



Save the Children®

ECCE Pakistan LB End of Year One Report

November 2013

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List of abbreviations

ECCE – Early Childhood Care and Education

LB – Literacy Boost

SC – Save the Children

SES – Socio-economic status

I. Executive Summary

During the 2012-2013 school year, Save the Children (SC) began implementing the first year of the Early Childhood Care and Education (ECCE) program. The program, designed to improve reading skills for early grade students and prepare young children for school, focuses on improving infrastructure and supplies, training government education staff and working with teachers, parents, and community members to boost students' academic growth. ECCE uses Literacy Boost to train teachers in effective teaching methodologies and works with communities to maintain weekly activities for students to participate in, reinforcing academics inside and outside the classroom. It also creates opportunities for children to participate in pre-school and early childhood education programs to ensure they are ready when they enter Katchi (kindergarten).

The project collected data from two different samples of students: First, using an early grade reading assessment for 2nd grade students, a subset of the students' reading growth is tracked from baseline to the end of year one to chart their progress through a complete academic year. These data also enable SC program staff to adapt the intervention's teacher training and community activities to the students' particular needs. In March 2012, Literacy Boost baseline data were collected in 35 ECCE Project Intervention schools and 28 comparison schools from all four project districts. From three of those districts, 308 students from the end of 1st grade were assessed at baseline, and 216 of these same students, (70% of the original sample), were located in the 3rd grade a year later and assessed. Control schools were a good comparison and not significantly different than ECCE program intervention schools on a variety of background characteristics. Students' literacy skills and home and academic background were collected and will be used in this report to understand both the effect of the ECCE program and overall trends in literacy among students.

Second, students who had entered Katchi in the academic year starting from April 2013, were also tested in school readiness. Students who had been part of SC ECCE homes and students who did not attend ECCE homes were both tested in motor, language and literacy skills. From the community activities, Reading Camps had just started towards the end of the year 2013, and had only recently been implemented in a few communities before data collection at the end of year one, while Parenting sessions had started earlier than that in the project.

Program Impact

At the end of the first year, Literacy Boost students in ECCE Project Intervention schools made significant additional gains over peers in comparison schools in letter identification, Urdu reading fluency, Urdu and Pashto reading accuracy, and Urdu and Pashto reading comprehension. However, there was not a statistically significant effect of the program on Pashto fluency or in the percentage of students that are considered "readers".

Teachers who were trained to use Literacy Boost techniques by SC were also much more likely to exhibit many positive behaviors associated with higher student gains, though it is unknown if teachers in the treatment and control were different to begin with even before the training. Students with teachers who used more of these Literacy Boost techniques also performed significantly better than those that did not.

During the analysis it was observed that children who performed better at the baseline were more inclined towards borrowing books, attending reading buddies and their parents were more regular in attending parent reading awareness workshops, as compared to the students who performed relatively poorer at baseline.

A portion of Literacy Boost community reading activities like parental meetings, book banks and reading buddies were used more frequently by students who were already performing better at the baseline.

Literacy & Gender

At the beginning of the school year, boys outperformed girls along several measures of literacy but at the end of the year boys only had statistically significantly higher scores in Pashto fluency and girls had higher scores in Urdu comprehension. There were not significant differences along gender lines in ECCE program intervention versus comparison schools.

Literacy & Home Environment

Students' exposure to text and family members who are supportive of the student's academic development are crucial drivers of literacy. Students who saw at least one family member read at home or were read to performed better in almost all areas of literacy at the end of year one. Having access to more types of reading materials, especially child friendly ones, was also related to higher performance.

Students from low socio-economic status families performed similar to those from other backgrounds.¹ However, Pashto students did perform significantly worse than their peers in measures of Urdu literacy.

¹ Only collected once (at baseline for Buner and Battagram and at the end of year one for Abbottabad)

Table of Contents

List of abbreviations.....	2
I. Executive Summary	3
II. Introduction	6
A. ECCE Program	7
B. Methods.....	7
III. Context for Literacy Boost program.....	10
A. Student Background	10
B. Socio-Economic Status.....	11
C. Home Literacy Environment.....	12
D. Attrition at End of Year I	13
IV. Program Impact of Literacy Boost.....	14
A. Program Impact by Reading Skill	14
i. Letter Identification	15
ii. Reading Fluency	15
iii. Reading Accuracy.....	16
iv. Reading Comprehension.....	17
v. Readers.....	17
vi. Reading with Comprehension.....	18
vii. Effect Size.....	19
B. Involvement in ECCE Programming	19
i. Community Activities	19
ii. Teaching Strategies	22
V. Literacy & Student Background	25
A. Results by Gender	25
B. Results by Home Literacy Environment	26
C. Results by Home Language & Socio-Economic Status.....	27
D. Results by Performance at Baseline	29
VI. Results – School Readiness Skills	31
A. Emergent Literacy & Language.....	32
i. Letter Identification	32
ii. Phonological Awareness.....	32
iii. Oral language	32
B. Motor Development.....	33
C. School Readiness Total Score.....	34
VII. Recommendations	35
A. Program Recommendations	35
B. Data Collection Recommendations	36
Bibliography	37
Appendix I – Regression Outputs.....	38
Appendix 2 – Implementation Timeline.....	41

II. Introduction

The following report presents the results of an impact evaluation of the first half of a three-year early childhood care education program (“ECCE”) implemented by Save the Children Pakistan in four districts of KPK province: Abbottabad, Battagram, Buner and Peshawar. The evaluation will look at results for two groups of students: (a) 2nd grade students based on Literacy Boost baseline and end of the year data from students in program schools and comparable control schools and (b) school readiness assessment scores for Katchi (kindergarten) students.²

The report is organized as follows:

This section outlines the main features of the program itself and discusses the methodology for sample selection and describes the instruments used to measure literacy skills, school readiness and other background data collected at the student, school, community and program level.

Section II takes a closer look at 2nd grade students in ECCE program intervention and comparison schools to better understand whether the two groups are a good comparison and to gain insight on these students’ backgrounds and home environment. This section also discusses attrition between the baseline and end of the first year and what the implications are for being able to compare the program and control schools.

Section III examines whether the program had an impact in each literacy sub-skill comparing the gains made by ECCE students in literacy over the year with those of students in comparison schools. We will also look at students reported involvement in ECCE activities and teachers’ use of teaching techniques taught during ECCE training.

Section IV examines a wider variety of factors that impact student’s literacy abilities. We examine student’s results by their gender, home environment, primary language and baseline score. We also discuss the varying impact ECCE had for these sub-populations.

Section VI will look at the results of the school readiness assessment for Katchi students that attended ECCE homes versus those that did not attend any form of preschool.

Section VII looks the results of teacher observations to see what techniques teachers are using to teach literacy. We will also look at how this relates to student performance.³

Section VIII discusses recommendations for the second half of the program, as well as areas for further data collection and analysis. The Appendix includes the regression tables for aggregated and disaggregated outcomes.

² Students who attended ECCE homes were specifically tracked in the program schools, and corresponding ‘control’ students who had not attended any ECCE homes were selected from the same classroom of the same school

³ Teachers were sampled from Katchi class as well as Grade 2.

A. ECCE Program

Starting in May 2011, Save the Children implemented the ECCE program—aimed at improving educational outcomes by increasing opportunities for learning and development and by improving transitions into primary school—in Pakistan. The 3-year program is being implemented in 401 schools and the surrounding communities.

The ECCE program entails a number of components to ensure students are prepared before they enter primary school and have improved educational outcomes in early grades. These include:

1. Refurbishing classrooms and providing learning materials for classrooms and school libraries
2. Teacher training in literacy methodology using Literacy Boost strategies
3. Building capacity among district and provincial government education institutions
4. Establishing ECCE homes (preschool classes held in community homes)
5. Establishing Literacy Boost community activities to support literacy and parent meetings
6. Rigorous monitoring and evaluation throughout

B. Methods

The data at the end of the year focuses on two groups of students: 2nd grade students' improvement in literacy over a year and the school readiness skills of 5 year olds who attended ECCE homes. The program seeks to make changes for other students and along other outcomes (numeracy, attendance, etc) but this analysis will focus on this portion of the program. The program has also been implemented in four districts but year end data was only collected for Abbottabad, Battagram and Buner. Due to logistical and timeline problems, Peshawar as a district could not be covered in this assessment round, Hence we can only make comparisons for these three districts.

Sample Selection

2nd grade students: At baseline in March 2012 students who had almost completed Grade 1 from 35 program schools and 28 comparison schools were randomly chosen to take a literacy assessment. Those same students were retested in June 2013 (when the students were retested they were entering 3rd grade but we will refer to them as 2nd graders and the intervention impacted them during the 2nd grade year). Thirty percent of students tested at baseline were unable to be retested a year later due to absence on the day of the assessment or migration. This analysis looks at the program results for students who were tested both at baseline and a year later.

In order to understand the effect of a program, it is crucial to have a comparison group that does not receive the program to understand what happens in schools without the intervention. During the course of a school year, students in regular schools will make some literacy gains. Therefore, we need to compare the gain students in our program schools make to that of a students in a typical classroom. Comparison schools were selected based on similarities such as minimum number of teaching staff at the school, overall student enrollment and geography (proximity to project schools) At the end of the first year on average the ECCE program intervention and comparison schools are highly similar in background characteristics, ensuring these groups are a good comparison (see section III).

Katchi students: Students who participate in ECCE homes were given the school readiness assessment, which gauges students' abilities in basic literacy, language and motor skills. 79 students, 38 who were not part of an ECCE home and 41 who were part of an ECCE home, were assessed from the same in three districts.

Data was collected from each child that had spent one year in an ECCE home to determine which school he or she had enrolled in. Only the children enrolled in a project school were selected for the Katchi class sample, consequently this sample size was restricted and was not evenly distributed amongst the districts. The same number of control children was selected from the classroom of the ECCE homes children.

Instruments

Similar instruments were used at baseline and a year later to assess students and solicit background information. At the end of the year an additional questionnaire for ECCE students asking about their participation in Literacy Boost activities, including reading buddies, reading camps and using the school's book bank was also added to the end of the survey. Due to limitations students were only asked about background characteristics once (at baseline for Battagram, Buner and Peshawar and at the end for Abbottabad). Figures 1 & 2 show the information that was collected for the 2nd grade literacy assessment and the Katchi SRA (school readiness assessment).

Figure 1. Literacy Boost Assessment Data Collected for 2nd grade students in ECCE program intervention schools

Students Background	
General	Gender, age, language
Academic	School, grade repetition
Socioeconomic	Size of home, livestock, household size, home amenities
Home Literacy Environment	
Access to print	Quantity and type of print materials at home
Reading at home	Household members seen reading and reading directly to student
Literacy Skills	
Letter identification	Number of upper case and lower case letters/sounds identified
Fluency (Urdu & Pashto)	Number of words in a connected text read correctly in a minute
Accuracy (Urdu & Pashto)	Percentage of words in a connected text read correctly
Comprehension (Urdu & Pashto)	Number of comprehension questions answered correctly about passage

Figure 2. Assessment Data Collected for Katchi students who had attended ECCE home preschools

Students Background	
General	Gender, age, language, ate breakfast
School Readiness	
Motor skills	Fine and gross motor
Literacy & Language	Letter identification, letter sounds and oral language skills

In addition, teachers were observed and assessed based on their use of teaching strategies and child-friendliness of the classroom to learning.

Figure 3. Summary of data collected at after Year 1

Group	Type of data	N	Control group?	Baseline data?	Location
2 nd grade students	Literacy assessment	216	Yes	Yes	3 districts
Katchi students	School readiness assessment	79	No ⁴	No	3 districts
Teachers	Classroom observation	110	No	No	3 districts

One significant limitation of the study is that with such a small sample size it is hard to look at the effect of the program on certain sub groups. Additionally, there are cases where it is unclear if there really is no relationship between certain variables or if our sample size is just too small to be able to detect it.

⁴ Control group option has been listed as no (same as for Katchi students), because we did not have enough baseline data for the same teachers/students to be able to compare them before and after

III. Context for Literacy Boost program

In order to best serve the students, we need to understand their background and home literacy environment. It is also important to compare students in ECCE program intervention schools versus control schools along background characteristics to ensure the two groups are a good comparison.

Were students present at the end of the year in each group similar enough to compare?

As we will show in the following pages, students in ECCE program intervention and comparison schools are very similar along a wide range of background characteristics. The only significant difference between the two groups was the percentage of students who had someone at home read to them.

The following charts use clustered t-tests⁵ to determine if there is a significant difference between ECCE program intervention and comparison schools for each characteristic. Most background characteristics were only collected once for students. In Battagram and Buner most background information was collected at the baseline, and in Abbottabad it was collected . Information on home literacy was collected at both baseline and a year later in Battagram and Buner.

A. Student Background

Figure 4. Background Characteristics by group

Variable	ECCE Average	Comparison Average	Sig. diff.
Sample size	128	88	
Age	8.3	8.4	-
% Female	53%	52%	-
% who repeated Katchi	24%	19%	-
% who repeated 1 st grade	22%	21%	-
<i>Home Language</i>			
% Pashto	60%	63%	-
% Other language	40%	37%	-

*** p<0.001, ** p<0.01, * p<0.05

Figure 4 displays the mean values for background variables by sample group. As we can see from the fourth column, there were no significant differences between students in ECCE program intervention and comparison schools along these attributes, so ECCE program intervention schools and comparison schools started out fairly similar before the program. At the end of the year, students were on average a little over 8 years old. About one in five students had repeated Katchi and a similar proportion had repeated 1st grade. The majority of students speak Pashto.

⁵ Clustered t-tests are used to account for students being grouped into schools and therefore a likelihood that students within the same school will be more similar to each other than to the whole sample

B. Socio-Economic Status

Figure 5 shows that ECCE program intervention schools are similar to comparison schools in household composition and socio-economic status. Households had on average seven people and the large majority of students have electricity in their homes. Most families own livestock and the rate is higher for comparison students, but the difference is not statistically significant.

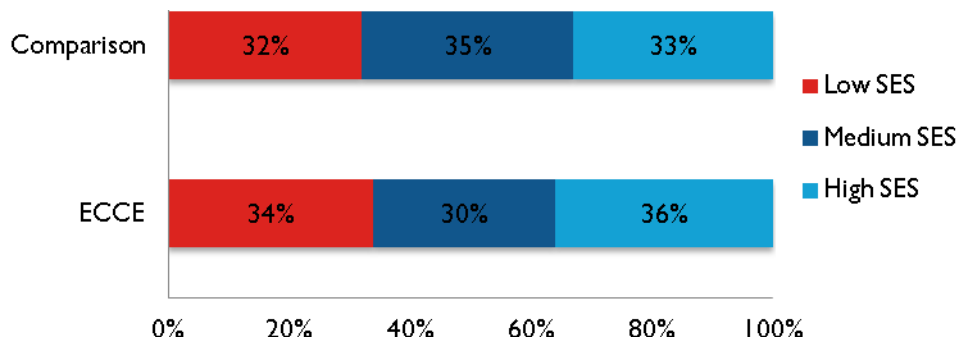
Figure 5. Socio-economic characteristics by group

Variable	ECCE Average	Comparison Average	Sig. diff.
Household size	7.1	7.0	-
% with electricity	93%	94%	-
% with livestock	69%	78%	-
Number of rooms in house	3.2	3.2	-
Socio-economic status score (of 3)	2.0	2.0	-

*** p<0.001, ** p<0.01, * p<0.05

Using a combination of information about house size and number of amenities, socio economic status scores were created. These were then grouped so students fell into a category of low, medium or high socio-economic status (SES). Students appear to be fairly evenly grouped across the SES categories, for both intervention and control schools. Overall, ECCE program intervention and comparison students have very similar SES as shown in Figure 6.

Figure 6. Percent of students in each SES category by group



C. Home Literacy Environment

Family support for a child's education has been a key factor in studies of other literacy programs. At the baseline, ECCE students had more supportive home literacy environments along each metric but the difference was only statistically significant for the percent of students who had at least one family member read to them. At the end of year 1, ECCE program intervention schools still had more supportive home literacy environments on average but none of the differences were statistically significant. It appears that Literacy Boost students from ECCE program intervention schools did not have more of a change in their home environment than those in regular schools. It is unclear if the ECCE program did not have an impact on children's home environments or if the change was too small to detect with such a small sample size.

Figure 7. Student's home literacy environment by group

Variable	Baseline ⁶			End fo Year 1		
	ECCE Average	Comparison Average	Sig. diff.	ECCE Average	Comparison Average	Sig. diff.
# of types of reading materials at home	1.6	1.6	-	1.7	1.5	-
% of children who have seen at least one family member read	93%	81%	-	97%	90%	-
% of family members seen reading	46%	36%	-	54%	46%	-
% of children who were read to by at least one family member	79%	48%	**	90%	79%	-
% of family members who read to child	30%	24%	-	42%	30%	-

* p<0.05, **p<0.01

On average at the end of the year, students had less than two types of reading materials at home. The vast majority of homes had a Quran and about half had other religious books. Only one in five students reported having any storybooks at home. 86% of students saw at least one person in their household read. On average, about a third of their family members have been seen reading. 83% of students have had someone in their family read to them, and about a fifth of family members, on average, read to the student.

Overall, the groups are matched well enough that we can compare their progress in literacy over the year. As there was one variable with a statistically significant difference at baseline, percent of children who were read to by at least one family member, we will control for that differences in our later analysis of the program effect.

⁶ Baseline averages include Abbottabad data from the end of the year as this data was only collected then in this district

D. Attrition at End of Year 1

Was absence at the end of year 1 different in ECCE program intervention schools than in comparison schools?

At baseline, 308 students were tested from 33 ECCE program intervention schools and 27 comparison schools in the three districts.⁷ At the end of the school year, 216 of those students were able to be located and retested. Reasons for attrition of the sample include students missing school for the day because of illness, irregular attendance or changing schools.

Figure 8: Student by group, gender and attrition status

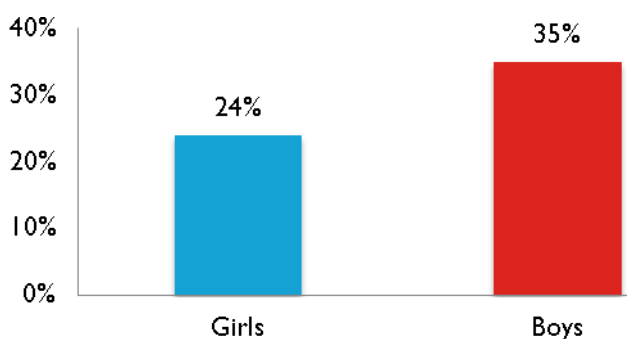
	ECCE students	Comparison students
Girls	Present: 68 Absent: 20 (23%)	Present: 46 Absent: 16 (26%)
Boys	Present: 60 Absent: 30 (33%)	Present: 42 Absent: 26 (38%)
Total	Present: 128 Absent: 50 (28%)	Present: 88 Absent: 42 (32%)

The absence rate was slightly higher at comparison schools than ECCE program intervention schools, 32% and 28%, respectively, though the difference was not statistically significant.

Were absent students different in some way than those present at the end of the year?

In general students who were absent on the day of the second assessment were very similar to those who were present with only two differences. Boys were more likely to be absent, with 35% of boys absent compared to 24% of girls. Along most of the baseline literacy scores, students who were absent at the end of the year had scores that were actually higher than those who were present but the difference was only statistically significant for Pashto comprehension score. This is unusual as typically lower performing students have been more likely to be absent a year later in other SC studies. More work should be done to speak with schools about why these higher performing students were more likely to be absent. If more talented students are being drawn out of schools due to attractive work options or family needs this is an area of concern.

Figure 9: Percent of students absent at the end of year 1 by group



⁷ These 308 students are specific to Battagram, Buner and Abbottabad.

IV. Program Impact of Literacy Boost

A. Program Impact by Reading Skill

This section looks at the gains made by 2nd grade students in ECCE program intervention and comparison schools in four different areas of literacy: letter identification, reading fluency, accuracy and comprehension.

As ECCE program intervention and comparison students did not start out with the same average literacy skills, we will be focusing on comparing the gains students made in each group as opposed to the total score at the end of year 1. Additionally, to determine if ECCE students made a larger gain, we are controlling for any background characteristics that were significantly different at baseline.⁸ Overall, we saw in the previous section the two groups were quite similar so the control schools provide a good comparison of what students in regular schools would expect to learn over a year. Our analysis looks to see if ECCE students learned more during the year and a half than the students in regular schools.

Note: Further disaggregation according to gender is present on p.g 24.

Figure 10: Avg. Baseline, End of Year 1 and Gains in Literacy Skills by Group

Reading Skill	Group	Baseline score	End of Year 1 score	Avg. Gain ⁹	Sig. diff. between gains
Letter identification (%)	ECCE	61	91	30	**
	Comparison	58	84	26	
Fluency (words per minute)	Urdu	ECCE	1.0	37	*
		Comparison	0.9	16	
	Pashto	ECCE	0.1	23	
		Comparison	0.5	15	
Reading Accuracy (%)	Urdu	ECCE	6	55	*
		Comparison	6	30	
	Pashto	ECCE	1	46	*
		Comparison	4	24	
Reading Comprehension (%)	Urdu	ECCE	21	64	*
		Comparison	11	31	
	Pashto	ECCE	14	69	**
		Comparison	21	43	
Readers (% of students)	Urdu	ECCE	9	65	
		Comparison	6	38	
	Pashto	ECCE	1	51	
		Comparison	3	28	

*** p<0.001, ** p<0.01, * p<0.05

We find that Literacy Boost students in ECCE program intervention schools made significantly more progress in letter identification, Urdu reading fluency, Urdu and Pashto

⁸ For each literacy skill, we controlled for whether someone in the family read to the child at the baseline as this was the only statistically significant difference between the two groups at baseline. Baseline letter score was used as a control for the gains in letters regression as there was a ceiling effect on the scores. We used clustered standard errors as students are grouped in schools. See Appendix 1 for the regression models

⁹ Any difference between baseline plus gain scores versus end of the year is due to rounding.

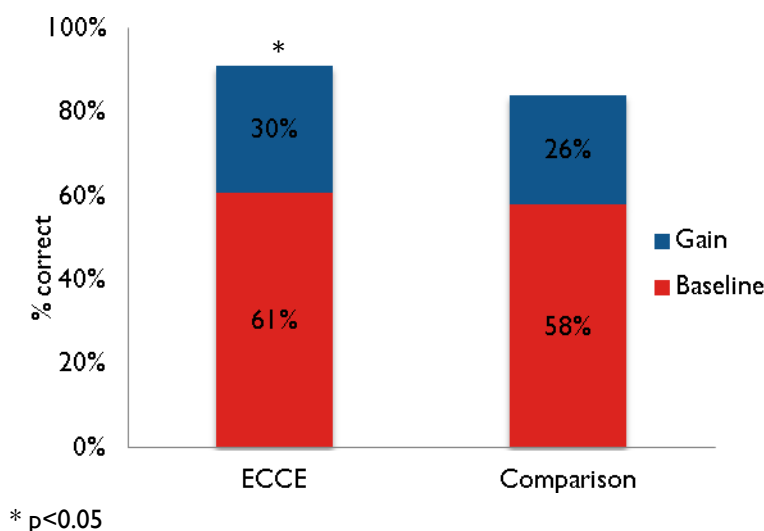
reading accuracy, and Urdu and Pashto reading comprehension. Students in ECCE program intervention schools did not have statistically significantly larger gains in Pashto fluency or in the percentage of students that are considered “readers” (able to read at least 10 words a minute).

Below are the detailed results for each skill, showing the baseline scores for students in ECCE program intervention and comparison schools and the gains students made over the year. For each skill we will compare the gains ECCE students made with that made of similar students that did not receive the program.

i. Letter Identification

At the baseline, students could identify a little under two-thirds of the letters, with ECCE students starting 3% higher than comparison students. At the end of the first year ECCE students gained 30%, knowing a total of 91% of the letters at the end of the year. Those in the comparison schools gained 26%, knowing on average 74% of the letters at the end of the year. Controlling for baseline differences between the two groups, ECCE students made statistically significantly larger gains than those in traditional schools.

Figure 11: Letter identification by group at baseline and gain made in a year

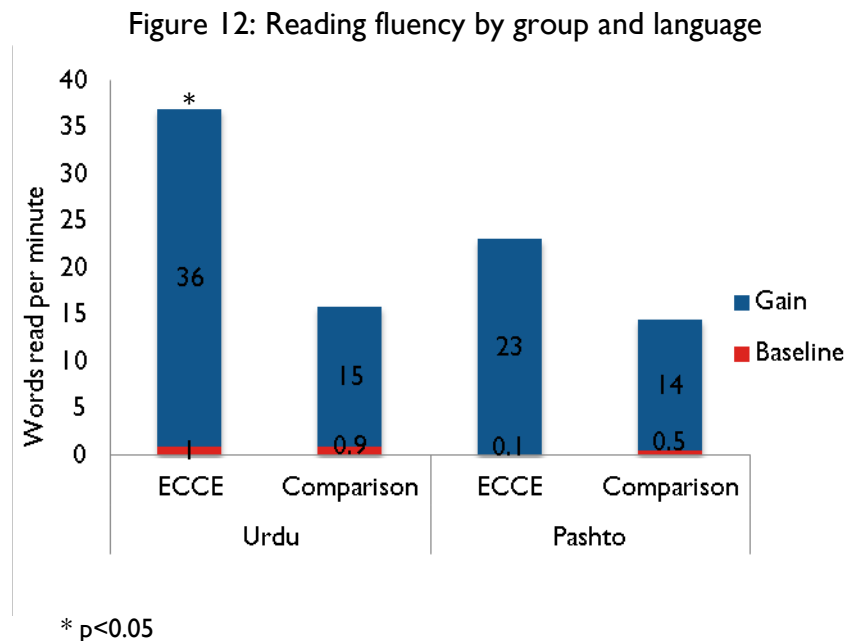


ii. Reading Fluency

Reading fluency in each language was assessed based on the number of words a student could read correctly from a 114-word passage in one minute in Urdu and a 90-word passage in Pashto. Reading speed is key to ensure students can grasp the message of the text. ECCE students on average made larger gains over the year in both Urdu & Pashto fluency but the difference was only statistically significant for Urdu, the official language of instruction. However it is important to note that Pashto speaking teachers often translate their lessons in Pashto for the students, particularly teachers in Buner and Battagram who cannot speak Urdu properly.

In both ECCE program intervention and comparison schools very few students could read any of the passage at baseline. Hence the baseline reading fluencies average out to less than 1 word per minute. This is due to 80% of the students being unable to read any words from the passage and many only able to read a couple words at baseline. Over the year students in both ECCE and comparison schools made large gains in reading fluency, but the gains were greater in ECCE schools. In Urdu, ECCE

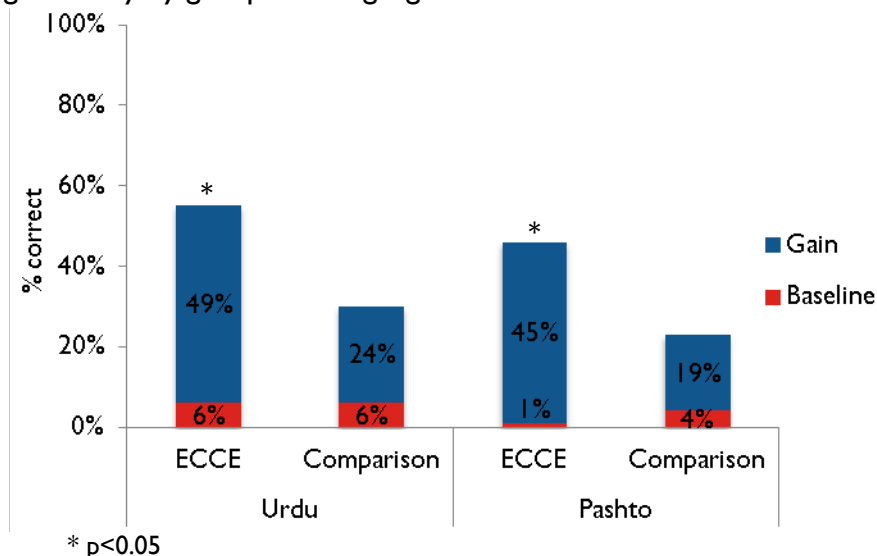
students made over double the gains those in regular classroom made, reading at 37 words per minute in Urdu and 23 words per minute in Pashto.



iii. Reading Accuracy

Using the same passage as the one to gauge reading fluency, assessors counted the total number of words read correctly. The percentage of words read correctly out of 114 and 90-word passages were used to calculate reading accuracy in each language. As mentioned above both groups had very few students that could read any of this passage. At the end of the year, both groups had made a fair amount of progress. ECCE students made statistically significantly larger gains than comparison students in reading accuracy in both Urdu and Pashto. ECCE students made over double the gains students in a regular classroom made in both languages over the course of a year.

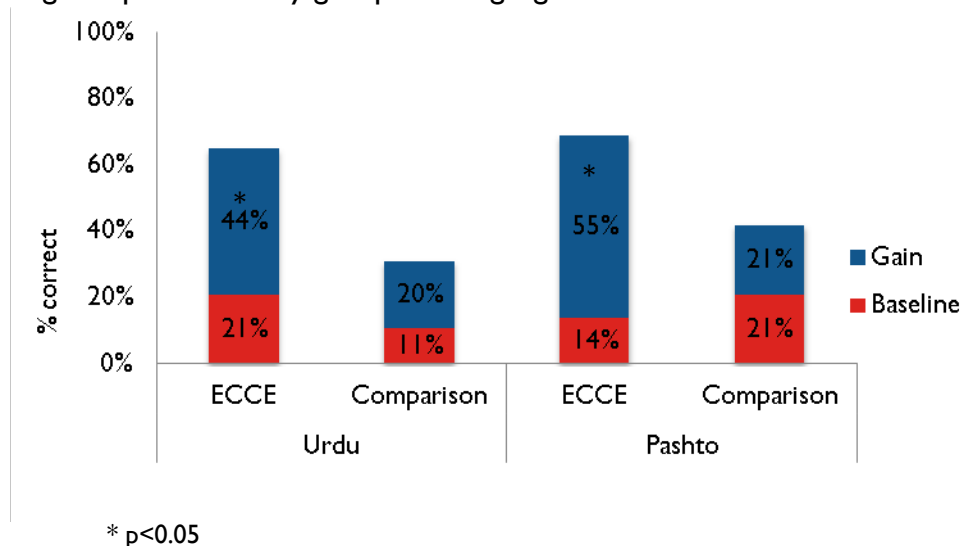
Figure 13: Reading accuracy by group and language



iv. Reading Comprehension

After reading the passage, students were asked four questions to gauge their comprehension of the passage. ECCE students made statistically significantly larger gains than comparison students in both Urdu and Pashto comprehension. Students in ECCE schools again made over twice the growth of their peers in the same time period. At the end of the year, ECCE students were able to answer just under 3 of the 4 comprehension questions in each language and comparison students could answer about 1.5 questions on average.

Figure 14: Reading comprehension by group and language

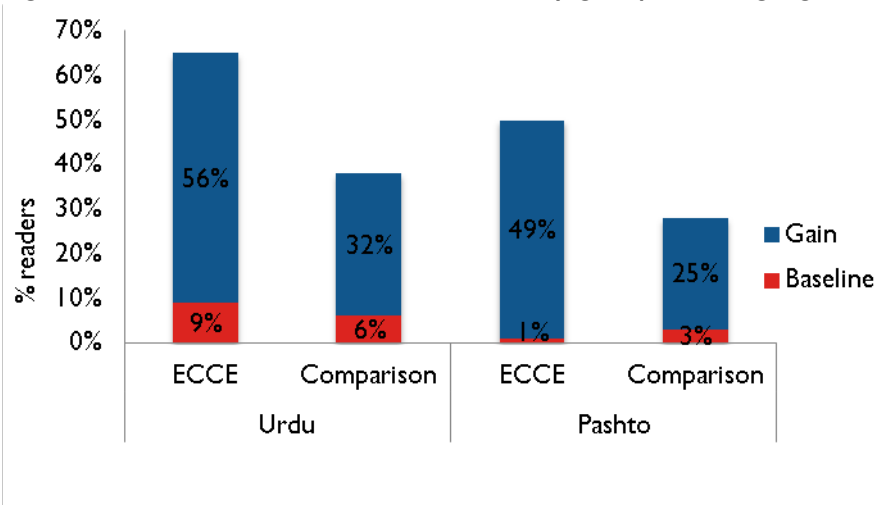


v. Readers

Another important measure to look at is the gain in students who became “readers”, able to read at least 10 words per minute. At the baseline very few students in either ECCE or comparison schools were readers. By the end of the year, 65% of students were readers in Urdu and 50% in Pashto at ECCE schools. While many more students became readers over the year in ECCE schools than comparison schools, the difference was not statistically significant. This may be an issue of a small size unable to detect an effect or there could in fact be no effect of the program in this outcome area.¹⁰

¹⁰ This is just a yes or no variable on whether the student can read (but this doesn't tell us how well they can read). Since this is just a binary variable it is harder to detect a statistically significant effect with a small sample size so we don't know if there really wasn't an effect in this area or if we cannot tell with the small number of students assessed.

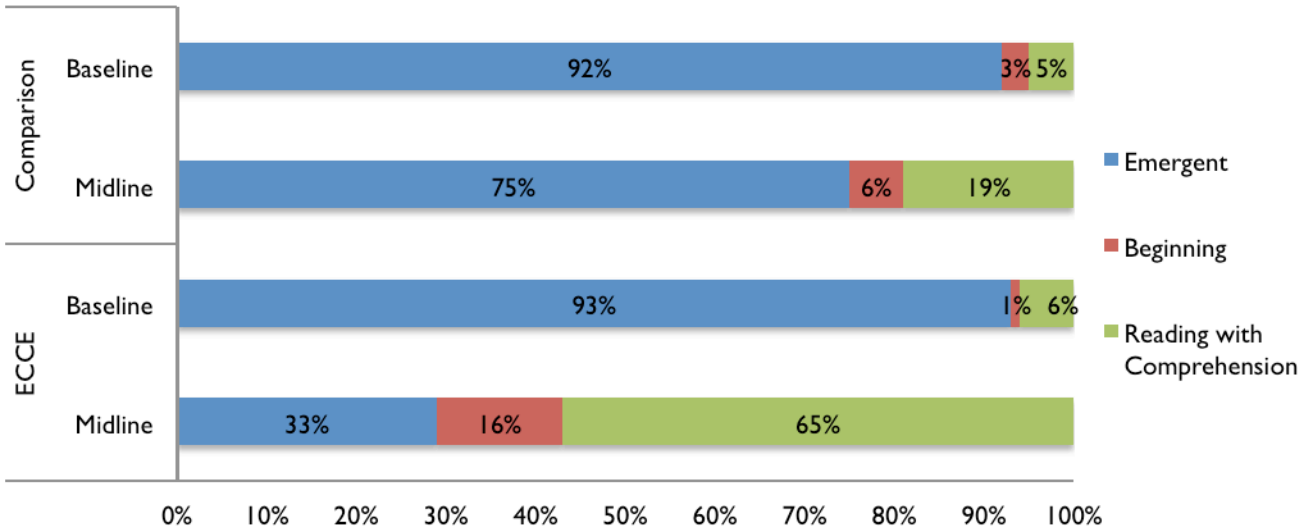
Figure 15: % of students that are readers by group and language



vi. Reading with Comprehension

The ultimate goal of reading is to fully understand and absorb the text. Each basic skill—letter awareness, reading fluency, etc.—builds on the others to ultimately culminate in reading with comprehension. By using students’ scores from the skills listed previously we can gauge where the students falls along the scale from nonreader to reading with comprehension. Figure 16 shows the percentage of students that were “emergent readers”, “beginning readers” and “readers with comprehension” in each group at the beginning and end of the evaluation period. Emergent readers are those that could not read the passage or did so very slowly and were only able to answer at most one of the four comprehension questions. Beginners are those that could read faster and answered 2 of the comprehension questions correctly. Readers with comprehension could read the passage with more fluency and answered 3 or 4 out of the comprehension questions correctly.

Figure 16: Reader level by group at baseline and end of year I



At the beginning of the year, the majority of students from both groups were emergent readers. At the end of the year 65% of students in ECCE schools were readers with comprehension, significantly more than at comparison schools where only 19% of students were readers with comprehension.

vii. Effect Size

Another way to express the impact of the program on literacy skills is to look at the effect size. Effect sizes take the average difference in gains between the two groups divided by the average standard deviation to account for the spread of the results. Figure 17 presents the effect sizes for the six literacy skills with a significant program effect.

Figure 17: Effect sizes for each literacy skill

Reading skills	Effect size (Cohen's d)
Letter Identification	0.23
Urdu Fluency	0.45
Urdu Accuracy	0.43
Pashto Accuracy	0.54
Urdu Comprehension	0.39
Pashto Comprehension	0.83

Effect sizes of around 0.2 are considered small, around 0.5 are medium effects and around 0.8 are large effects.¹¹ The effect of ECCE varied depending on the skill with the largest effect on Pashto comprehension and only a small effect on letter identification.

B. Involvement in ECCE Programming

The following section will look at student and teacher involvement in two areas of ECCE implementation focused on Literacy Boost strategies: student attendance at community literacy events (reading camps, reading buddies and book banks) and teachers' use of teaching strategies taught during ECCE teacher training. These two sections will give a sense of how things actually changed in the communities due to the program—what were students and teachers doing differently as a result of ECCE and how does that impact their scores.

i. Community Activities

Through training, provision of materials and appointment of supervisors, ECCE established three main Literacy Boost activities students could participate in to improve their literacy skills outside the classroom.

1. **Book banks:** The books were carefully selected from the choice of age appropriate and locally relevant children's fiction books available in the market. These collections of books, usually located in the main office of the school and in communities, were available for students to borrow for the day, take home or read at school. SC provided the books and shelving for the book banks.
2. **Reading buddies:** In the Literacy Boost community model, SC appoints a teacher at each school to be in charge of creating reading buddy pairs (an early grade student and an older student) and then the activity is monitored to ensure that the students are meeting with their buddies and have access to books to read together. By the time data was collected for the LB Endline in this project, xx number of reading buddies had been established in xx number of schools.
3. **Reading camps:** SC trained local volunteers to hold weekly reading camps in the community. At these events students could listen to a story, play reading games, take part in focused instruction on a certain reading skill and make a book to take home. By the time data was collected for the LB endline,--

¹¹ Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (second edition). Lawrence Erlbaum Associates.

Participation in Literacy Boost Activities

Many students participated in these activities, but attendance was nowhere near universal. After the 2nd grade students were tested at the end of the year, they were also asked about their participation in ECCE activities. Students reported the following:

Book Banks

46% reported using the book bank last week

On average of students who used the reading banks, they reported attending book banks once a week

37% of students could name their favorite book, and 33% could summarize the book

Reading Buddies

54% reported having a reading buddy

On average of students who reported having a reading buddy, students reported meeting with their reading buddy once or twice a week

Reading Camps

11% reported attending a reading camp last week

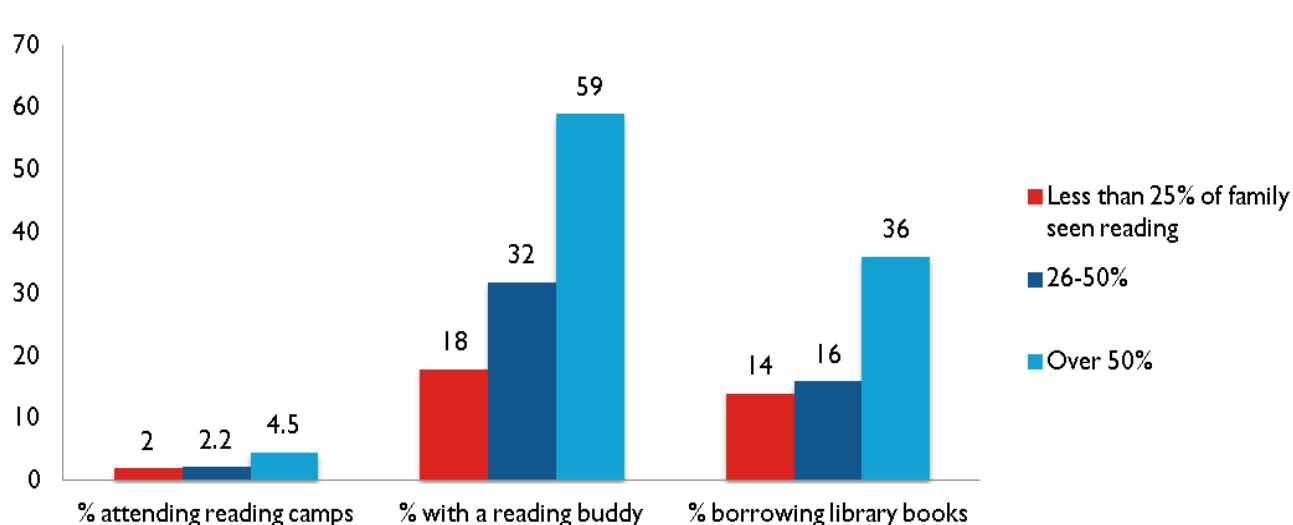
On average of students who reported attending reading camps, they reported attending reading camps a couple times a month

It is important to note that the reported number of attendees of the reading camps is very low as this program component had only been recently started in mid-2013. However, these results are just students reported attendance and we would need monitoring data to know for sure what percentage of students participated in these activities. SC Literacy Boost reports from other countries have shown students over-reporting their attendance at these events. Additionally these results do not tell us the quality of the interaction that the student had. For example, a student could “meet” with their reading buddy but not actually do any reading and just play instead. A student could check a book out of the book bank but not read it or try to read it but get frustrated when no one is available to help. More data needs to be collected about the quality of the students’ experiences. Additionally, more supports need to be in place to make sure the student gets the most out of each experience. For example, when a student returns a book the teacher is supposed to ask them questions about it to gauge comprehension, which we do not have data on. More sources of monitoring like this should be incorporated into these activities.

Who attends ECCE Activities?

While many students participate in ECCE activities, it appears that students with higher initial literacy levels and more supportive home literacy environments are more likely to attend (Appendix I). Girls were more likely to report borrowing books from the book bank and Pashto students were significantly less likely to participate in all three activities. Majority of the Pashto speakers are in Battagram and Buner, while Abbottabad has very few Pashto speakers. Community activities were held in Pashto AND Urdu in Battagram and Buner (teacher would use both languages) and only Urdu in Abbottabad, so this statement would lead us to conclude that Battagram and Buner as districts see low participation

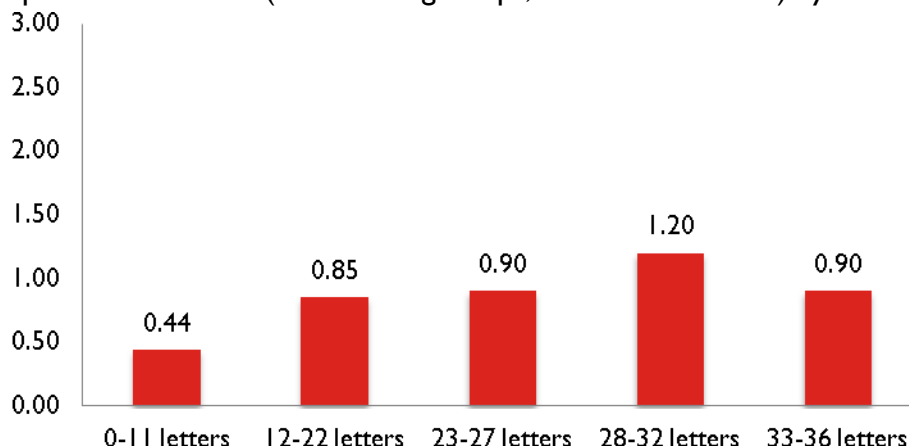
Figure 18: Participation in ECCE activities by % of family seen reading



Home support for reading was consistently related to attendance in ECCE activities.

Having family members that read to the student and or were seen reading were related to participation in book banks, reading buddies and reading camps as shown in Figure 18.

Figure 19: Participation in activities (of 3: reading camps, buddies and banks) by letters score at baseline



Students who had higher literacy levels at the baseline tended to report attending ECCE activities at higher rates. While there were many students in Figure 19 who did not start out strong readers that still attended many events, SC should strive to ensure all students feel comfortable attending no matter their initial literacy level.

Pashto students were also less likely to attend ECCE activities. However, when controlling for baseline score, speaking Pashto was only significant when looking at attendance at reading camps and not the two other activities. This suggests that since Pashto students have lower scores on average they, like non-Pashto speaking peers with low scores, are less likely to attend these activities.

Other student characteristics like SES, age and household size were generally unrelated to participation in activities. Students coming from poorer families were not less likely to attend ECCE events.¹²

¹² It is possible that other key variables that capture poverty more effectively may need to be identified

Does participation in ECCE activities affect literacy gains?

When controlling for baseline differences that were correlated with whether the student attended ECCE activities, there was not a statistically significant effect of reported attendance and gains made over the school year (Appendix I, Table A2). Due to a small sample size and not being able to measure actual attendance at event (just reported attendance), it is inconclusive if these activities did or did not have an effect on gains students made during the year.

ii. Teaching Strategies

The program model provides ongoing support, resources and training for principals, teachers and community members but leaves much of the actual initiative for change to these individuals. It is up to schools to send their teachers to training. It is up to the teachers who do attend the training to make changes in their teaching strategies based on what they have learned. It is up to schools to actually allow students to borrow the books provided and encourage students' participation in activities like reading buddies and reading camps. While ECCE provides ongoing support and some monitoring, for the program to work it requires teachers, principals and communities to follow through with the program and take initiative to reach out for additional support when their school faces obstacles in implementation.

In order to see if teachers had actually changed their teaching behaviour after the teacher training, nearly a hundred teachers, half teaching Katchi and half 2nd grade, were observed during a reading lessons and evaluated on their classroom and teaching methods. Items included whether there were materials on the walls that were at eye level and print rich, the teacher's tone and use of questions and praise and what teaching materials were used throughout the lesson.

Figure 31. Teacher Observation Score

Indicator	% of teachers			
	Katchi	2 nd grade	Not trained	Trained
Children's work is displayed in the classroom	50	26*	10	48**
Displays are at the eye-level of children	53	38	0	61***
Learning Corners are organized and labeled	48	N/A	0	65***
Children can access material in Learning Corners	50	N/A	0	68***
Displays are age appropriate and print rich	56	31**	0	62***
Room is airy and bright	80	77	86	83
Flexible seating arrangement	50	50	19	64***
Teacher follows a structured plan for daily activities	55	66	50	68
Teacher frequently encourages asking questions	62	55	50	68
Teacher uses materials other than textbook	54	49	0	76***
Teacher use concrete materials (ex. blocks, stones)	51	37	10	58***
Teacher frequently praises children on their work	61	63	43	76*
Teacher gives equal attention to all children	66	68	24	87***
Tone of the teacher when interacting with children <i>Scale: Friendly (1), Neutral (2), Unfriendly (3)</i>	1.4	1.4	1.8	1.3***
Teachers asks questions to engage children in thinking process or to recap the lesson	60	77	65	73
For multi-grade setting: Teachers regularly checks in with children especially those with learning needs	59	56	50	58
Number of teachers observed	56	56	21	72

*** p<0.001, ** p<0.01, * p<0.05

On average, teachers who had been trained scored significantly higher in 2/3 of the indicators of effective teaching. However, since teachers were not randomly assigned to the training, we cannot say that this difference is exclusively from the training itself. Teachers who had been trained were three times more likely to give equal attention to all students and significantly more likely to display student work and use teaching materials other than the textbook. However there were several behaviors where trained teachers were not statistically more likely to exhibit the strategy during the observation. Trained teachers were not more likely to encourage children to ask questions, follow a structured plan, ask children questions or have them summarize the lesson and check in with slower learners.

Katchi teachers also scored higher than 2nd grade teachers especially on indicators related to displaying work (on indicators that were relevant to both grades).

Male teachers were more likely to use almost all of the recommended teaching strategies than female teachers, except for when it came to following a structured plan. Along this technique there was a huge gender divide. 91% of female teachers followed a structured plan for daily activities, as opposed to just 39% of male teachers.

What types of teachers used more teaching strategies?

There were very few baseline differences between teachers that used more or less teaching strategies.¹³ Teachers with students from lower SES backgrounds, more Pashto speaking students or more students that repeated a grade were not more likely to use the strategies taught in the teacher training.¹⁴ Students on average had similar baseline literacy scores along most sub-skills in classes that did and did not use the teaching strategies. The only differences were students with higher baseline Pashto fluency, accuracy and comprehension had teachers that were less likely to use the teaching strategies during the year.

It is possible that the teachers who used the strategies are already more motivated teachers or have a more supportive school system that encouraged them to improve their teaching style. However, seeing as they are well matched in terms of other baseline characteristics (literacy scores, home environment, etc) suggests that these improvements in teaching strategy may be partly exogenous and therefore we can look at their effect on students outcomes.

Do students make larger gains in classrooms that use more teaching strategies?

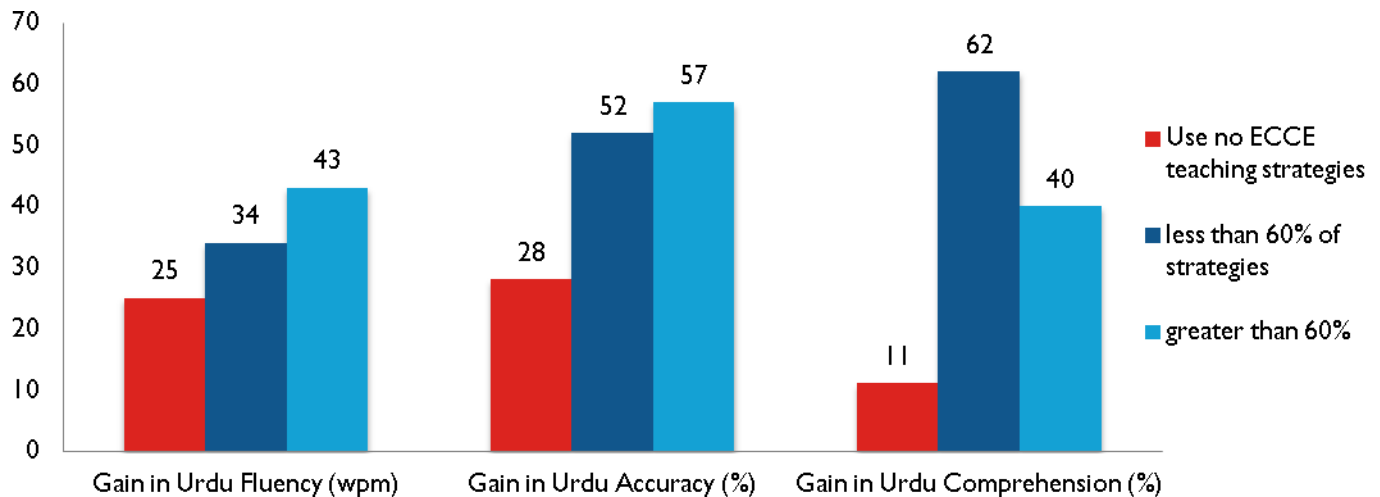
As we saw from the previous section, schools that used more teaching strategies were fairly similar to those that did not. However, in the few areas where they were different we controlled for these differences to hope to capture the effect of teaching strategies. This allows us to compare these schools and possibly attribute differences in gains over the year to the differing use of these teaching strategies.

¹³ Often different teachers are teaching Katchi and Grade 2 in these schools: Hence, if Katchi teachers say they are 'trained', it means they have attended SC's ECCE training. While if Grade 2 teachers have said they have attended trainings, they would have attended LB trainings. The indicators are generic in this tool and refer to basic child friendly practices relevant to both LB and ECCE

¹⁴ Note: this finding comes from a very small sample of 5 matched children with a teacher interviewed from the same classroom

In general, students at schools that used more teaching strategies made larger gains in letter identification, Urdu and Pashto fluency, accuracy and comprehension during the school year than those that did not, though Urdu comprehension was only significant at $p < 0.1$. (Appendix I, Table A.3).

Figure 20: Reading fluency gains by use of teaching strategies for program intervention students only



While we cannot be sure the relationship is causal, there does appear to be a strong correlation between using teaching strategies and having students make larger gains over the year.

Increasing Program Involvement of Schools & Communities

It appears there is some link between use of ECCE teaching strategies and larger gains over the school year. Therefore it is crucial that SC not only start up ECCE programs but ensure that the staff at the school is on board and motivated enough to be committed to the program throughout the school year and really change their behavior. Some ECCE schools did not make any additional gains while others made huge gains, so the intensity of the ECCE program is crucial. This requires SC to both build the determination within schools and communities to invest time in the beginning and check up with schools frequently to support them in their work throughout the year. Further recommendations for this are discussed in section VII.

V. Literacy & Student Background

A. Results by Gender

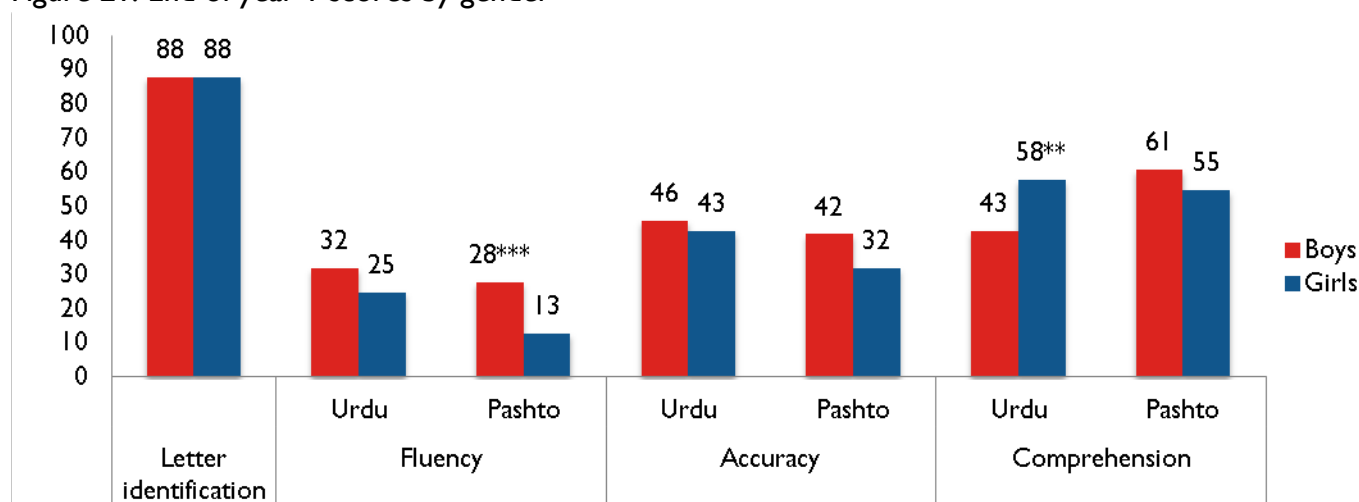
Figure 20: Baseline, end of year I & gain scores by gender for ECCE program intervention schools

Reading Skill	Sex	Baseline score	Sig. diff.	End of year I score	Sig. diff.	Gain	Sig. diff.
Letter identification (%)	Boys	68	***	88		22	**
	Girls	53		88		33	
Fluency (words per minute)	Urdu	Boys		32		31	
		Girls		25		24	
	Pashto	Boys	***	28	***	26	**
		Girls		13		17	
Accuracy (%)	Urdu	Boys	*	46		39	
		Girls		43		39	
	Pashto	Boys	***	42		36	
		Girls		32		32	
Comprehension (%)	Urdu	Boys		43	**	28	
		Girls		58		39	
	Pashto	Boys	*	61		50	*
		Girls		55		33	
Reader (%)	Urdu	Boys	-	54		47	
		Girls		54		46	
	Pashto	Boys	**	47		42	
		Girls		36		36	

***p<0.001, ** p<0.01, * p<0.05

Overall at baseline, boys scored higher than girls in letter identification, Pashto fluency, Pashto and Urdu accuracy and Pashto comprehension. However at the end of the year there were only significant differences in Pashto fluency with boys scoring higher and Urdu comprehension with girls scoring higher. Girls were able to catch up or close the gap in other skills over the course of a year. There was not a difference along gender lines in ECCE versus regular schools.

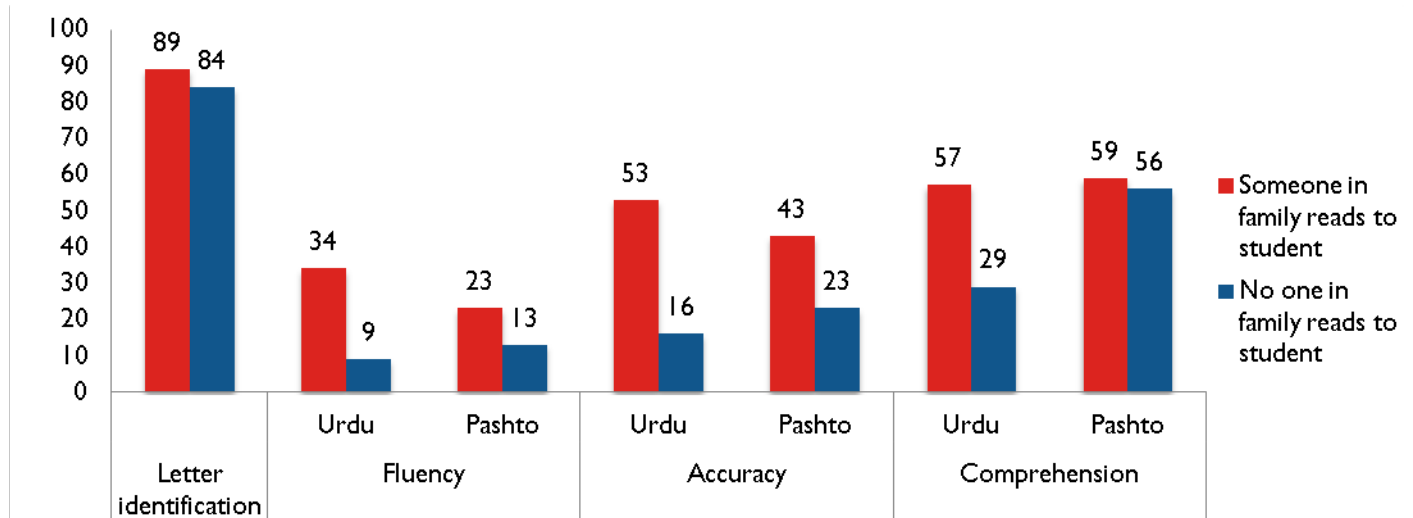
Figure 21: End of year I scores by gender



***p<0.001, ** p<0.01, * p<0.05

B. Results by Home Literacy Environment

Family support for reading and access to reading materials are crucial factors affecting student's reading growth. **More family members seen reading or reading directly with the student was correlated with higher scores in letter identification, Urdu and Pashto fluency, accuracy and comprehension.** Having more reading materials, especially child-friendly ones like stories as also correlated with higher scores in some sub-skills.



It appears that home literacy environment also has a different impact on girls versus boys. If girls had a more supportive home literacy environment they were more likely to have higher literacy scores, and while the relationship still holds for boys the size of the effect is smaller. Girls with better home literacy environments perform much better than those with less support. This could also be influenced by the fact that girls had more room for growth than boys. The following figure shows the correlation between Reading fluency and the home literacy indicator that was statistically significant Figure 41 and Appendix I, Table A.13).

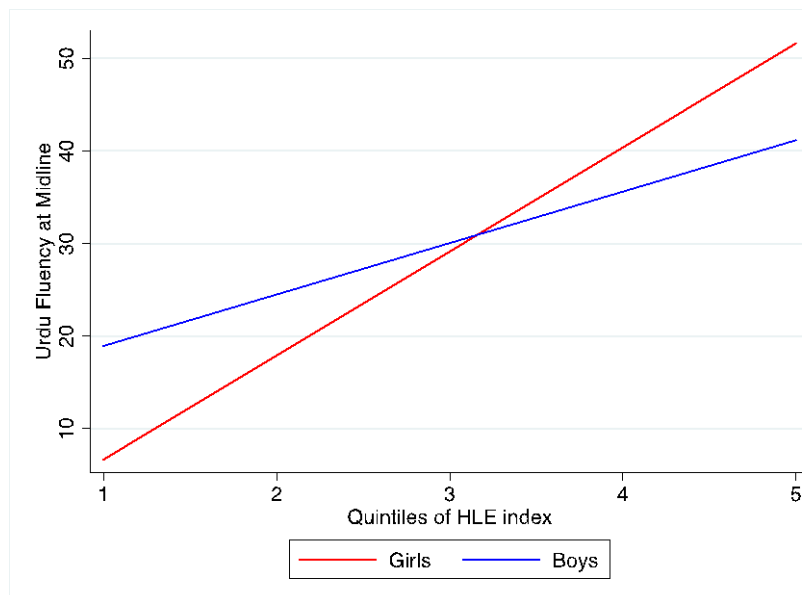
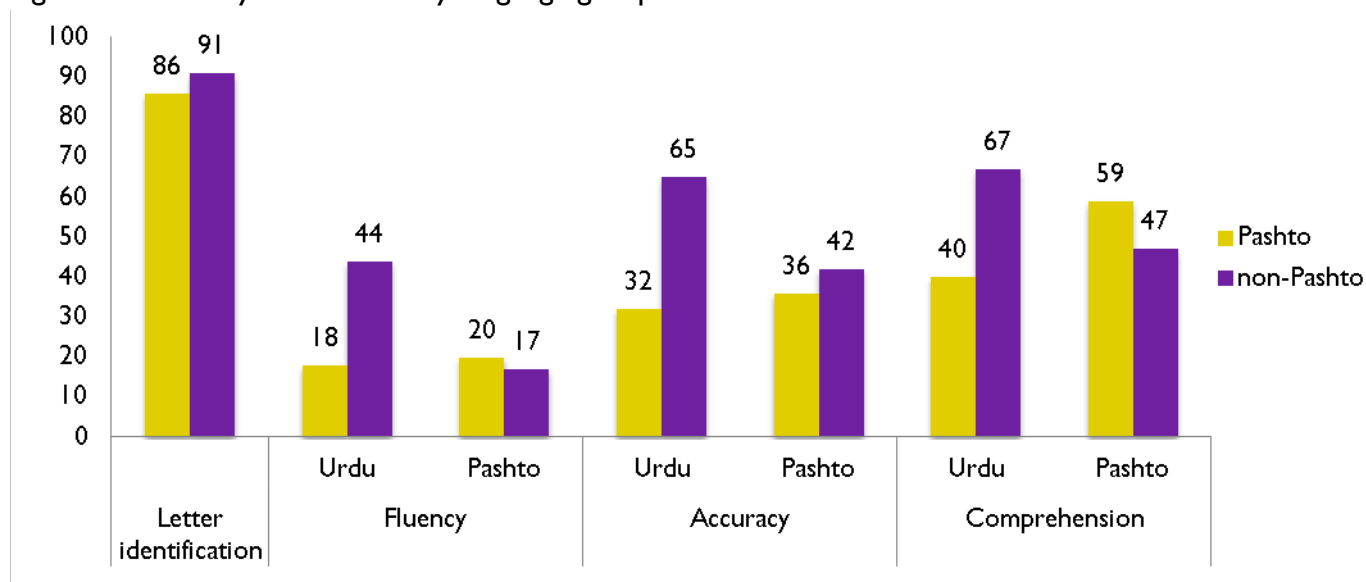


Figure 23: Reading fluency by percent of family members student sees read and gender

C. Results by Home Language & Socio-Economic Status

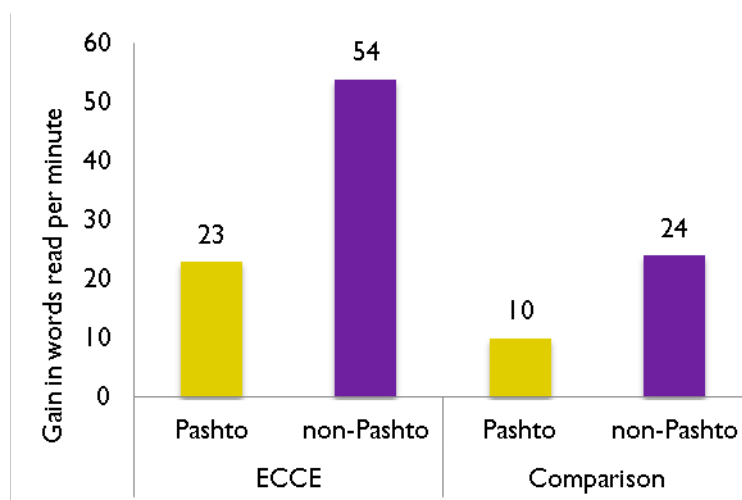
Student's home language has a significantly correlated with their literacy abilities. Students who speak Pashto as their primary language score lower on average in letter identification, Urdu reading fluency, accuracy and comprehension. They do not perform better than non-Pashto speakers in Pashto fluency, accuracy and comprehension. This correlation could be causal that these students have had less exposure to the other language or there could be other underlying factors related to both language and performance. For example, since majority of Pashto speakers reside in the districts of Battagram and Buner, children in those districts are performing worse than children in Abbottabad. Pashto speakers less likely to have encouraging home environments, have lower SES and less likely to attend program activities.

Figure 24. End of year 1 scores by language group



Additionally, see that while both Pashto and non-Pashto students make larger gains in ECCE schools, the gap between the two groups increases in ECCE schools because the gains non-Pashto students make is much larger than that of Pashto speakers. However, advantage seen for non-Pashto students is not statistically significant, possibly due to the small sample size being analyzed.

Figure 25. Gain in Urdu fluency by group and language



Students' socio-economic status was determined using the number of appliances in the home and rooms per person. Students were then grouped into low, medium and high SES groups. The students' socio-economic status (SES) was not related to their end of the year score along any dimension nor their gain in score over the year. There was however, no statistically significant effect on the interaction term, when SES indicator was interacted with intervention schools and language groups¹⁵.

¹⁵ No statistically significant result to show if the poorest/richest students are doing any better in intervention schools

D. Results by Performance at Baseline

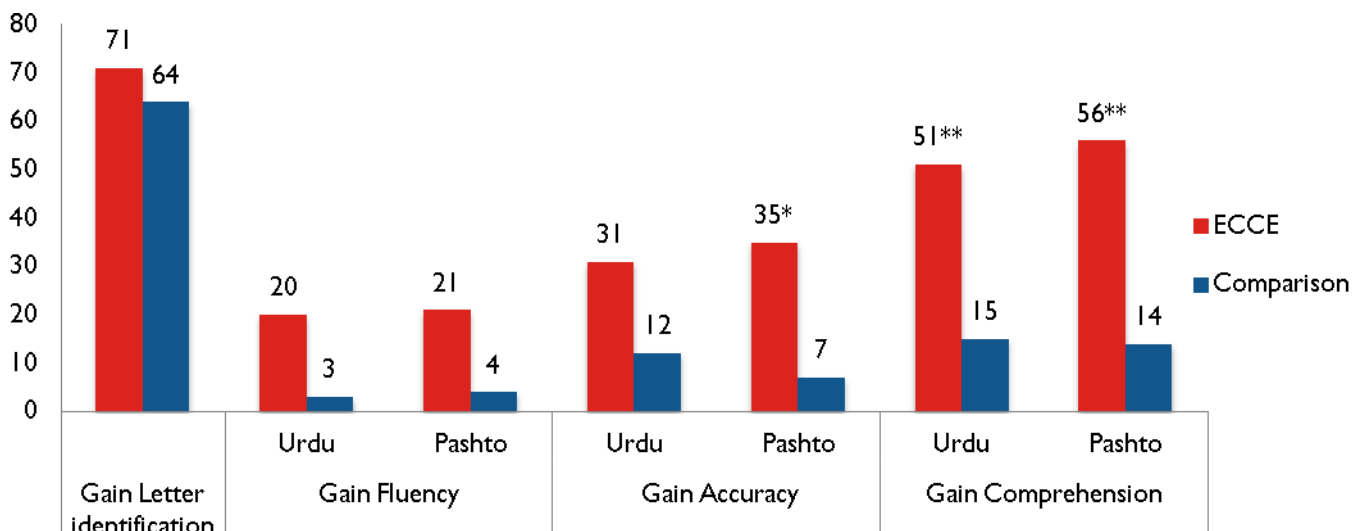
We define a “**struggling student**” as someone who **cannot read any words from the passage and knew less than a third of letters at baseline**, which is equivalent to being one standard deviation below the mean in letter identification. At the beginning of the school year **20% of the total students** were “struggling students” (18% in ECCE schools and 21% in comparison). Of these initially struggling students, many were still performing poorly at the end of the year:

- 60% still could not read any words from the passage in Urdu
- 50% still could not read any words from the passage in Pashto

This suggests there is a portion of students that were unable to catch up during the school year. At baseline, struggling students were more likely to be girls (12% of boys were struggling at baseline and 25% of girls were struggling) and speak Pashto. They also had a less supportive home environment and came from families that owned more livestock.

On average students who were struggling at baseline made larger gains in ECCE schools than comparison schools. While we would like to see these students make greater strides to get back on track with their peers, it is positive to see that many students in ECCE schools did make quite a lot of progress. ECCE program strives to support all students and not just boost those that are already at the top of the class. Figure 27 shows the gain in each literacy score for students who were struggling at the baseline. We can see that indeed students in the lowest quintile are performing better in ECCE schools after a year than in comparison schools. While the difference is only statistically significant for the three right-most columns on graph, it is likely there was an impact in other skill as well but cannot be detected with such a limited sample size. Since we have narrowed the analysis to just look at struggling students, this cuts our sample size down to 44 (17 in comparison schools and 27 in ECCE schools).

Figure 27. Gain in literacy scores by group for students who were struggling at baseline

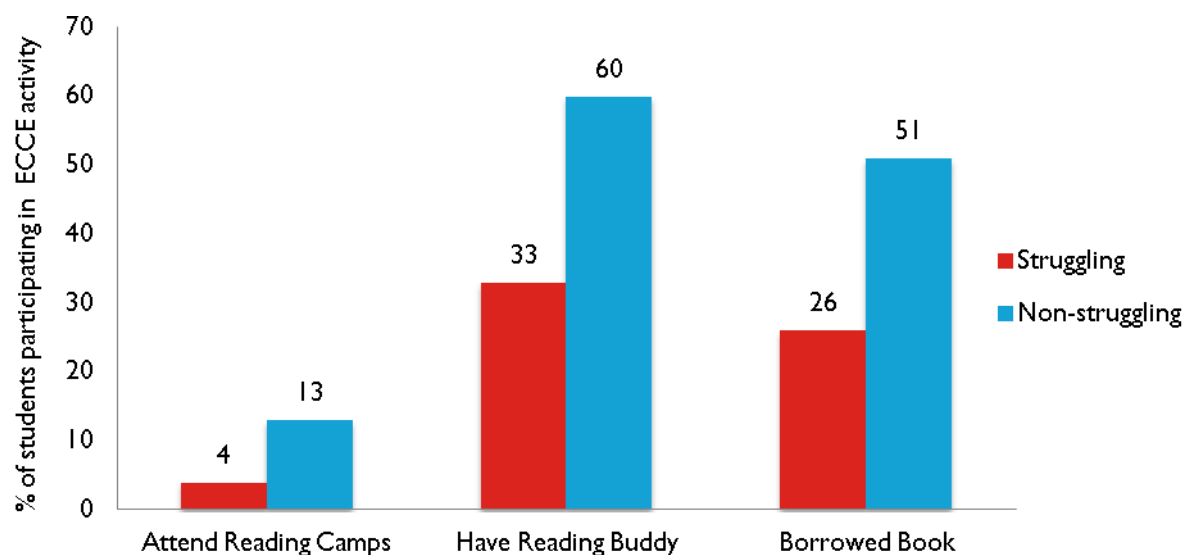


***p<0.001, ** p<0.01, * p<0.05

However, struggling students attended ECCE community literacy activities at about half the rate of their non-struggling peers. It appears that the current model of ECCE was not successful enough in reaching those lowest performing students; so more work needs to be done to ensure all students feel comfortable attending these activities. In order for all students to benefit, there needs to be a range of

activities for students at different levels and they need to be arranged in a way that students who are struggling feel welcomed and not intimidated.

Figure 28. Attendance at ECCE activities for struggling versus non-struggling students



Of the five students that were tested at each school about half of schools had at least one low performing student. Since we only have small sample of students from each school it is hard to know which schools actually have more struggling students than others, but there is at least one struggling student from the sample in most schools.

VI. Results – School Readiness Skills

The following section presents the results of the school readiness assessment given to students entering Katchi. Treatment students participated in ECCE homes (preschool classes held in someone's home and taught by a ECCE community volunteer, provided by the project) and control students lived in areas that did not have ECCE homes and did not attend preschool before entering Katchi. However, since treatment and control students were not selected randomly, ECCE homes were specifically placed in certain communities based on access to schools and cooperation of the community, and students who attended did so voluntarily, we cannot assume that these students are an exact comparison to those selected in communities with ECCE. In addition, since we do not have a lot of background information collected on the students we cannot post-hoc compare the groups to see if they are from similar socio-economic backgrounds and have similar home environments.

For these students, data was collected at only one point in time, which was at the end of the year. There is no previous baseline for this group of students.

While we will compare the results for students who attended ECCE homes and those in the control group, it should not be taken to assume that the program itself causes differences in scores between the two groups.

School Readiness Assessment

The school readiness assessment gauges students' motor, literacy and language skills. This tool was given in Urdu, and enumerators would translate the questions in Pashto in Pashto speaking districts, if children did not respond the first time round. The Listening Comprehension passage was changed from Urdu to Pashto, except when administered in Abbottabad.

Figure 26. School Readiness Assessment Instrument

Domain	Constructs assessed	# of Indicators	# of Items
Emergent Literacy & Language	Alphabet awareness	1	12
	Phonological awareness	1	6
	Oral language (Expressive, Receptive & Comprehension)	3	10
Motor Development	Fine Motor Skills	2	8
	Gross Motor Skills	2	6

A. Emergent Literacy & Language

To gauge their literacy and language skills, students were tested on letter identification, phonological awareness and oral language abilities. Overall students had the most trouble identifying letters and the phonological sounds the letters make. Students performed the best along measures of oral language development.

i. Letter Identification

Children in the sample had varying levels of awareness of letters. About 10% could not name any of the 12 letters shown and about a 1/3 of the children could identify 11 or 12 of the letters. On average, students could identify 6.2 out of the 12 letters. Students who speak Urdu at home scored statistically significantly higher than those who do not speak it at home. There were no significant differences along gender or whether the student was in an ECCE home or not.

Figure 27. Number of letters identified

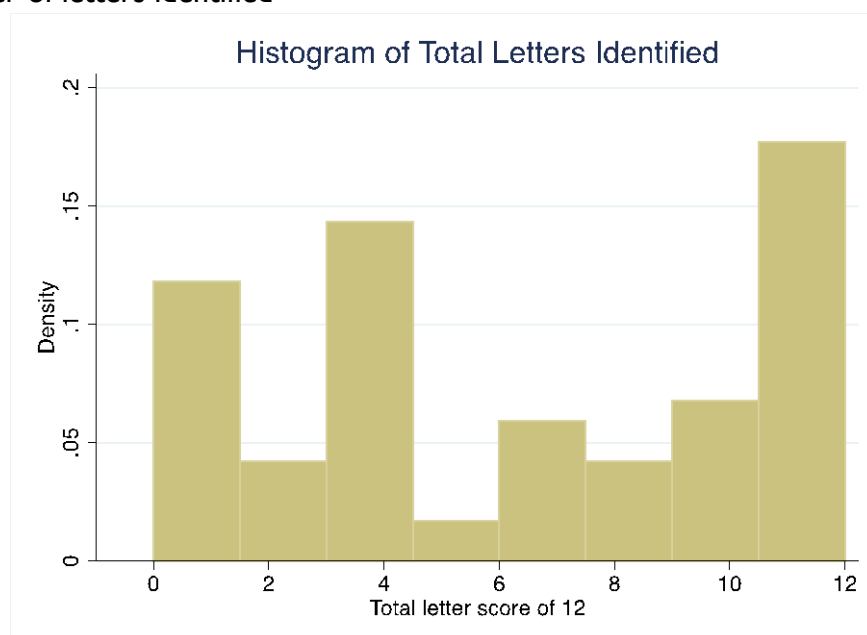


Figure 27 shows how many students got 0-1 letters correct, 2-3, etc. In general you can see there are a fair amount who knew very few letters and a few that knew nearly all the letters and fewer students somewhere in the middle.

ii. Phonological Awareness

Students were asked to identify what sound certain letters make. Of the 6 letters shown to students on average could correctly identify the sound of 2.8 of the letters. However, 1/4 of the students could not identify any of the sounds. There were not significant differences between boys and girls or those in ECCE homes and those not in ECCE homes.

iii. Oral language

Oral language skills are crucial for students entering school. Children's oral language skills were assessed through receptive language skills (whether they followed instructions they were told to do), expressive language (listing up to three foods they could think of) and listening comprehension (answering questions about a short passage that was read to them).

Figure 28. Summary of Oral Language

Indicator	% Correct	Standard deviation	Significant Differences?	
			ECCE vs. comparison	Boys vs. Girls
Receptive language: Following instructions	94%	0.17	No	No
Expressive language: Listing types of food	89%	0.22	*	No
Comprehension	79%	0.33	No	No
Total Oral Language	87%	0.19	*	No

* $p < 0.05$

We removed one item, the first comprehension question, from the scores as it was not correlated to the other measures, which suggests it was not a good gauge of the students language skills. The total scores for all indicators are significantly correlated. Taken together these indicators have an internal reliability of 0.80, suggesting that they create a reliable measure of children's oral language skills.

Children performed well in all measures of oral language skills with following directions the easiest and answering comprehensions questions the hardest. Students who had attended ECCE homes scored higher in vocabulary and overall oral language skills, with a total oral language score of 92% for those in ECCE homes versus 83% for those not in ECCE homes. There were no significant differences between boys and girls.

B. Motor Development

Students were assessed along both fine and gross motor skills. Students were asked to copy several shapes and cut figures to gauge fine motor skills and were assessed on their balance walking forward, backward and in a line and hopping.

All of the eight items under fine motor skills had high internal reliability. The five of the six items comprising gross motor skills had good internal reliability, so the other item walking forward was removed from the total gross motor skills score.

Figure 29. Summary of Motor Skills

Indicator	Item	% correct	Standard deviation	Significant Differences?	
				ECCE vs. comparison	Boys vs. Girls
Fine motor	Drawing	77%	0.26	No	No
	Cutting	82%	0.26	No	No
	Total	79%	0.23	No	No
Gross motor	Balance	80%	0.35	No	No
	Hopping	86%	0.27	No	No
	Total	84%	0.24	No	No

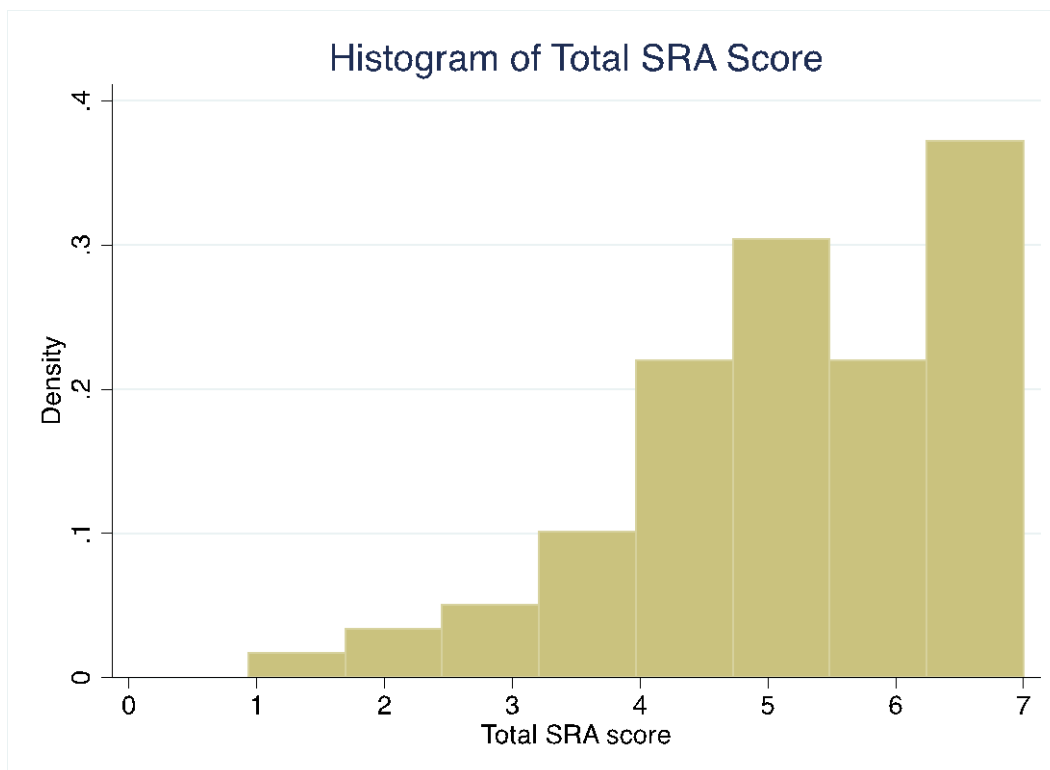
*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Students overall performed well in most measures of gross and fine motor development and there were no significant differences between those who participated in ECCE homes versus those that did not and girls versus boys. On average children were able to complete 6 out of the 8 measures of fine motor skills, with copying a triangle the hardest for students, and 4 out of the 5 measures of gross motor skills with walking along a straight line the most difficult.

C. School Readiness Total Score

To create a total school readiness score, we added together the seven areas (each weighted equally): letter identification, phonological awareness, receptive language, expressive language, comprehension, fine and gross motor skills. On average students were able to correctly answer 74% of the questions, with scores ranging from 13% to 100% correct.

Figure 30. Total Score Readiness Score distribution



In the above figure, it shows the number of students who received each score out of 7. Very few students scored below 3 and many students scored above 5.

Students scored the highest in receptive and expressive language skills and struggled most with identifying letters and their sounds. Students in ECCE homes scored 75% on average, compared with 68% for those not in ECCE homes but the difference was not statistically significant.

VII. Recommendations

A. Program Recommendations

The first group of recommendations below discuss how to improve academic performance of students in Pakistan. Some of these recommendations involve improvements for SC's second half of the ECCE program, and some are more general and can be done by the government, other NGO's or individual schools that want to take initiative and improve performance in their schools. The second group discusses improvements for further data collection.

1. Using ECCE teaching strategies

There is evidence that using ECCE teaching strategies significantly improve students' performance. There are several ways to make sure more teachers use the ECCE strategies. First is to ensure all teachers attend all parts of the training. Second is ensuring the training is effective so that the teachers both know how to use the techniques and are motivated to use them (shown evidence that the techniques work). Lastly, even if the teachers know how to use the techniques it is very common to fall back into old habits of teaching. Therefore, there needs to be continual monitoring and encouragement, especially from the principal, to continue to use the strategies. Additionally, when teachers face problems in implementing the teaching methods, master trainers or school supervisors need to take a more active role in problem solving with the teacher.

2. Improved home literacy environment

The data suggests the more family members that are seen reading and read to the student, the better the student will perform. However, there was not evidence that these aspects of home literacy changed more for students in ECCE schools. SC should ensure that it effectively communicates the importance of strong home literacy environments and can use evidence from this report showing the importance.

3. Support for Pashto students

Pashto students are performing significantly worse than their peers in many areas of literacy. They are also less likely to attend ECCE activities. More should be done to ensure teachers are able to support students from different language groups and that these students feel comfortable participating in ECCE community activities.

4. Support for struggling students

First, since these students are much more concentrated in certain schools, there should be greater attention paid to those schools. Second, the ECCE activities at these schools should be tailored to students with a variety of abilities. Currently, struggling students do not attend as many activities, so there needs to be more done to adapt these activities to them. At reading camps, there should be an emphasis on low-level skills. Reading camps should also be marketed as something for those who struggle with reading as well as those who feel more comfortable to attend, as the name alone implies it might be an activity for those who can already read. The reading buddies pairing should focus specifically on the lowest students. Those that need the most support should be paired with older, supportive students first, and teachers should monitor throughout the year to make sure the student is learning from their buddy. Third, identification of students' abilities is crucial to giving them the right support. Therefore, teachers need to use their formative assessment strategies to know who needs additional support and what their students' actual abilities are instead of just teaching to the average students. These techniques need to be a focus of the ECCE training for next year. Finally, there needs to be a belief that every single student can succeed. From conversations with teachers and staff this is

not the current mentality, and so there needs to be a commitment from all levels that every student can become a strong reader.

B. Data Collection Recommendations

1. Larger sample size

In order to see smaller effects or to look at results for certain subgroups, it is crucial to have a larger sample size. With only 216 students present at both the baseline and endline, it is very hard to detect any small effects. Luckily, the effect of the program was so massive that we were able to pick that up with a small sample size but had that not been the case we might not of know if there was a true null effect or just that our sample size was not large enough. It would be better to have fewer studies with larger samples and more data collected than lots of smaller studies that do not detect an effect. If possible, data collected from other evaluations done by the donor or other groups should be combined to get more data.

2. Include individual word reading section

It would also be preferable to include an additional section where students read simple individual words not in paragraph form and/or decodable words. These are simpler tasks for students than reading a whole passage and allow us to better see which students are progressing in the intermediate steps leading up to reading with comprehension.

3. Expand reading comprehension section

As the current instrument only includes four comprehension questions there are challenges in assessing the results, as there are so few questions. Adding a couple more questions would improve the reliability of the results on this component.

4. Baseline teacher observations

Observing teachers before the program would be helpful because it would allow us to see if teachers who were part of the training actually changed their teaching strategies. While we can see that ECCE teachers use the strategies at much higher rates than comparison teachers, we do not know at what rates ECCE teachers used these strategies before the training even happened.

5. Data on Attendance for High Performing Students

In this evaluation, we saw that students who were high performing at baseline were more likely to be absent at endline. This is unusual and not consistent with what we usually see in their countries. Qualitative data should be collected on why higher performing students were more likely to be absent.

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Appendix 1 – Regression Outputs

Table A.1: Regression Models Predicting Change in Scores from Baseline to End of Year 1 with Baseline Controls

VARIABLES	Gain letter identification (%)	Gain Urdu fluency (wpm)	Gain Pashto fluency (wpm)	Gain Urdu accuracy (%)	Gain Pashto accuracy (%)	Gain Urdu Comprehension (%)	Gain Pashto Comprehension (%)	Gain Urdu Reader (%)	Gain Pashto Reader (%)
ECCE	0.0642** (0.0221)	15.17* (6.426)	5.949 (6.172)	0.179* (0.0805)	0.208* (0.0848)	0.235* (0.110)	0.400*** (0.111)	0.166 (0.0938)	0.205 (0.105)
Someone reads to you	0.0178 (0.0245)	20.07*** (4.599)	8.463 (5.010)	0.272*** (0.0580)	0.141* (0.0638)	0.0435 (0.0849)	-0.226* (0.0931)	0.308*** (0.0744)	0.107 (0.0920)
Baseline letter identification ¹⁶	-0.0228*** (0.00109)								
Constant	0.718*** (0.0405)	2.898 (3.595)	10.10* (4.883)	0.0656 (0.0466)	0.124* (0.0536)	0.170** (0.0616)	0.331*** (0.0672)	0.120 (0.0631)	0.206* (0.0859)
Observations	208	208	141	208	141	208	141	208	141
R-squared	0.783	0.143	0.045	0.152	0.130	0.041	0.163	0.111	0.068

*** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1. Robust standard errors in parentheses

¹⁶ Baseline letter identification included because of non-normal distribution of letter identification due to ceiling effect on the score

Table A.2: Regression Model Predicting Attendance at ECCE Activities by Background Characteristics

VARIABLES	Attended Reading Camp	Has Reading Buddy	Borrowed Library Book	Total ECCE Activities (of 3)	Total ECCE Activities (of 3)
Baseline concepts about print		0.0111 (0.0122)		0.0279 (0.0156)	0.0249 (0.0145)
	0.00237 (0.00165)			0.00252 (0.00644)	
Baseline letter identification				-0.0565* (0.0213)	-0.0431** (0.0156)
Baseline Urdu fluency				0.200 (0.164)	
Someone reads to you		0.627*** (0.130)	0.351* (0.137)	1.272** (0.401)	0.926*** (0.239)
% of family seen reading				-0.665 (0.506)	
% of family that reads to you	-0.123** (0.0392)	0.0407 (0.157)	-0.229 (0.213)	-0.209 (0.401)	-0.241 (0.428)
Pashto			0.129 (0.0895)		
Gender	0.109* (0.0411)	-0.00507 (0.179)	0.209 (0.225)	0.131 (0.448)	0.322 (0.457)
Constant					
Observations	214	139	139	138	139
R-squared	0.068	0.139	0.099	0.179	0.147

*** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1. Robust standard errors in parentheses

Table A.3 Literacy Skill Results & HLE by District

	Abbottabad		Battagram		Buner	
	Baseline	End of Year I	Baseline	End of Year I	Baseline	End of Year I
Skill Results						
Letter identification	28	33	23	33	17	30
Fluency – Urdu	2.4	48	0.5	29	0.8	13
Fluency – Pashto	-	-	0.3	22	0.8	18
Accuracy – Udu	13%	69%	3%	53%	4%	22%
Accuracy – Pashto	-	-	3%	48%	5%	30%
Comprehension – Urdu	25%	72%	24%	57%	6%	31%
Comprehension – Pashto	-	-	35%	60%	6%	56%
Home Literacy Environment						
Number of reading materials			1.6	1.7	1.6	1.6
% of family that reads to student		54%	33%	41%	29%	22%
% of family seen reading		70%	51%	53%	36%	36%

Appendix 2 – Implementation Timeline

Date of intervention/s tart	Intervention	Time to assessment (June 2013)	Description
24/4/2012	First Training of Trainers (TOT) session conducted on print rich environment, formative assessment & letter knowledge	1 year 3 months	# of Participants = 21 Combined training on all previous modules, MTs from PITE and DCTE to deliver the same in all four districts
5/6/2012	First training of teachers conducted on Introduction to Literacy Boost Module 1	1 year	# of Participants = 444 Training held on Module Introduction to Reading Development and Instruction for Young Children in the following: Peshawar - May 6 th 2012 Battagram - May 7 th 2012 Buner - May 13 th , 2012 Abbottabad -May 15 th , 2012
June 2012	Book banks with five different types of reading materials were first in use.	1 year	Book banks supplied in schools of all four districts Peshawar Nov 2012 Abbottabad June 2012 Battgram June 2012 Buner July 2012
17/6/2012	Second training of teachers conducted on formative assessment Module 2	1 year	# of Participants = 267 Training held on Module _Formative assessment_ in Peshawar on June 17 th 2012 Battagram June 21 st 2012 Buner June 17 th , 2012 Abbottabad June 19 th , 2012
9 th – 11 th Sept 2012	Second TOT session conducted on phonemic awareness, reading fluency, reading comprehension, letter knowledge and vocabulary attended by teachers and district staff	9 months	# of Participants: 44 Training modules (Letter knowledge and Phonemic awareness) MTs from PITE and DCTE to deliver the same in all four districts

			Abbottabad : Oct 2-3 ,2012 Peshawar : Oct 9-10,2012
			# of Participants: 42 modules (Reading Fluency and Comprehension) MTs from PITE and DCTE to deliver the same in all four districts Peshawar: November 6-7, 2012 Abbottabad (Chattar plain): November 6-7, 2012
			# of Participants: 34 Training modules (Vocabulary and Language issues) MTs from PITE and DCTE to deliver the same in all four districts Peshawar: March 10-11,2013 Abbottabad: March 18-19, 2013
May 2012- October 2012	Reading buddies were established in schools	1 year	Reading buddies were established in schools in four districts Buner May 2012 Abbottabad June 2012 Battagram June 2012 Peshawar Sep 2012
17 th -18 th /10/2012	Third training of teachers conducted on letter knowledge and phonemic awareness (Module 4 and 5)	1 year	# of Participants: 701 Training held on modules Abbottabad : Oct 17-18, 2012 Buner Oct 21-22, 2012 Peshawar Oct 24-25,2012 Battagram Oct 31-Nov 1, 2012

13 th -14 th Nov 2012	Fourth training teachers conducted on reading fluency and reading comprehension (Module 6 and 7)	6 months	# of participants: 723 Training held in all four districts according to following detail: Abbottabad: Nov 13-14,2012 Buner: Nov 18-19,2012 Battagram: Nov 20-21,2012 Peshawar: Dec 1-2, 2012
27 -28 /3/2013	Fifth training of teachers conducted on language issues, Vocabulary (Module 3, 7 & 9) and conclusion to the program training.	3 months	# of participants: 644, Training held in all four districts according to following detail: Abbottabad: April 23-24,2013 Buner April 21-22,2013 Battagram: April 2-3,2013 Peshawar: March 27-28, 2013
June 24 th -26 th , 2013	Community facilitators were trained in management of book bank programs.	Conducted after the end of Year One assessment	# of CLWs and CEs = 59 Peshawar: June 28- 30, 2013 Abbottabad: June 24 th – 26 th , 2013 Buner: August 1 st – 3 rd Battagram: June 24 th – 26 th , 2013
June 27 th -28 th , 2013	Community members attended Reading Camp leader and mentor training workshops.	Conducted after the end of Year One assessment	# of CLWs and CEs : 59 Peshawar: July 1-2,2013 Abbottabad: June 24 th – 26 th , 2013 Buner: August 1 st – 3 rd , 2013
July 1 st – 5 th , 2013	Community Reading Awareness Workshops	Conducted after the end of Year One assessment	# of participants around 20 participants per session; Total 32 sessions (8 sessions per district) . Total participants: 640
July 8 th – December 20 th , 2013	Reading camps attended by children once a week; Story time occurs during the camp	Conducted after the end of Year One	# of participants: 656, sessions were conducted in all four districts. 8 reading camps per district.

		assessment	
Sep 2013	ToT-3, session conducted on phonemic awareness, reading fluency, reading comprehension, letter knowledge and vocabulary attended by teachers and district staff	Conducted after the end of Year One assessment	# of participants 44, Training held on Compact (reviewed) manual comprises of five reading skills. Training attended by MTs of PITE and DCTE along with ECCE staff. Abbottabad: Sep 3-5, 2013 Peshawar: 9-11, 2013
Sep- October, 2013	Teachers training conducted on phonemic awareness, reading fluency, reading comprehension, letter knowledge and vocabulary attended by teachers	Conducted after the end of Year One assessment	# of participants 691 Training held at all four districts on compact training manual of Literacy Boost: Peshawar: Sep 20-22,2013 Battagram Nov 19-21, 2013 Buner: Oct 4-6, 2013 Abbottabad Sep 17-19,2013
Dec 2013	Conducted last reading camp session by camp leader of 1 st group	Conducted after the end of Year One assessment	# of campers 656 December 20, 2013 was the last date of reading camp in all four districts