43		Other reason	33
		n=36	

VI. Endline Results

In this section we examine average and gain scores in each literacy skill area to assess the impact of Literacy Boost on student learning outcomes. Table 6 provides a summary of baseline, endline and gain scores on each subtest for all students present at baseline and endline. Significance tests use clustered standard errors to account for the grouping of students within sections. Correlation analyses and regression models were also run to verify that the differences were still significant when holding equal the background variables on which the samples differed.

Table 6. Baseline, Endline and Gains in Literacy skill scores by Intervention Groups

Variable	Sample Group	Baseline Score	Endline Score	Change from Baseline to Endline	Sig. Diff. in Change between Groups	Effect size of diff in gain scores
Concepts about Print (%)	Comparison	59	63	4	-	0.08
	LB	56	64	8		
Letters (%)	Comparison	86	92	6	-	-0.02
	LB	86	91	6		
MUW (%) Filipino	Comparison	80	92	12	-	-0.04
	LB	78	89	11		
MUW (%) English	Comparison	60	74	14	*	0.08
	LB	54	75	21		
Fluency (wcpm) Filipino	Comparison	32	51	19	*	0.11
	LB	28	52	24		
	LB – readers	45	66			
	LB – non-readers [^]		27			
Fluency (wcpm) English	Comparison	26	46	20	*	0.10
	LB	21	47	26		
	LB – readers	54	77			
	LB – non-readers [^]		27			
Accuracy (%) Filipino	Comparison	66	81	15	-	0.04
	LB	59	81	22		
	LB – readers	94	96			
	LB – non-readers [^]		56			
Accuracy (%) English	Comparison	39	60	21	-	0.06
	LB	33	60	27		
	LB – readers	84	92			
	LB – non-readers [^]		40			
Reading Comprehension (%) Filipino	Comparison	28	44	16	-	0.07
	LB	26	45	19		
Reading Comprehension (%) English	Comparison	16	33	17	-	0.06
	LB	13	33	20		

[^] Non-readers at baseline defined as those students that were not able to read the text given to them

VI.1. Program Impact of Literacy Boost

At the moment that the endline was collected, Literacy Boost students made significantly greater gains than comparison students in Filipino and English fluency and English most used words. Moreover, **Literacy Boost students started at a disadvantage but made greater gains and drew level with the Comparison students on every measure of intermediate and higher-level reading skills, even if the gains were not statistically significant.**

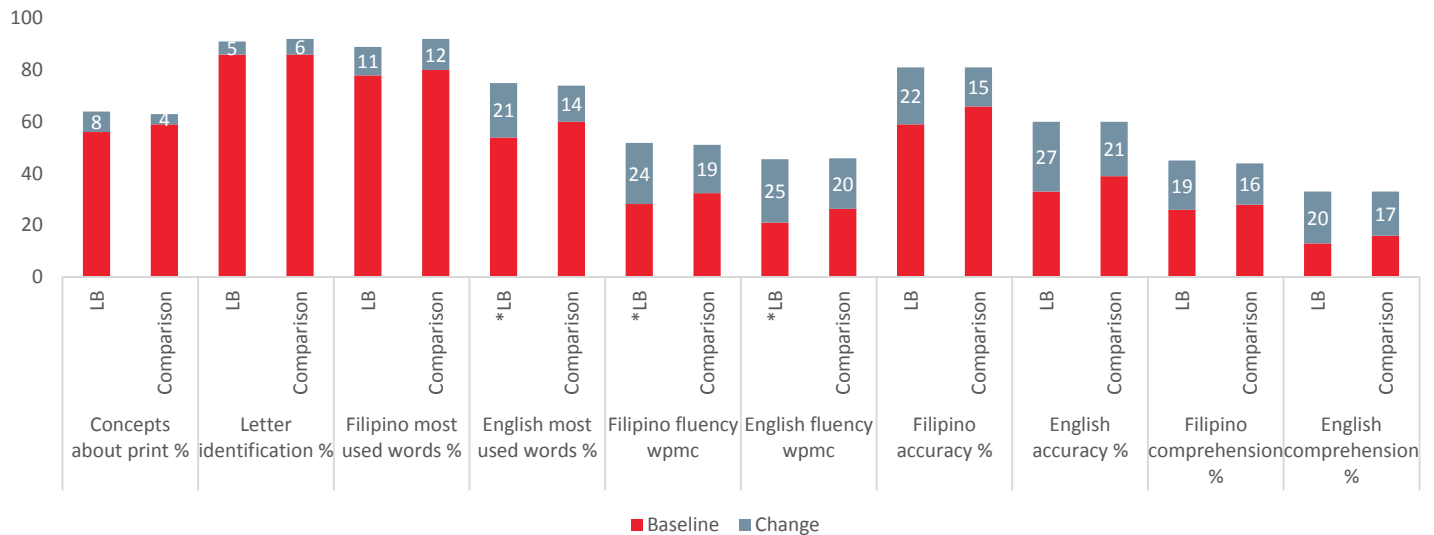


Figure 3. Reading Skills at Baseline and Gains, by School

VI.2. Individual Skill Analysis

This section analyses the endline results of students from Literacy Boost schools.

VI.2.A. Concepts about Print

LB students made significant progress between baseline and endline results in CAP. However for such a foundational skill, students' mastery remains low. At baseline students recognized 56% of the structural components of books and by endline students recognized 64% of these components, an increase of about one additional question answered correctly. Additionally, some items were very difficult for the students, in particular items that asked children to show how stories develop. **Continued exposure to printed materials will increase children's comfort with and knowledge about books. Children should be clearly shown how stories develop in books.**

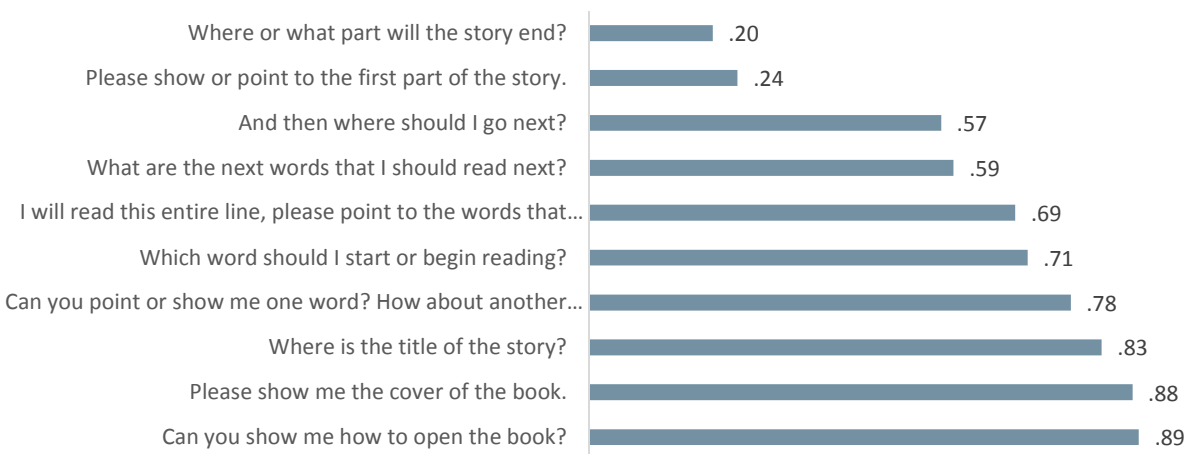


Figure 4. Concepts About Print Items - Proportion of Students Responding Correctly (LB Students)

VI.2.B. Letter Awareness

Letter identification is a foundational skill in which LB students are reasonably strong. At baseline, students recognized 86% of letters (48 out of 56 letters) presented to them and by endline students correctly identified 91% of letters (51 out of 56 letters).

At baseline the most difficult letters for LB students were (beginning with most difficult): Ñ, r, l (el), ñ, ng and NG. Only 61% to 70% of students named these letters correctly. At endline these letters were still the most difficult letters, but the percentage of students naming them correctly had risen to between 64% and 82%. **All four Filipino letters remain recognized by less than 80% of students, and special attention should be paid to these letters to ensure that students receive sufficient exposure to become familiar with them.** The letter ‘l’ (lowercase L) appears an outlier and may be due to students confusing lowercase L with uppercase i (e.g., l and I), the font used in the test should also be checked.

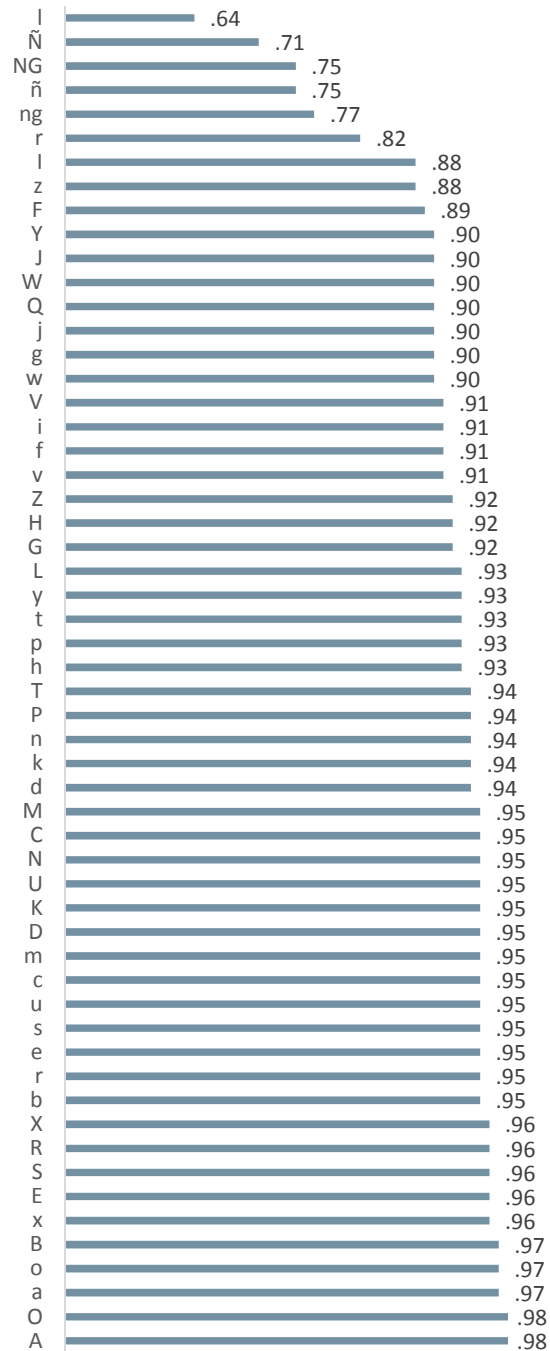


Figure 5. Letter Identification - Proportion of Students Naming Each Letter Correctly (LB Students)

As most students are reaching mastery of this skill, programmatic efforts can begin to focus on more advanced skills. However, Filipino letters should continue to receive special attention, and

any students appearing to struggle with letter identification should be given additional attention as soon as possible so as not to fall behind their peers.

VI.2.C. Most Used Words (Filipino and English)

The measure of Most used words identifies the twenty most frequent words in the students' textbooks, then tests children on their ability to read these words aloud. Students are stronger in Filipino than English, as expected. By endline, students are approaching a ceiling for the Filipino word set (89%), increasing 11 percentage points from 78%. In English, students were quite weak at baseline (54%), and by endline were reading 75% correctly; a substantial improvement but still room for progress.

Figure 6 shows the relative difficulty of each word on the measure, to help identify areas for instructional improvement. Students may find specific words difficult because they are encountered less often or have difficult orthography. It could also be useful to compare the word difficulties with the frequencies of the words in the textbook(s). The only English words with fewer than 60% of students reading correctly were 'read' 'these' and 'sentences'. Perhaps these words are often found in instructions that students rarely read? All the Filipino words were read successfully by at least 80% of students. 'Pook' was the only word that was substantially more difficult than the others.

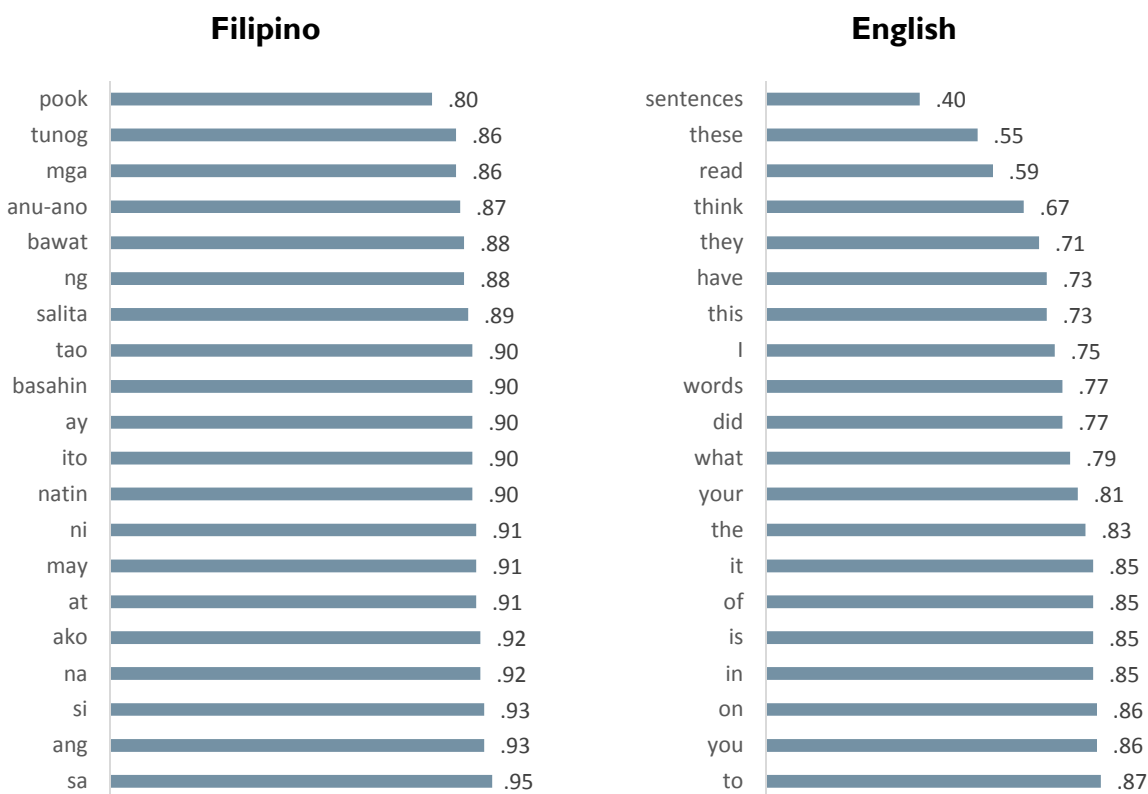


Figure 6. Most Used Words - Proportion of Students Naming Each Word Correctly (LB Students)

VI.2.C. Fluency and Accuracy (Filipino and English)

Fluency is measured by the number of words students read correctly in one minute from the reading passage presented to students. At baseline LB students (including non-readers as 0) could read an average 28 words per minute in Filipino and 21 words per minute in English. By endline, this result had increased to 52 words per minute in Filipino and 47 words per minute in English. These increases are substantial, an increase of more than double for English and almost double for Filipino.

Accuracy is measured by the percent of words read correctly out of the total reading passage. LB students' accuracy (including non-readers as 0) in Filipino was 59% at baseline and 81% at endline. In English accuracy was 33% at baseline and 60% by endline. In Filipino these gains were due largely to gains by baseline non-readers, whose accuracy was 56% by endline. At baseline Filipino readers were already reading with accuracy 94%, rising to 96% at endline. The gains in English accuracy were substantial for both baseline readers and non-readers. English readers rose from 84% at baseline to 92% at endline, while non-readers were reading with 40% accuracy at endline.

There is a discrepancy between students who are Filipino readers only and those who are both Filipino and English readers. Overall, Filipino readers read more slowly than English readers. However this is because English readers are a higher-performing subsection of Filipino readers. In fact, many lower achieving Filipino readers are still non-readers of English at endline. Table 7 below shows how students in reading groups differ in their Filipino/English reading fluency at endline. Given usual language acquisition trends, it is likely that students struggling in English are being held back by their weak Filipino reading skills. **It is important that students who are very weak in English should receive additional attention in Filipino as well as English.**

Table 7. Mean Percentages in Reading Passage Skills, by Language Mastery (LB Students)

Reader at endline in:	Non-reader	Filipino only	Filipino and English
Filipino fluency (# words per minute correct)	0	41	67
Filipino accuracy (% words read correctly)	0	92%	97%
Filipino comprehension (% correct)	0	42%	57%
English fluency (# words per minute correct)	0	0	70
English accuracy (% words read correctly)	0	0	89%
English comprehension (% correct)	0	0	49%
% of total students	16%	17%	68%

Taken together, fluency and accuracy show that students are making strong gains in intermediate reading skills. Care should be taken to support Filipino as a basis for mastering English.

VI.2.D. Comprehension

Students were given a passage in Filipino and a passage in English, each followed by ten comprehension questions. Students were asked to read aloud, and those who could not read a single word were read the passage by the assessor. For the English passage, students were first asked the comprehension questions in English, and if they could not understand a question they were asked the question again in Filipino.

Students in LB schools made significant progress. At baseline after reading the Filipino passage, students answered 2.6 questions correctly whereas at endline they answered 4.5 questions correctly. In English at baseline, students answered 1.3 questions correctly that were asked in English, and this rose to 3.3 questions correct by endline.

However the interesting findings are in the difficulty of the skills assessed. Summarizing and Evaluating were the easiest skills for the children, with 77% LB students at endline responding correctly to the Filipino

summarizing question, and 67% responding correctly to the Filipino evaluation question. The trend is similar in English, as 52% answered the summarizing question correctly and 49% answered the evaluation item correctly, although the greater difficulty in English compared to Filipino reflects the lower mastery levels of English among the students. In contrast, inferencing and understanding literal information were clearly more difficult than evaluating and summarizing in both Filipino and English. Figure 7 below shows the relative difficulties. In Filipino, children could answer one inferencing question (32% of three questions), and 1.6 literal information questions (41% of four questions). In English, children answered 1.1 literal information questions correctly (27% of four questions) and 1 inferencing question correctly (33% of three questions).

These results indicate a couple of issues. Most importantly, inferencing and understanding literal information are the strongest indicators that children are fully comprehending a passage, and the scores on these skills remain low. Tellingly, the skill difficulty hierarchy was the same at baseline and the children made greatest gains on the two easier skills (summarizing and evaluating). **Careful efforts should be made to ensure that children are acquiring foundational comprehension skills: the ability to build meaning rooted in the information in the passage.** Interestingly, understanding literal information was harder in English than inferencing, whereas generally inferencing is the most difficult reading skill. This issue may be due to the students being learners of English and understanding literal information being rooted in detailed vocabulary and syntactic knowledge. The tests questions could also be checked to make sure they are testing the correct skill at the appropriate level. If not already in place, ensure that students can refer back to the passage when asked comprehension questions, so as to avoid testing their memory rather than their reading comprehension.

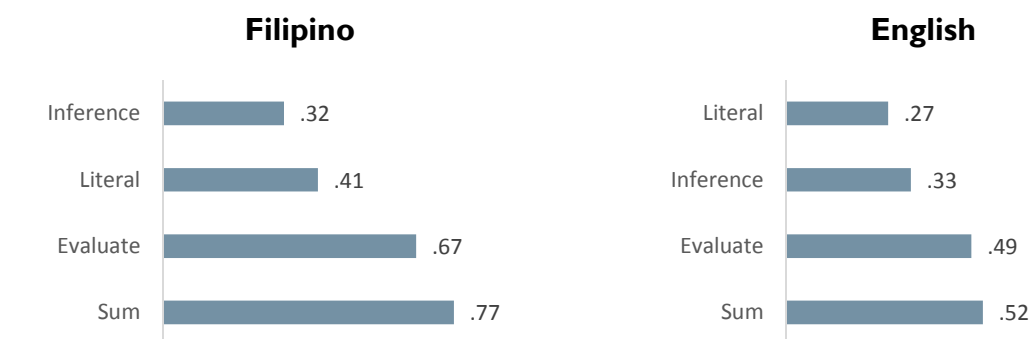


Figure 7. Reading Comprehension – Average Proportion of Items Answered Correctly, by Skill (LB Students)

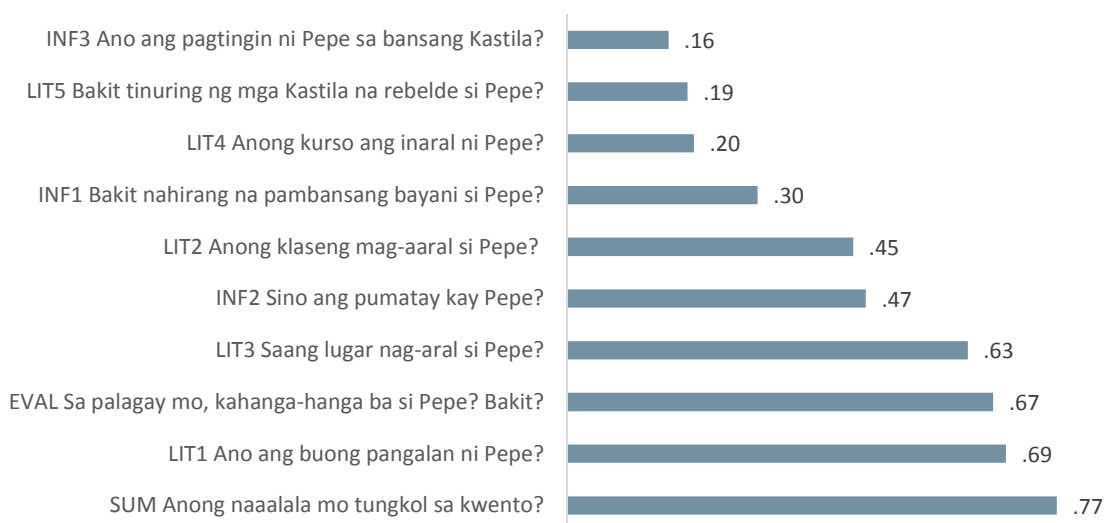


Figure 8. Reading Comprehension – Proportion of Items Answered Correctly, Filipino (LB Students)

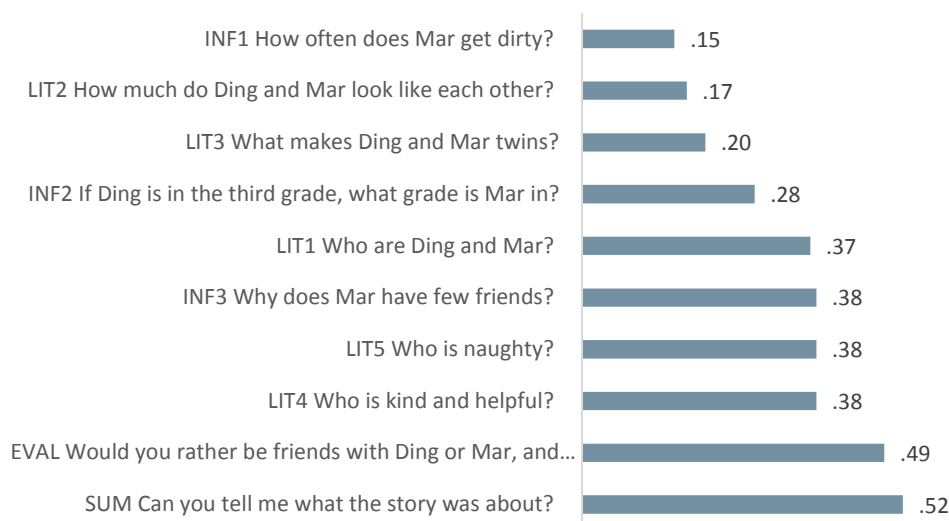


Figure 9. Reading Comprehension – Proportion of Items Answered Correctly, English (LB Students)

An analysis of readers and non-readers at baseline and endline shows that at the LB school fewer students became readers than at the comparison school. However almost no students in the LB schools moved backward and became non-readers, while in contrast 8% of comparison students became non-readers in Filipino and 12% became non-readers in English. There appears to be an instability in the Comparison school that is not found in the LB school. Finally, in the LB school 15% of students started as non-readers and were still non-readers in Filipino at endline, and 31% remained non-readers in English.

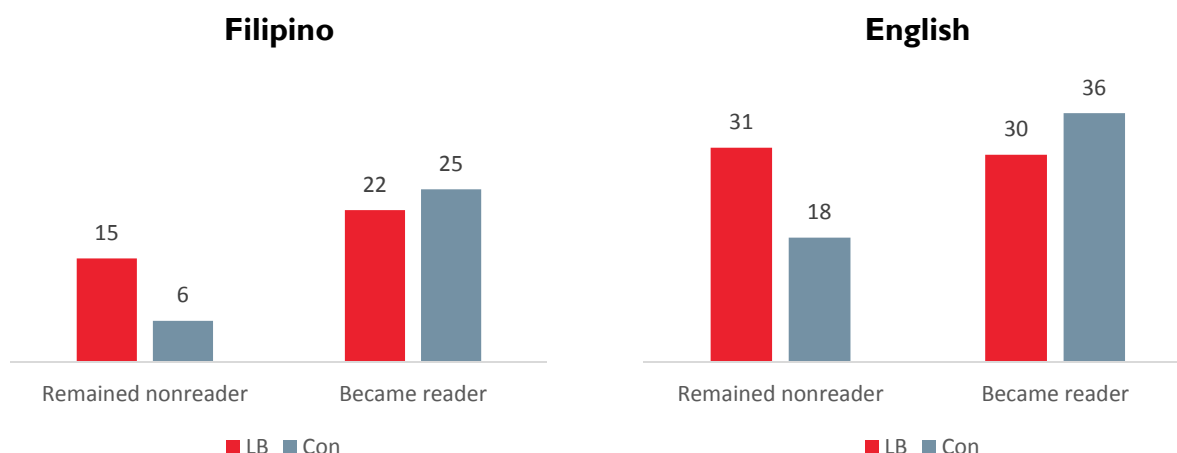


Figure 10. Reading Comprehension - Change in Baseline Non-Readers Between Baseline and Endline

A further measure of children's reading skills is to classify them into emergent, beginning, and reading with comprehension tiers (see Figure 11). The LB school has made great progress in this respect. At baseline for Filipino, 33% of LB learners were beginner readers and 5% were readers with comprehension. By endline in Filipino 54% of learners were classified as beginner readers and 14% were readers with comprehension. At baseline for English, 15% of LB learners were beginner readers and 3% were readers with comprehension. By endline in English 34% of learners were classified as beginner readers and 13% were readers with comprehension.

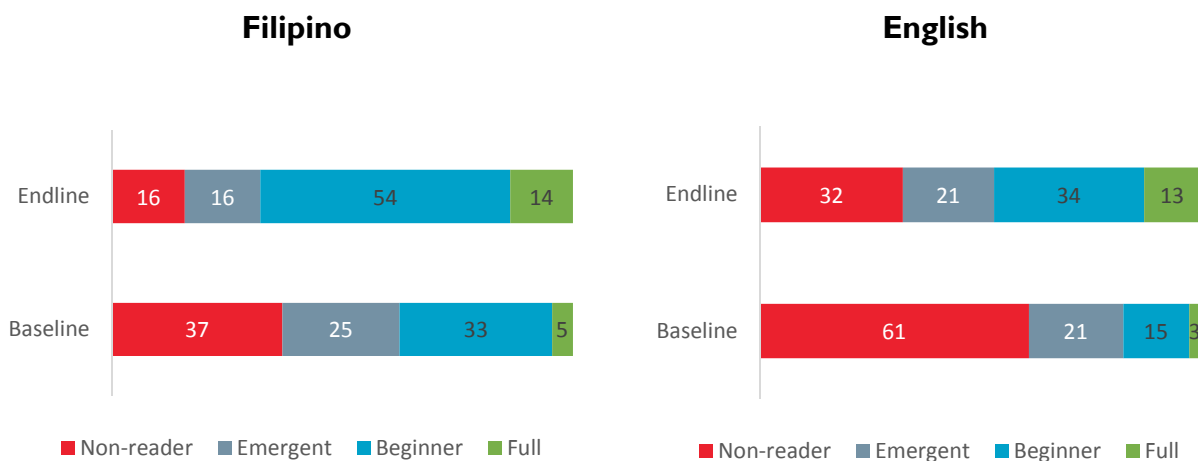


Figure 11. Reading Comprehension – Reading Tiers, Baseline and Endline (LB Students)

Note: Emergent Readers correctly answer less than 40 percent of the comprehension questions; Beginning readers correctly answer between 40 and 80 percent of the questions correctly; Readers with Comprehension correctly answer more than 80 percent of the comprehension questions. Tier cut-offs were set in combination with associated fluency and accuracy levels.

VII. Learning Equity and Struggling Students

This section analyzes the factors that relate to higher endline reading skills and higher gains in reading skills for Literacy Boost students. Specifically, we investigate whether endline reading skills and reading skill gains differ for traditionally disadvantaged groups, such as girls, the poorest of the poor, the HLE-deprived, and children without previous ECD experience. We also investigate whether students who struggled at baseline improved their test scores differently than other students, and whether struggling students share certain demographic characteristics. To conduct this analysis, baseline and endline data were used to construct indices to place children into quintiles of socio-economic status (SES) and HLE. Multivariate regression models were used to estimate the correlation between reading skills outcomes and these measures of equity.

VII.1. Gender

When other variables are held equal, gains for girls and boys in Literacy Boost schools that were present at baseline and endline are statistically different for concepts about print and English reading comprehension. Girls did better than boys on both these subtests (see Appendix C1 for the corresponding multivariate regression). Girls also had a larger gain than boys at the lower significance threshold of $p=.1$ for letter identification, English fluency, and Filipino reading comprehension. As is common in many education systems, **Literacy Boost has benefitted girls more than boys. Boys and their teachers and families should be encouraged to view reading as a skill that complements boys' gender identity.** Figure 12 presents results disaggregated by gender with the corresponding gain for each set of students.

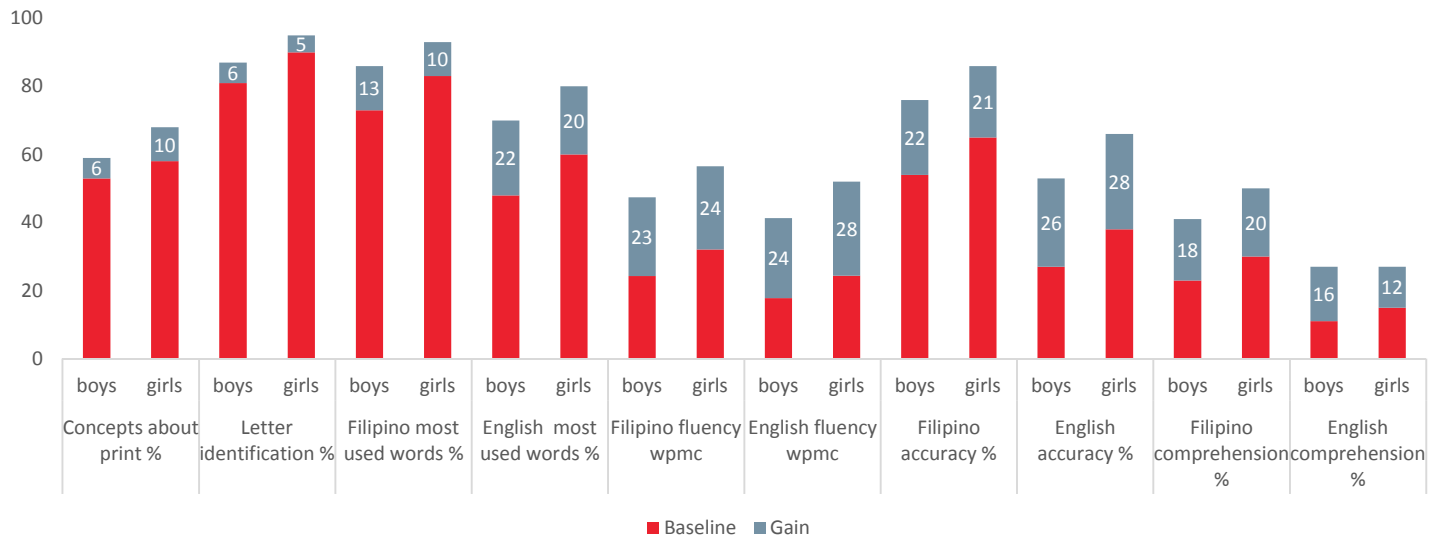


Figure 12. Baseline and Gains in Reading Skills at Baseline and Gains, by Gender (LB Students)

VII.2. ECD Attendance

Early education predicts higher gains for LB students in English fluency and English reading comprehension, and in English accuracy at the lower significance threshold of $p=.1$ (see Appendix C1 for the corresponding multivariate regression). As English language achievement is related to higher reading achievement in Filipino too, **Literacy Boost should make a special effort to support students that have not attended early education as they will need more help in making gains.**

VII.3. Low Socio-Economic Status

Low socio-economic status was not generally a predictor of progress or endline achievement, indicating that the LB program did not unequally benefit better-off children. Low socio-economic status was a predictor of slower progress for English reading accuracy at the lower significance threshold of $p=.1$ (see Appendices C2 and C3 for the corresponding multivariate regressions), but this was the only skill with such a result. **Literacy Boost has not benefitted higher or lower SES children disproportionately.**

VII.2. Home Literacy Environment

Home Literacy Environment is significantly related to lower gains and lower endline scores for some skills when controlling for students' baseline result, background characteristics, and socioeconomic level (see Appendices C4 and C5 for details on the multivariate regressions). Specifically, having a lower Home Literacy Environment predicts lower endline results in concepts about print and Filipino most used words, and lower endline results and gains for Filipino fluency. These results make sense as home literacy will likely take place in mostly Filipino, as Tagalog is the home language the majority of the children. **Literacy Boost should continue to encourage the provision of print materials in the home and reading activities with family and community members.**

VII.4. Struggling Students

Finally, we investigate the characteristics and gains of struggling students, defined as those students who scored in the bottom two quintiles on the letter identification component of the assessment at baseline (see Appendices C6 and C7 for the corresponding multivariate regressions). Boys and children with lower socio-economic status are more likely to struggle on letter identification. Also, these students have the lower gains in all subcomponents of the assessment with the exception of letter identification and Filipino most used

words, which means that they are far from catching up from their more skill-advantaged peers. **Literacy Boost should continue to provide enough support to struggling students so that they can make larger gains than their peers not only in letters but also in other subtests.**

VIII. Conclusion

After one year of full Literacy Boost programming in Metro Manila, Literacy Boost learners have shown gains in all basic and advanced skills, and have more textbooks at home. Gains in English most used words and Filipino and English fluency are greater than in the comparison school, and overall the Literacy Boost school started behind in all subtests and in textbooks ownership, but gained enough to draw level with the Comparison school after one year. In addition, 68% Literacy Boost students at endline were emergent or full Filipino readers and 47% were emergent or full English readers.

Boys were at greater risk than girls for lower achievement. **Boys and their teachers and families must be encouraged to view literacy and reading as a skill that complements boys' gender identity.**

The results continue to highlight the importance of an appropriate Home Literacy Environment (HLE) for learners. Students in home with a low HLE were associated with lower progress and achievement on Filipino language subtests. **The assessments show that Filipino reading skills are required before English reading skills can be mastered, so promoting a strong HLE environment in Filipino will benefit English as well as Filipino.** However little change was observed in HLE during the first year of this project. **Literacy Boost should continue to encourage the provision of print materials in the home and reading activities with family and community members.**

Appendix A. Home Literacy Environment by Sample Group

	LB			Comparison		
	Baseline	Endline	Change	Baseline	Endline	Change
Reading Materials (% of students who have material at home)						
Textbooks	77	92	***15	93	98	**5
Stories	53	45	*-8	53	51	-2
Coloring books	42	36	*-6	42	40	-2
Newspapers	33	38	5	35	35	0
Magazines	32	32	0	27	34	7
Religious materials	52	64	***12	55	65	**10
N	420	419		334	334	
Literacy Exposure (% of students who experience activity at home)						
See reading	80	75	-5	84	79	-5
Helps you study	96	96	0	96	97	1
Read to you	79	72	*-7	82	75	*-7
Story to you	65	66	1	67	64	-3
Sing to you	53	49	-4	56	53	-3
Game with you	77	78	1	72	77	5
N	420	420		334	334	

***p<.001, **p<.01, *p<.05, ~p<.1

Appendix B. Item Difficulties for Subtests

B1. Concepts About Print Items

	LB Baselin e	Endlin e	Chang e	Comparison Baselin e	Endlin e	Chang e
Can you show me how to open the book?	.85	.89	.04	.82	.86	.04
Please show me the cover of the book.	.74	.88	.14	.74	.85	.11
Where is the title of the story?	.62	.83	.21	.60	.77	.17
Can you point or show me one word? How about another one?	.70	.78	.08	.72	.85	.13
Which word should I start or begin reading?	.77	.71	-.06	.78	.75	-.03
I will read this entire line, please point to the words that I'm reading.	.52	.69	.17	.60	.67	.07
What are the next words that I should read next?	.54	.59	.05	.63	.59	-.04
And then where should I go next?	.56	.57	.01	.63	.55	-.08
Please show or point to the first part of the story.	.23	.24	.01	.28	.23	-.05
Where or what part will the story end?	.07	.20	.13	.07	.16	.09

B2. Letter Identification Items

Lower case							Upper case						
	LB			Comparison				LB			Comparison		
	Baseline	Endline	Change	Baseline	Endline	Change		Baseline	Endline	Change	Baseline	Endline	Change
a	.94	.97	.03	.98	.99	.01	A	.94	.98	.04	.98	.99	.01
o	.95	.97	.02	.96	.97	.01	O	.93	.98	.05	.95	.98	.03
x	.91	.96	.05	.92	.95	.03	B	.94	.97	.03	.95	.99	.04
b	.92	.95	.03	.94	.96	.02	E	.94	.96	.02	.94	.96	.02
r	.92	.95	.03	.91	.96	.05	S	.93	.96	.03	.94	.96	.02
e	.93	.95	.02	.95	.97	.02	R	.91	.96	.05	.93	.97	.04
s	.93	.95	.02	.95	.97	.02	X	.89	.96	.07	.91	.96	.05
u	.87	.95	.08	.92	.94	.02	D	.90	.95	.05	.90	.97	.07
c	.91	.95	.04	.93	.96	.03	K	.89	.95	.06	.89	.95	.06
m	.91	.95	.04	.91	.97	.06	U	.89	.95	.06	.91	.95	.04
d	.87	.94	.07	.87	.95	.08	N	.88	.95	.07	.88	.97	.09
k	.89	.94	.05	.90	.96	.06	C	.90	.95	.05	.93	.96	.03
n	.89	.94	.05	.90	.97	.07	M	.89	.95	.06	.90	.98	.08
h	.85	.93	.08	.84	.91	.07	P	.90	.94	.04	.89	.96	.07
p	.89	.93	.04	.90	.96	.06	T	.88	.94	.06	.89	.96	.07
t	.87	.93	.06	.87	.95	.08	L	.87	.93	.06	.90	.96	.06
y	.86	.93	.07	.86	.93	.07	G	.85	.92	.07	.87	.92	.05
v	.83	.91	.08	.81	.93	.12	H	.83	.92	.09	.85	.93	.08
f	.81	.91	.10	.79	.92	.13	Z	.85	.92	.07	.86	.90	.04
i	.90	.91	.01	.94	.94	.00	V	.82	.91	.09	.81	.92	.11
w	.87	.90	.03	.84	.90	.06	Q	.81	.90	.09	.82	.89	.07
g	.83	.90	.07	.85	.90	.05	W	.85	.90	.05	.83	.90	.07
j	.82	.90	.08	.82	.90	.08	J	.82	.90	.08	.80	.87	.07
z	.86	.88	.02	.86	.92	.06	Y	.83	.90	.07	.81	.92	.11
r	.64	.82	.18	.67	.82	.15	F	.81	.89	.08	.80	.87	.07
ng	.69	.77	.08	.69	.75	.06	I	.83	.88	.05	.87	.92	.05
ñ	.66	.75	.09	.67	.73	.06	NG	.70	.75	.05	.67	.73	.06
l	.65	.64	-.01	.64	.70	.06	Ñ	.61	.71	.10	.65	.69	.04

B3. Most Used Words Items, Filipino and English

Filipino	English					
	LB			Comparison		
	Base	End	Change	Base	End	Change
sa	.87	.95	.08	.91	.95	.04
ang	.84	.93	.09	.87	.95	.08
si	.85	.93	.08	.87	.95	.08
na	.86	.92	.06	.86	.95	.09
ako	.82	.92	.10	.84	.96	.12
at	.82	.91	.09	.80	.94	.14
may	.78	.91	.13	.81	.93	.12
ni	.82	.91	.09	.83	.95	.12
natin	.73	.90	.17	.77	.90	.13
ito	.78	.90	.12	.79	.92	.13
ay	.79	.90	.11	.78	.93	.15
basahin	.77	.90	.13	.77	.92	.15
tao	.81	.90	.09	.82	.93	.11
salita	.78	.89	.11	.80	.93	.13
ng	.75	.88	.13	.76	.89	.13
bawat	.74	.88	.14	.75	.91	.16
anu-ano	.71	.87	.16	.76	.91	.15
mga	.68	.86	.18	.76	.88	.12
tunog	.72	.86	.14	.74	.88	.14
pook	.69	.80	.11	.70	.80	.10
to	.70	.87	.17	.75	.87	.12
you	.63	.86	.23	.72	.85	.13
on	.67	.86	.19	.72	.87	.15
in	.68	.85	.17	.72	.83	.11
is	.68	.85	.17	.72	.75	.03
of	.69	.85	.16	.74	.88	.14
it	.68	.85	.17	.73	.85	.12
the	.64	.83	.19	.68	.86	.18
your	.56	.81	.25	.61	.78	.17
what	.49	.79	.30	.55	.77	.22
did	.61	.77	.16	.65	.78	.13
words	.52	.77	.25	.61	.74	.13
I	.64	.75	.11	.66	.75	.09
this	.47	.73	.26	.57	.73	.16
have	.46	.73	.27	.50	.71	.21
they	.45	.71	.26	.51	.71	.20
think	.37	.67	.30	.42	.61	.19
read	.40	.59	.19	.46	.55	.09
these	.38	.55	.17	.40	.57	.17
sentences	.19	.40	.21	.22	.25	.03

B4. Reading Comprehension, Filipino and English

	LB			Con		
	Baseline	Endline	Change	Baseline	Endline	Change
Filipino items						
SUM Anong naaalala mo tungkol sa kwento?	.51	.77	.26	.53	.69	.16
LIT1 Ano ang buong pangalan ni Pepe?	.34	.69	.35	.32	.64	.32
EVAL Sa palagay mo, kahanga-hanga ba si Pepe? Bakit?	.44	.67	.23	.48	.66	.18
LIT3 Saang lugar nag-aral si Pepe?	.34	.63	.29	.39	.61	.22
INF2 Sino ang pumatay kay Pepe?	.27	.47	.20	.31	.48	.17
LIT2 Anong klaseng mag-aaral si Pepe?	.31	.45	.14	.30	.47	.17
INF1 Bakit nahirang na pambansang bayani si Pepe?	.09	.30	.21	.10	.28	.18
LIT4 Anong kurso ang inaral ni Pepe?	.17	.20	.03	.23	.20	-.03
LIT5 Bakit tinuring ng mga Kastila na rebelde si Pepe?	.07	.19	.12	.06	.23	.17
INF3 Ano ang pagtingin ni Pepe sa bansang Kastila?	.09	.16	.07	.10	.18	.08
English items						
SUM Can you tell me what the story was about?	.23	.52	.29	.28	.52	.24
EVAL Would you rather be friends with Ding or Mar, and why?	.21	.49	.28	.22	.51	.29
LIT4 Who is kind and helpful?	.15	.38	.23	.16	.35	.19
LIT5 Who is naughty?	.16	.38	.22	.18	.38	.20
INF3 Why does Mar have few friends?	.19	.38	.19	.22	.41	.19
LIT1 Who are Ding and Mar?	.13	.37	.24	.16	.32	.16
INF2 If Ding is in the third grade, what grade is Mar in?	.10	.28	.18	.13	.27	.14
LIT3 What makes Ding and Mar twins?	.06	.20	.14	.06	.21	.15
LIT2 How much do Ding and Mar look like each other?	.06	.17	.11	.07	.17	.10
INF1 How often does Mar get dirty?	.04	.15	.11	.08	.14	.06

	LB			Con		
	Baseline	Endline	Change	Baseline	Endline	Change
Filipino skills (mean % correct)						
Sum	.51	.77	.26	.53	.69	.16
Evaluate	.44	.67	.23	.48	.66	.18
Literal	.22	.41	.19	.23	.40	.17
Inference	.18	.32	.14	.20	.33	.13
English skills (mean % correct)						
Sum	.23	.52	.29	.28	.52	.24
Evaluate	.21	.49	.28	.22	.51	.29
Inference	.14	.33	.19	.18	.34	.16
Literal	.10	.27	.17	.12	.26	.14

Appendix C. Regression Models

CI. Relationship between gender, ECD attendance and gains, LB students

VARIABLES	CAP Gain	Letter Gain	MUW Gain		Fluency Gain		Accuracy Gain		Reading Comp. Gain	
			Filipino	English	Filipino	English	Filipino	English	Filipino	English
Female	**0.070	0.028	0.031	0.036	2.147	4.923	0.043	0.057	0.045	**0.080
	(0.0215)	(0.0143)	(0.0203)	(0.0262)	(2.1280)	(2.7320)	(0.0288)	(0.0332)	(0.0235)	(0.0239)
Attended ECD	-0.006	0.001	0.028	0.058	4.056	*8.560	-0.007	0.120	0.025	*0.097
	(0.0263)	(0.0203)	(0.0345)	(0.0449)	(3.5820)	(4.0100)	(0.0477)	(0.0606)	(0.0352)	(0.0465)
Age at baseline	-0.003	-0.007	0.004	-0.006	0.390	0.250	-0.006	-0.010	0.006	-0.019
	(0.0081)	(0.0067)	(0.0134)	(0.0150)	(1.3190)	(1.3000)	(0.0180)	(0.0153)	(0.0133)	(0.0137)
Household members at baseline	0.014	-0.003	0.003	0.001	0.314	0.173	0.008	0.007	0.016	0.002
	(0.0073)	(0.0047)	(0.0079)	(0.0111)	(0.8090)	(1.0050)	(0.0109)	(0.0113)	(0.0098)	(0.0123)
Socio-economic status at baseline	0.000	-0.002	0.000	0.002	-0.107	-0.221	0.002	-0.005	0.002	0.001
	(0.0021)	(0.0014)	(0.0013)	(0.0020)	(0.2130)	(0.2580)	(0.0030)	(0.0032)	(0.0026)	(0.0032)
Home language environment at endline	**0.002	-0.001	*0.001	0.001	**0.219	0.005	**0.003	0.001	*0.002	0.002
	(0.0008)	(0.0005)	(0.0006)	(0.0008)	(0.0726)	(0.0886)	(0.0009)	(0.0012)	(0.0008)	(0.0014)
% CAP at baseline	***-0.708									
	(0.0592)									
% Total letters at baseline		***-0.524								
		(0.0637)								
% MUW Filipino at baseline			***-0.560							
			(0.0470)							
% MUW English at baseline				***-0.472						
				(0.0295)						
Fluency Filipino at baseline (wpmc)					***-0.200					
					(0.0522)					
Fluency English at baseline (wpmc)						***-0.186				
						(0.0374)				
% Accuracy Filipino at baseline							***-0.581			
							(0.0339)			
% Accuracy English at baseline								***-0.408		
								((0.0360)		
% Filipino Reading Comp. at baseline									***-0.455	
									(0.0482)	
% English Reading Comp. at baseline										***-0.386
										(0.0849)
Constant	***0.396	***0.585	**0.458	**0.403	18.760	19.530	**0.497	*0.372	0.121	0.220
	(0.0809)	(0.0602)	(0.1310)	(0.1440)	(10.5600)	(10.9600)	(0.1570)	(0.1420)	(0.1170)	(0.124)
Observations	412	412	412	412	408	404	412	412	412	412
R-squared	.41	.48	.46	.34	.07	.05	.46	.21	.23	.13
Adjusted R-squared	.40	.47	.45	.33	.06	.04	.45	.20	.21	.11
RMSE	0.21	0.13	0.21	0.24	21.12	27.56	0.29	0.34	0.23	0.28

Robust standard errors in parentheses

***p<.001, **p<.01, *p<.05, ~p<.1

C2. Relationship between lower socio-economic status and endline, LB students

VARIABLES	CAP Gain	Letter Gain	MUW Gain		Fluency Gain		Accuracy Gain		Reading Comp. Gain	
			Filipino	English	Filipino	English	Filipino	English	Filipino	English
Not low socio-economic status at baseline	0.003	-0.006	-0.018	-0.032	-0.188	-2.187	-0.022	0.001	-0.035	-0.034
	(0.0172)	(0.0214)	(0.0242)	(0.0255)	(2.9540)	(3.7730)	(0.0309)	(0.0399)	(0.0269)	(0.0324)
Female	***0.083	***0.071	**0.078	**0.096	**8.148	*9.280	**0.089	*0.110	**0.076	***0.097
	(0.0192)	(0.0153)	(0.0215)	(0.0279)	(2.8890)	(3.6580)	(0.0270)	(0.0405)	(0.0231)	(0.0219)
Age at baseline	-0.001	-0.006	-0.001	-0.022	-0.964	-2.657	-0.022	*-0.043	-0.005	*-0.033
	(0.0095)	(0.0070)	(0.0133)	(0.0165)	(1.3200)	(1.5140)	(0.0169)	(0.0184)	(0.0136)	(0.0142)
Household members at baseline	0.006	-0.004	-0.002	-0.001	-0.356	0.038	0.006	0.013	0.006	-0.001
	(0.0074)	(0.0063)	(0.0092)	(0.0130)	(1.2810)	(1.3910)	(0.0132)	(0.0159)	(0.0107)	(0.0151)
Attended ECD	0.014	0.023	0.070	0.098	*11.250	*15.820	0.049	*0.168	0.055	*0.107
	(0.0239)	(0.0291)	(0.0488)	(0.0579)	(4.7240)	(6.2210)	(0.0597)	(0.0807)	(0.0456)	(0.0495)
Home literacy environment at endline	**0.003	0.000	0.002	0.002	*0.286	0.084	*0.003	0.001	*0.003	0.002
	(0.0008)	(0.0007)	(0.0010)	(0.0011)	(0.1180)	(0.1310)	(0.0013)	(0.0017)	(0.0009)	(0.0015)
Constant	***0.533	***0.918	***0.795	***0.774	**42.340	**47.960	***0.839	**0.665	**0.371	**0.437
	(0.0871)	(0.0580)	(0.1280)	(0.1610)	(11.6000)	(14.6800)	(0.1400)	(0.1920)	(0.1260)	(0.1460)
Observations	412	412	412	412	409	404	412	412	412	412
R-squared	.06	.05	.05	.06	.05	.05	.04	.06	.05	.07
Adjusted R-squared	.05	.04	.03	.05	.04	.04	.03	.04	.03	.06
RMSE	0.22	0.17	0.25	0.31	29.59	36.27	0.35	0.42	0.27	0.31

Robust standard errors in parentheses

***p<.001, **p<.01, *p<.05, ~p<.1

C3. Relationship between lower socio-economic status and gains, LB students

VARIABLES	CAP Gain	Letter Gain	MUW Gain		Fluency Gain		Accuracy Gain		Reading Comp. Gain	
			Filipino	English	Filipino	English	Filipino	English	Filipino	English
Not low socio-economic status at baseline	0.007	0.017	-0.008	-0.014	0.649	3.820	-0.038	0.052	-0.033	0.010
	(0.0163)	(0.0160)	(0.0183)	(0.0184)	(2.2090)	(2.5300)	(0.0294)	(0.0299)	(0.0210)	(0.0279)
Female	**0.070	0.029	0.031	0.035	2.182	4.916	0.043	0.058	0.045	**0.079
	(0.0211)	(0.0144)	(0.0202)	(0.0261)	(2.1200)	(2.7490)	(0.0287)	(0.0336)	(0.0233)	(0.0233)
Age at baseline	-0.003	-0.006	0.005	-0.006	0.440	0.162	-0.005	-0.009	0.006	-0.021
	(0.0083)	(0.0067)	(0.0136)	(0.0151)	(1.3240)	(1.3050)	(0.0180)	(0.0155)	(0.0135)	(0.0136)
Household members at baseline	0.014	-0.003	0.002	0.001	0.274	0.212	0.008	0.006	0.016	0.004
	(0.0074)	(0.0047)	(0.0078)	(0.0110)	(0.7860)	(0.9670)	(0.0105)	(0.0110)	(0.0093)	(0.0120)
Attended ECD	-0.005	0.000	0.027	0.059	3.960	*8.621	-0.008	0.118	0.025	*0.100
	(0.0255)	(0.0201)	(0.0348)	(0.0443)	(3.5440)	(4.0580)	(0.0463)	(0.0612)	(0.0358)	(0.0460)
Home language environment at endline	**0.002	-0.001	0.001	0.001	**0.217	0.007	**0.003	0.001	*0.002	0.002
	(0.0008)	(0.0005)	(0.0006)	(0.0008)	(0.0738)	(0.0894)	(0.0009)	(0.0012)	(0.0008)	(0.0014)
% CAP at baseline	***-0.709									
	(0.0589)									
% Total letters at baseline		***-0.526								
		(0.0643)								
% MUW Filipino at baseline			***-0.560							
			(0.0472)							
% MUW English at baseline				***-0.471						
				(0.0293)						
Fluency Filipino at baseline (wpmc)					***-0.201					
					(0.0517)					
Fluency English at baseline (wpmc)						***-0.184				
						(0.0372)				
% Accuracy Filipino at baseline							***-0.579			
							(0.0336)			
% Accuracy English at baseline								***-0.410		
								(0.0352)		
% Filipino Reading Comp. at baseline									***-0.454	
									(0.0474)	
% English Reading Comp. at baseline										***-0.378
										(0.0841)
Constant	***0.389	***0.550	**0.458	**0.433	17.000	15.110	***0.539	0.286	0.161	0.234
	(0.0793)	(0.0595)	(0.1250)	(0.1410)	(10.8900)	(12.3500)	(0.1360)	(0.1630)	(0.1110)	(0.1290)
Observations	412	412	412	412	408	404	412	412	412	412
R-squared	.41	.48	.46	.34	.07	.06	.46	.21	.23	.13
Adjusted R-squared	.40	.47	.45	.33	.06	.04	.45	.20	.21	.11
RMSE	0.21	0.13	0.21	0.24	21.12	27.52	0.29	0.34	0.23	0.28

Robust standard errors in parentheses

***p<.001, **p<.01, *p<.05, ~p<.1

C4. Relationship between low home literacy environment and endline, LB students

VARIABLES	CAP Gain	Letter Gain	MUW Gain		Fluency Gain		Accuracy Gain		Reading Comp. Gain	
			Filipino	English	Filipino	English	Filipino	English	Filipino	English
Not low home literacy environment at endline	*0.057	0.011	*0.059	0.039	*7.291	3.038	0.065	0.023	0.049	0.036
	(0.0249)	(0.0207)	(0.0280)	(0.0337)	(3.4300)	(4.0830)	(0.0389)	(0.0516)	(0.0297)	(0.0364)
Female	***0.085	***0.071	**0.080	**0.098	**8.381	*9.438	**0.090	*0.112	**0.078	***0.099
	(0.0209)	(0.0152)	(0.0218)	(0.0284)	(2.9670)	(3.6710)	(0.0281)	(0.0408)	(0.0234)	(0.0225)
Age at baseline	-0.002	-0.006	-0.002	-0.020	-0.993	-2.364	-0.024	*-0.042	-0.006	*-0.031
	(0.0087)	(0.0066)	(0.0131)	(0.0164)	(1.2900)	(1.4360)	(0.0172)	(0.0176)	(0.0130)	(0.0130)
Household members at baseline	0.004	-0.005	-0.003	-0.003	-0.603	-0.272	0.005	0.011	0.005	-0.004
	(0.0074)	(0.0065)	(0.0096)	(0.0135)	(1.3140)	(1.4350)	(0.0139)	(0.0164)	(0.0112)	(0.0154)
Attended ECD	0.009	0.022	0.065	0.091	*10.500	*14.950	0.044	*0.163	0.051	0.099
	(0.0246)	(0.0296)	(0.0490)	(0.0583)	(4.7730)	(6.0870)	(0.0604)	(0.0789)	(0.0445)	(0.0496)
Socio-economic status at baseline	0.001	0.001	0.001	0.005	0.194	0.509	0.002	0.002	0.004	0.006
	(0.0020)	(0.0017)	(0.0020)	(0.0030)	(0.3010)	(0.3880)	(0.0032)	(0.0043)	(0.0031)	(0.0037)
Constant	***0.546	***0.905	***0.781	***0.701	**41.430	**39.550	***0.825	***0.643	*0.329	*0.342
	(0.0787)	(0.0681)	(0.1360)	(0.1660)	(11.1000)	(13.2400)	(0.1540)	(0.1720)	(0.1280)	(0.1270)
Observations	412	412	412	412	409	404	412	412	412	412
R-squared	.05	.05	.05	.06	.06	.06	.04	.06	.04	.08
Adjusted R-squared	.04	.04	.03	.05	.04	.04	.03	.04	.03	.06
RMSE	0.22	0.17	0.25	0.31	29.57	36.18	0.35	0.42	0.28	0.31

Robust standard errors in parentheses

***p<.001, **p<.01, *p<.05, ~p<.1

C5. Relationship between low home literacy environment and gains, LB students

VARIABLES	CAP Gain	Letter Gain	MUW Gain		Fluency Gain		Accuracy Gain		Reading Comp. Gain	
			Filipino	English	Filipino	English	Filipino	English	Filipino	English
Not low home literacy environment at endline	0.038	-0.017	0.038	0.014	*4.601	2.260	0.044	0.008	0.031	0.037
	(0.0236)	(0.0154)	(0.0198)	(0.0187)	(2.1340)	(2.9090)	(0.0250)	(0.0375)	(0.0251)	(0.0328)
Female	**0.071	0.028	0.032	0.036	2.270	4.966	0.045	0.057	0.046	**0.081
	(0.0227)	(0.0144)	(0.0204)	(0.0264)	(2.1930)	(2.7100)	(0.0296)	(0.0335)	(0.0238)	(0.0239)
Age at baseline	-0.004	-0.007	0.003	-0.006	0.249	0.261	-0.007	-0.010	0.005	-0.020
	(0.0079)	(0.0067)	(0.0134)	(0.0150)	(1.3110)	(1.2840)	(0.0182)	(0.0153)	(0.0131)	(0.0131)
Household members at baseline	0.013	-0.002	0.002	0.000	0.229	0.128	0.007	0.007	0.016	0.001
	(0.0071)	(0.0047)	(0.0078)	(0.0109)	(0.8290)	(1.0180)	(0.0109)	(0.0113)	(0.0101)	(0.0125)
Attended ECD	-0.008	0.002	0.025	0.058	3.793	*8.325	-0.009	0.120	0.024	0.094
	(0.0263)	(0.0204)	(0.0350)	(0.0451)	(3.5900)	(3.9560)	(0.0472)	(0.0601)	(0.0344)	(0.0472)
Socio-economic status at baseline	0.000	-0.002	0.000	0.002	-0.076	-0.233	0.003	-0.005	0.002	0.002
	(0.0021)	(0.0014)	(0.0013)	(0.0020)	(0.2100)	(0.2650)	(0.0029)	(0.0033)	(0.0026)	(0.0032)
% CAP at baseline	***-0.705									
	(0.0584)									
% Total letters at baseline		***-0.523								
		(0.0634)								
% MUW Filipino at baseline			***-0.561							
			(0.0475)							
% MUW English at baseline				***-0.471						
				(0.0301)						
Fluency Filipino at baseline (wpmc)					***-0.202					
					(0.0533)					
Fluency English at baseline (wpmc)						***-0.186				
						(0.0378)				
% Accuracy Filipino at baseline							***-0.582			
							(0.0348)			
% Accuracy English at baseline								***-0.408		
								(0.0361)		
% Filipino Reading Comp. at baseline									***-0.453	
									(0.0499)	
% English Reading Comp. at baseline										***-0.388
										(0.0844)
Constant	***0.414	***0.582	**0.464	**0.411	20.490	18.700	**0.523	*0.380	0.137	0.232
	(0.0787)	(0.0602)	(0.1310)	(0.1420)	(10.5700)	(10.8700)	(0.1580)	(0.1400)	(0.1150)	(0.1160)
Observations	412	412	412	412	408	404	412	412	412	412
R-squared	.40	.48	.46	.34	.07	.05	.45	.21	.22	.12
Adjusted R-squared	.39	.47	.45	.33	.05	.04	.44	.20	.21	.11
RMSE	0.21	0.13	0.20	0.24	21.18	27.54	0.29	0.34	0.24	0.28

Robust standard errors in parentheses

***p<.001, **p<.01, *p<.05, ~p<.1

C6. Characteristics of struggling students, LB students

VARIABLES	Not struggling students
Female	***1.007
	(0.2230)
Age at baseline	-0.174
	(0.0932)
Household members at baseline	0.066
	(0.1030)
Attended ECD	0.017
	(0.3140)
Socio-economic status at baseline	**0.070
	(0.0258)
Home literacy environment at endline	0.008
	(0.0109)
Constant	0.136
	(0.9700)
Observations	412

Struggling students was a binary variable with 'struggling' coded as '0', a logit model was run

Robust standard errors in parentheses

***p<.001, **p<.01, *p<.05, ~p<.1

C7. Struggling students and gains, LB students

VARIABLES	CAP Gain	Letter Gain	MUW Gain		Fluency Gain		Accuracy Gain		Reading Comp. Gain	
			Filipino	English	Filipino	English	Filipino	English	Filipino	English
Not struggling student	*0.072	-0.039	0.034	*0.119	**10.300	***16.800	**0.163	**0.199	***0.170	***0.228
	(0.0334)	(0.0195)	(0.0268)	(0.0453)	(3.0580)	(4.4050)	(0.0496)	(0.0599)	(0.0315)	(0.0477)
Female	*0.057	*0.033	0.026	0.020	0.635	2.080	0.017	0.023	0.016	0.034
	(0.0232)	(0.0146)	(0.0209)	(0.0272)	(1.9870)	(2.6600)	(0.0317)	(0.0329)	(0.0226)	(0.0266)
Age at baseline	0.001	-0.009	0.005	-0.004	0.614	0.443	-0.003	-0.008	0.010	-0.013
	(0.0087)	(0.0067)	(0.0131)	(0.0144)	(1.2940)	(1.3410)	(0.0173)	(0.0160)	(0.0125)	(0.0133)
Household members at baseline	0.011	-0.002	0.002	-0.002	0.086	-0.054	0.005	0.005	0.011	-0.002
	(0.0074)	(0.0048)	(0.0076)	(0.0107)	(0.7600)	(1.0930)	(0.0101)	(0.0115)	(0.0093)	(0.0124)
Attended ECD	-0.002	-0.001	0.030	0.064	4.927	*9.558	0.004	*0.128	0.033	*0.097
	(0.0258)	(0.0210)	(0.0331)	(0.0433)	(3.2810)	(3.6460)	(0.0447)	(0.0565)	(0.0360)	(0.0421)
Socio-economic status at baseline	-0.001	-0.002	-0.001	0.001	-0.228	-0.364	0.000	*-0.006	0.000	-0.001
	(0.0021)	(0.0013)	(0.0014)	(0.0022)	(0.2040)	(0.2390)	(0.0027)	(0.0030)	(0.0022)	(0.0030)
Home literacy environment at endline	**0.002	-0.001	*0.001	0.001	**0.210	-0.008	**0.003	0.000	*0.002	0.001
	(0.0007)	(0.0005)	(0.0006)	(0.0008)	(0.0710)	(0.0860)	(0.0009)	(0.0012)	(0.0006)	(0.0013)
% CAP at baseline	***-0.773									
	(0.0745)									
% Total letters at baseline		***-0.474								
		(0.0774)								
% MUW Filipino at baseline			***-0.585							
			(0.0544)							
% MUW English at baseline				***-0.566						
				(0.0344)						
Fluency Filipino at baseline (wpmc)					***-0.298					
					(0.0569)					
Fluency English at baseline (wpmc)						***-0.315				
						(0.0511)				
% Accuracy Filipino at baseline							***-0.669			
							(0.0354)			
% Accuracy English at baseline								***-0.521		
								(0.0470)		
% Filipino Reading Comp. at baseline									***-0.608	
									(0.0532)	
% English Reading Comp. at baseline										***-0.559
										(0.0921)
Constant	***0.385	***0.574	**0.458	**0.389	15.900	13.750	**0.472	*0.312	0.081	0.126
	(0.0811)	(0.0626)	(0.1280)	(0.1350)	(10.0500)	(11.1700)	(0.1430)	(0.1440)	(0.1080)	(0.1260)
Observations	412	412	412	412	408	404	412	412	412	412
R-squared	.42	.48	.46	.36	.11	.11	.48	.25	.29	.24
Adjusted R-squared	.41	.47	.45	.35	.09	.10	.47	.24	.28	.22
RMSE	0.21	0.13	0.21	0.24	20.75	26.70	0.28	0.33	0.22	0.26

Robust standard errors in parentheses

***p<.001, **p<.01, *p<.05, ~p<.1