Save the Children®

Ethiopia

ELMI Parenting Endline

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Executive summary

Ethiopia is progressing well in education over the last two decades and the country is also at the vanguard of Africa's move toward improving access to education. Enrollment in primary education has increased from less than 30% twenty years ago to 95.3% (gross enrollment) and 85.9% (net enrollment) in 2012/13. During these decades of progress, however, Ethiopia paid little or no attention to ECCD, viewing it as the responsibility of families and communities. In recent years, the Government of Ethiopia has paid more attention to ECCD through policy development and by encouraging enrollment.[1]

Research evidence shows that early childhood is a critical phase for human development, and that access to early childhood care and education (ECCE) services can improve children's nutritional, health and education outcomes.[2] Cognizant of this rationale, the Federal Democratic Republic of Ethiopia is giving due attention to pre-school education and has prioritized it in the Education Sector Development Program of the country. Accordingly, the government is implementing the program as "Early Childhood Care and Education (ECCE)" in all the schools. As a result, the gross enrolment rate of pre-school children has increased from 5.3% in 2010/11 to 26.1% in 2012/13 academic year. [3] Though the government is very ambitious of the program, the pre-school education is marred by many challenges such as lack of trained and independent facilitators/teachers, unavailability of curriculum and guidelines, lack of adequate center facilities, developmentally appropriate learning materials, play grounds and lack of incentives/salary for teachers assigned for this program among others.

Save the Children supports the Ethiopian government to strengthen Early Childhood Care and Development (ECCD) in Tigray, Oromia, Gondar (Amhara) and the Southern Nations Nationalities and Peoples Region (SNNPR) through both grants and sponsorship funding. In 2013, the partners reached over 10,000 pre-school aged children of which 45% were addressed through sponsorship funds. The sponsorship-funded ECCD program started in 2008 in Tigray and in 2009 in West Showa where it is being implemented in four woredas: Dendi, Ambo Ejere and Toke Kutaye. In these four woredas, 71 centers have been supported with ECCD packages.
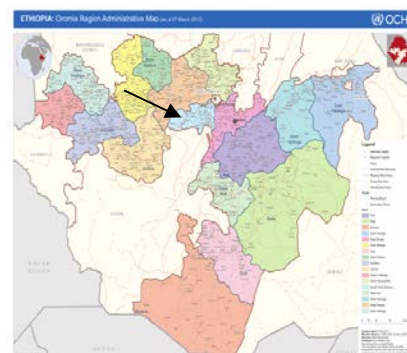
Save the Children invests in ECCD programming because it is fundamental to the optimal development of children, school success as well as overall lifetime achievement. Participation in quality ECCD programs results in improvements in quality of education, reduction of drop out and repetition rates at later stages of schooling and leads to higher enrolments in primary school, particularly of girls. Moreover, the early years are the optimal time to support children's school readiness for school.[4]

Results of this study find that children without access to ECCD centers whose parents attended a parenting program focused on promoting early literacy and math gain early skills at the same or faster rates than their peers who are enrolled in ECCD centers. Further, children who are enrolled in ECD centers and whose parents also attend a parenting program focused on promoting early learning gain more than children who are enrolled in ECCD centers with no parental training component. Analyses find also that children from poorer or less educated families benefit equally from the ECCD center and parenting interventions compared to children from families with more resources.

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[1] Ethiopian Federal Ministry of Education, Education Statistics Annual Abstract, Nov. 2012/13
[2] Young Lives, 2010. Early Childhood Care and Education as a Strategy for Poverty Reduction: Evidence from Young Lives. Young Lives Policy Brief 9.
[3] Ethiopian Federal Ministry of Education, Education Statistics Annual Abstract, Nov. 2012/13
[4] The common Approach to Sponsorship-funded Programming(CASP)-ECCD Module, Nov.2010

Introduction

A key aspect of a quality ECCD program for 4-6 year old children is the focus on supporting children's foundational literacy and math skills. The foundations of learning to read and write are set long before a child enters first grade. *Emergent literacy skills* and the experiences children have with language, print and books during the early childhood years are hugely important for later reading success. Emergent literacy includes such aspects as speaking and listening, alphabet knowledge, early phonological awareness (such as rhyming), and knowing that print can carry meaning, among many others.

Much in the same way, even before children learn to add, subtract, multiply or divide, children learn many concepts about numbers and mathematics that are a part of *emergent math* and that pave the way to more complex math competencies and proficiency in early primary grades and beyond. Emergent (or early) math skills include such aspects of math as patterns and sorting, basic number knowledge and counting, simple geometry (i.e shapes) and problem solving, among others.

Unfortunately, support for these foundational emergent literacy and math skills is lacking in the early years, yet sorely needed. Save the Children developed an innovative approach aimed at supporting these critical **Emergent Literacy and Math (ELM)** skills in preschool programs globally (ELM toolkit) and began piloting it in Ethiopia in 2012/13 (Ethiopian academic year). The main goal in integrating this intervention into the existing ECCD center based program was to improve the quality of the ECD program and ensure a substantive focus on early **literacy and math skills** as a part of the curriculum in order to strengthen children's readiness for school. The ELM toolkit was first tested in 36 ECCD centers (18 treated and 18 controlled) in West Showa impact area, Ethiopia. Impact evaluation report of the pilot program showed that there was significant difference in terms of ELM domains among children in intervention centers and control centers. Based on the promising result attained, Save the Children West Showa impact area scaled up the intervention to 71 Save the Children' supported school-based ECCD centers until 2014 FY.

There are still many government ECCE centers in the impact area that are waiting for the same intervention. In four districts alone, where Save the Children sponsorship program is currently under implementation (Dendi, Ejere, Toke Kutaye and Ambo) there are 200 schools having ECCE ("O" class) program. There are also such 824 schools in the entire West Showa zone (18 districts). The "O" class program in those schools is still missing quality ECCD services and practices. Parents' roles in children's development domains, though it is very critical, not yet considered as part of the ELM/ECCD programming. Based on this, Save the Children started parenting intervention in 2014 to see the role of parents (especially for children who are not getting ECCD/E access) in supporting children's development domains and learning outcomes.

This report examines the results of a follow-up assessment children's learning from November 2014 – April 2015. The same children and caregivers who were assessed during the November 2014 baseline assessment were targeted in this assessment. At baseline the child assessment and caregiver's survey covered 688 children and the same number of parents throughout 27 schools and 9 villages in the West Showa Impact area of Ethiopia were covered during this endline assessment.

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

1. What are the average learning gains for children who are exposed to different early learning programs?
    a. Do learning gains differ across early learning program groups?
    b. How could this inform future ECCD interventions?
2. What are the changes in caregiver support for early learning and development over time?

a. Do changes in caregiver support differ across early learning program groups?
a. How could this inform future ECCD interventions?

Context

West Showa Impact Area is one of the sponsorship core program interventions since 2009. West Showa zone covers 18 districts in which about 824 primary schools exist and Save the Children sponsorship program is currently under implementation in four districts (Dendi, Ejere, Toke Kutaye and Ambo) there are 200 schools having ECCE ("O" class) program. For this study of ELMI parenting, Dendi and Ambo districts which have had ELM pilot programs since 2013 were purposely selected to address the issue of quality support. In these districts there are 18 (9 each) centers possessing ELM intervention and all of them were considered. Ejere is newly enrolled district for Save the Children sponsorship intervention and 9 villages, where children are not attending "O" classes were identified to measure the impact of ELM at home only on children's school readiness. Cheliya is a district where there is no Save the Children intervention and was selected to compare children attending government regular "O" classes with those attending Save the Children-funded ELM-based ECCD center. 9 centers/schools from each district were then sampled and a total of 36 villages were identified for the assessment.

Implementation Plan

Program element	Implementation Strategy
Teacher Training **(Capacity Strengthening activities)**	• **Basic training** for ECCE teachers/facilitators on ELM packages was provided. This is an intensive training to given to the teachers on key aspects of both emergent literacy and math component. Each component has five sub domains in it. The training was given for 5 block days. The training was managed through giving to key facilitators from respective Education Offices and schools. • **Refresher training**. Following the basic training on the key aspects of ELM, refresher training will be organized for ECCE teachers to fill the emerging skill gaps during the actual program intervention. • This is a follow up training given to ECCD facilitator following the five days basic training given on ELM components to fill the emerging skill gaps on managing and demonstrating key aspects of ELM components. The training was given once for two days having identified key skill gaps of the facilitators through continuous coaching and monitoring made by ECCD team. Key ELM activities planning and demonstration, interactive reading with children, focuses on soft literacy abilities like comprehension, expression and phonemic awareness were areas revised during the follow-up training**.**
Group Training for parents on ELM at Home sessions	• Group training for parents on ELM at home component was given. This training was given to both parents receiving ELM-at home only(whose children were not getting any access to pre-school program) and parents whose children were also attending ELM at center intervention. The training was proceeded in such a way that two parents'

	facilitators/educators from the smallest part(hamlet)of each intervention villages were selected and given TOT. The parents' facilitators them made to cascade the training to the target parents within each small village. The ELM at home component has either training sessions that it was managed on weekly basis.
	• **Refresher training**. Following the basic training on the key aspects of ELM at home component, the parents' facilitators were also made to coach and monitor practices of parents' at home through home to home visitation. Based on the reflections and monitoring reports summarized from the parents' educators, a follow up training on key portions of ELM at home component was given to parents.
ELM-focused teaching resources	• Literacy and math skills development focused indoor learning materials including child appropriate story books, , letter cards, puzzles, number cards and math books were provided
Parents/ community involvement/ education	- There are parents' groups established in each ECCD center including where ELM is implemented to support the overall ECCD programming. These groups together with PTAs, community representative, cluster supervisors and school directors were aware of both ELM at home and at center intervention so as to ensure the way for sustainability, ownership and quality program intervention
Monitoring and Super-vision Support	Through the program implementation, monitoring and supervision support was made. Part of the monitoring and suppression support include, checking children's and parents 'group daily attendance registration books, Children's engagement and fair participation, center organization and print rich environment, children discipline and interaction with facilitator, daily lesson schedule and its accomplishment, Parents and children's participation in ELM-at home training and Parents' and Community involvement

Methods

Sampling

The sample for this baseline assessment encompasses 688 children, divided between 27 schools and 9 villages. Nine villages will receive the center ELM center intervention, 9 villages will receive both at home and center ELM intervention, 9 will receive at home ELM only and 9 villages will be used for comparison. These schools were selected based on the following criteria: 18 schools have been selected because ELM has been piloted from December 2012 to May 2013 and 9 schools have been selected for ELM at Center plus at Home; 9 schools have been selected for at center only ELM intervention. The remaining 9 villages for ELM at home only are selected where there is no access Early Childhood Care and Development center. The number of target schools was limited to the 27 schools. Nine comparison schools were selected based on being similar to target schools. All comparison schools are formal schools, none of which have received or benefited from Save the Children programs.

At each of the 27 schools and 9 villages where data were collected, 20 children in age 5 and 6 were prioritized and sampled. This was done randomly if there were more than 20 children in the center, with a ratio balance reflective of the gender population.

Having mapped and identified the target districts and schools/and villages, the team then determined sample size of the children to be assessed using statistical sampling calculation. Hence, 20 children from each center were considered to be reasonable size for the assessment. In 36 villages then, 688 children including their parents were targeted for the assessment.

Measurement

In this study two main tools were used: the IDELA Caregiver Questionnaire and the IDELA Child Assessment. The IDELA Caregiver questionnaire was used to gather information about homes in the study sample, and measure changes in parent behaviors and attitudes. Topics covered in the Caregiver Questionnaire appear in Table 1. The IDELA Child Assessment was used to measure early learning and development for children in the study. Items included in IDELA are listed in Table 2. The same versions of both tools will be used at baseline and endline.

Table 1. IDELA Caregiver Questionnaire overview

Section	Description
General family information	Sex of child, child age, ethnicity, parental literacy, parental education, languages spoken at home
ECCD experience and educational expectations	Child participation in ECCD program, details of participation, parental expectation of child's educational attainment
Home learning environment and parenting practices	Types of reading materials at home, types of toys at home, child-parent interactions
Parent self-efficacy	Parental attitudes about their role in child's development
Socio-economic status	Roof and wall of home materials, objects/appliances owed, land/animals owned, child work status

Table 2. IDELA Child Assessment

Gross and Fine Motor Skills	Emergent Literacy	Emergent Numeracy	Socio-emotional Development	Other items
Hopping	Print awareness	Size/length identification	Friends	Approaches to learning
Copying a shape	Expressive vocabulary	Sorting	Recognizing emotions in self	Inhibitory control
Drawing a human figure	Letter identification	Number identification	Recognizing emotions in others	Short term memory
Folding paper	Emergent writing	Shape identification	Conflict resolution	

Phonemic awareness	One-to-one correspondence	Personal information
Oral comprehension	Simple operations	
	Puzzle completion	

Data collection

For the purpose of data collection 18 data collectors have been involved to conduct IDELA Child Assessment and Caregivers Survey. The data collectors have been trained on IDELA and ELM parenting tool for three days. The Training was facilitated by technical team at Field Office the data collectors have been trained on the tool, practiced among each other and finally pretest has been made in selected school which is out of intervention and control schools. Data collection has been made using Tablets on Tangerine software and data was uploaded to the cloud periodically. The data collection took three weeks.

Analysis

The primary purpose of this analysis is to investigate the children's learning and development gains after six months of various early learning interventions. Summary statistics will be used to analyze students' performance in each of the IDELA sub-tests, as well as learning materials and activities occurring in children's homes. To test the comparability of learners in different intervention groups, this report will use comparison of means through t-tests assuming unequal variance between the two samples and clustering by village or ANOVA tests with Tukey-Kramer post hoc adjustment for the testing of multiple hypotheses. Finally, this report will use to multivariate regression models to explore relationships between children's early learning gains and background characteristics, home environment, and parent attitudes.

Attrition

Although the same children were targeting during the baseline and endline assessments, there was some attrition of the sample over time. Overall, 9 percent of children assessed at baseline were not located during the endline assessment. Looking at observable background characteristics and baseline assessment information, there were no significant differences between the children who were found at the follow-up assessment and those who were not. Children in the ELM Parenting only group were significantly more likely to be missing at endline than children in the ELM Center & Parenting group, but otherwise there were no significant differences between intervention groups. Given the small and relatively even attrition no additional variables will be used to control for attrition in the analysis of learning gains.

More caregivers than children were unable to be found at endline. Late May is a very busy time for adults in these communities and the data collection teams reported that it was challenging to find parents at home during this time. As with the child attrition, no significant differences were found between caregivers found at endline and those who were missing so no additional controls will be

added to future analyses. However, multivariate regression analyses will only focus on cases where both child and caregiver data were collected at baseline and endline.

Table 3. Sample attrition

	Sample at baseline	# Children missing at endline	% Children missing at endline	# Caregivers missing at endline	% Caregivers missing at endline
Gov't O class	171	12	7%	41	24%
ELM Parenting only	186	26	14%	40	22%
ELM Center only	176	12	7%	28	16%
ELM Center & Parenting	149	8	5%	11	7%
Total	682	58	9%	120	18%

Children's learning and development

This section will detail children's learning on the direct child assessment, IDELA. Direct child assessment items are organized into 5 categories: motor development, emergent literacy, emergent numeracy, socio-emotional development, and executive functioning. These items are all weighted evenly and added together to create the total IDELA score. Any assessor observation items are not included in the total IDELA score because they are not a direct assessment of children's skills, but rather help provide a more holistic picture of children's early learning and development.

Motor development

Table 4 displays average baseline and endline motor development skills for children in each intervention group. **On the total scale of motor development, children in the ELM Center and Parenting group gained significantly more than children in the government "O" class group and children in the ELM Parenting only group. There were no significant differences between gains made by children in the ELM Center, ELM Parenting and government "O" class groups.** Looking at individual items, there were no significant differences between gains in hopping or copying a shape between groups. The drawing a person item follows the same pattern as the overall score with children in the ELM Center and Parenting group gained significantly more than children in the comparison group and children in the ELM Parenting only group. Finally, all three intervention groups gained more on the folding paper item

compared to children in the comparison group. There were no significant differences between gains made by boys and girls.

Table 4. Motor development, by group

	Gov't O class		ELM Parenting only		ELM Center only		ELM Center & Parenting	
	Baseline	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline
Hopping	83%	91%	69%	82%	89%	95%	82%	95%
Drawing a person	21%	48%	10%	39%	35%	64%	37%	78%
Folding	55%	60%	45%	59%	60%	76%	58%	79%
Copying a shape	42%	58%	25%	44%	60%	80%	61%	89%
Total Motor Development	50%	64%	37%	56%	61%	79%	59%	85%

Figure 1. Motor development
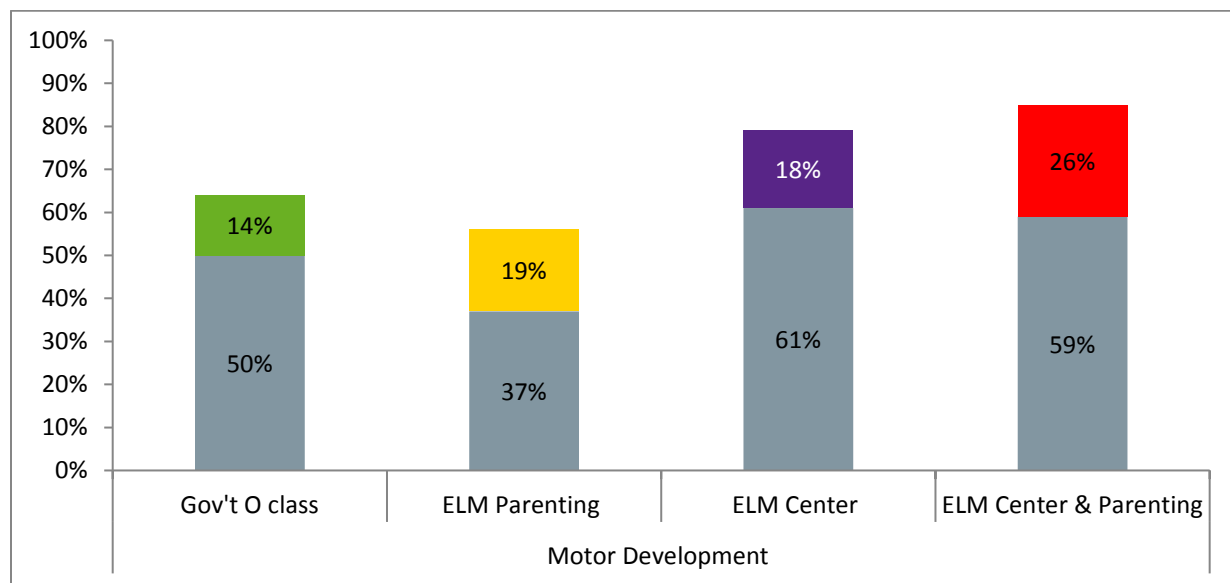
Emergent Literacy

Table 5 displays children's emergent literacy skills over time. **On the total scale of emergent literacy, children in the ELM Center and Parenting group gained significantly more than children in the government "O" class group and children in the ELM Parenting only group. There were no significant differences between gains made by children in the ELM Center, ELM Parenting and government "O" class groups.** Looking at individual items, there were no significant differences between groups on gains made on the print awareness or oral comprehension items. However, in letter identification children in the ELM Center and ELM Center and Parenting group gained significantly more than children in the government "O" classes. Children in the ELM Parenting only group gained significantly more than children from all other groups in expressive vocabulary, and children in the ELM Center and Parenting group gained significantly more than children in the comparison group and children in the ELM Parenting only group in emergent writing. There were no significant differences between gains made by boys and girls.

Table 5. Emergent Literacy, by group

	Gov't O class		ELM Parenting only		ELM Center only		ELM Center & Parenting	
	Baseline	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline
Print awareness	31%	51%	21%	45%	47%	73%	43%	76%
Letter ID	15%	26%	7%	12%	28%	53%	30%	66%
Expressive vocabulary	37%	34%	27%	33%	44%	42%	44%	45%
Oral comprehension	50%	66%	30%	59%	57%	80%	59%	85%
Phonemic awareness	13%	24%	5%	10%	22%	22%	21%	39%
Writing	25%	44%	13%	31%	42%	67%	45%	75%
Total Emergent Literacy	29%	42%	17%	33%	40%	58%	40%	66%

Note: The phonemic awareness changed slightly from baseline to endline. At baseline there were six trials in this item but at endline there were only three items.

Figure 2. Emergent Literacy
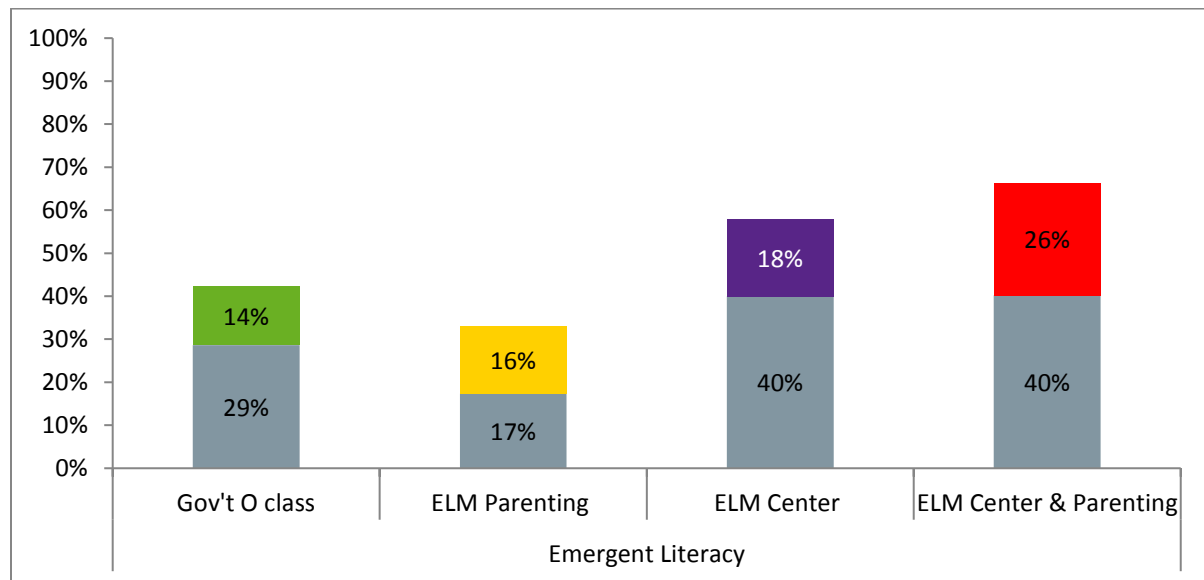
Emergent Numeracy

Table 6 displays children's learning over time in the area of emergent numeracy. **Overall, children in the ELM Center and Parenting group gained more than children in the ELM Center only and government "O" class groups but their gains were not significantly greater than children in the ELM Parenting group, and children in the ELM Parenting only group gained more than the ELM Center only group.** We see the same pattern for the one-to-one correspondence item. However, children in the ELM Center only group make stronger gains in number identification than children in any other group. Children in all intervention groups gain more knowledge about shapes than children in the government "O" classes. Children in the Parenting only group made the largest gains in the size/length measurement item but that is likely because they had the more skills to this gain compared to children in other groups. Children

in the ELM Center group made weaker gains in sorting and puzzle completion compared to children in the ELM Parenting and ELM Center and Parenting group, and their gains were not significantly different from children in the govermnet "O" classes. Finally, there were no significant differences between gains made by different groups in the area of simple operations. There were no significant differences between gains made by boys and girls.

Table 6. Emergent Numeracy, by group

	Gov't O class		ELM Parenting only		ELM Center only		ELM Center & Parenting	
	Baseline	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline
Size/length	92%	94%	74%	91%	93%	97%	94%	99%
Number ID	15%	26%	7%	12%	28%	53%	30%	66%
One-to-one correspondence	77%	80%	48%	69%	78%	84%	70%	92%
Simple operations	53%	70%	37%	63%	59%	78%	57%	83%
Shape ID	24%	38%	9%	34%	28%	48%	32%	68%
Sorting	23%	43%	12%	43%	37%	52%	31%	61%
Puzzle	16%	19%	10%	21%	25%	24%	26%	31%
Total Emergent Numeracy	43%	53%	28%	48%	50%	62%	49%	72%

Note: The puzzle item was changed slightly from baseline to endline, with a 4 piece puzzle used at baseline and 6 at endline.

Figure 3. Emergent Numeracy
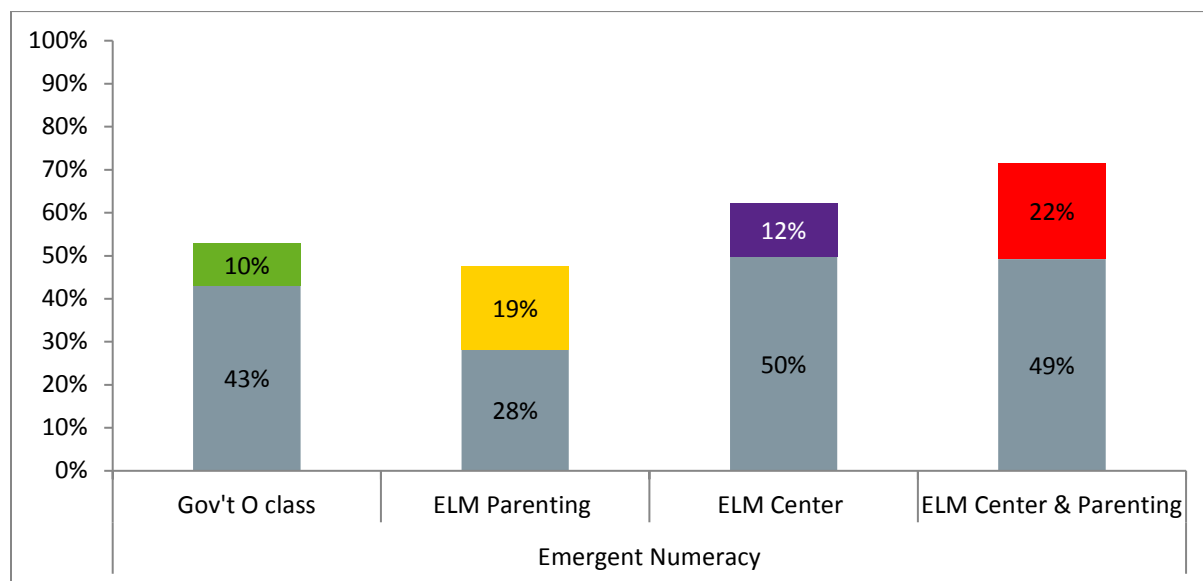
Socio-emotional Development

Table 7 summarizes children's socio-emotional development from baseline to endline. **Overall, children in the ELM Parenting group gained more than children in the government "O" class group and children in the ELM Center group, and children in the ELM Parenting and Center group gained more than the**

**ELM Center group.** There were no differences in gains made by children in social connections or empathy. Children in the ELM Parenting group gained more than children in the government "O" class and ELM Centers in the area of personal information. There were no significant differences between gains made by boys and girls.

Table 7. Socio-emotional development, by group

	Gov't O class		ELM Parenting only		ELM Center only		ELM Center & Parenting	
	Baseline	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline
Emotional recognition	59%	57%	34%	46%	69%	61%	65%	71%
Social connections	40%	52%	34%	47%	45%	57%	43%	56%
Empathy	40%	66%	21%	54%	54%	74%	51%	82%
Conflict resolution	39%	67%	20%	55%	50%	70%	42%	79%
Personal information	72%	72%	57%	69%	77%	80%	76%	82%
Total Socio-emotional Development	50%	63%	33%	54%	59%	68%	56%	74%

Figure 4. Socio-emotional Development, by group
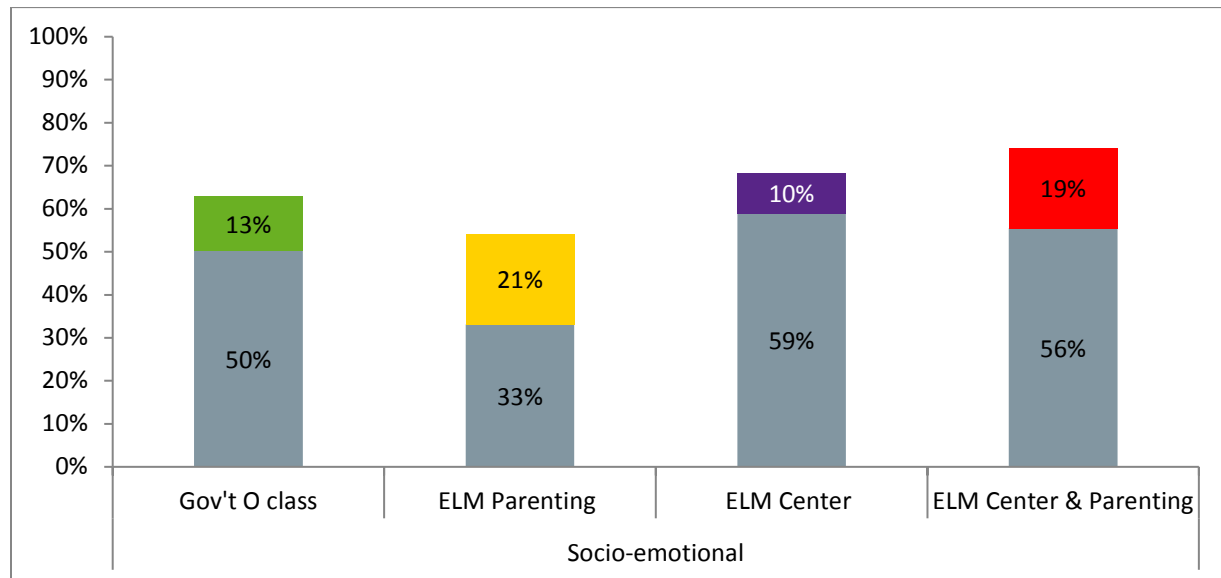
Executive function

In this study two measures of executive function are used to examine children's ability to follow mixed instructions (inhibitory control[4]) and remember strings of numbers (short-term memory). While children in all groups make gains in these areas, especially inhibitory control, children in the ELM Center and

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[4] Cameron Ponitz, C., McClelland, M. M., Matthews, J. S., & Morrison, F. J. (2009). A structured observation of behavioral self-regulation and its contribution to kindergarten outcomes. *Developmental Psychology, 45*, 605–619.

Parenting group have the strongest gains in both areas. There were no significant differences between gains made by boys and girls.

Table 8. Executive function, by group

	Gov't O class		ELM Parenting only		ELM Center only		ELM Center & Parenting	
	Baseline	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline
Short-term memory	51%	59%	43%	52%	54%	61%	47%	62%
Inhibitory control	38%	67%	26%	49%	47%	70%	41%	79%

Across all subscales, analyses find that children in the ELM Center and Parenting group make significantly greater gains than children in all other groups. There was no difference between the gains made by children in the ELM Center only group and children in the government "O" class group or children in the ELM Parenting only group. Children in the ELM Parenting only group gained more than children in the government "O" class group. Also, there were no significant differences between gains made by boys and girls.

Figure 5. IDELA baseline and gain scores, by group

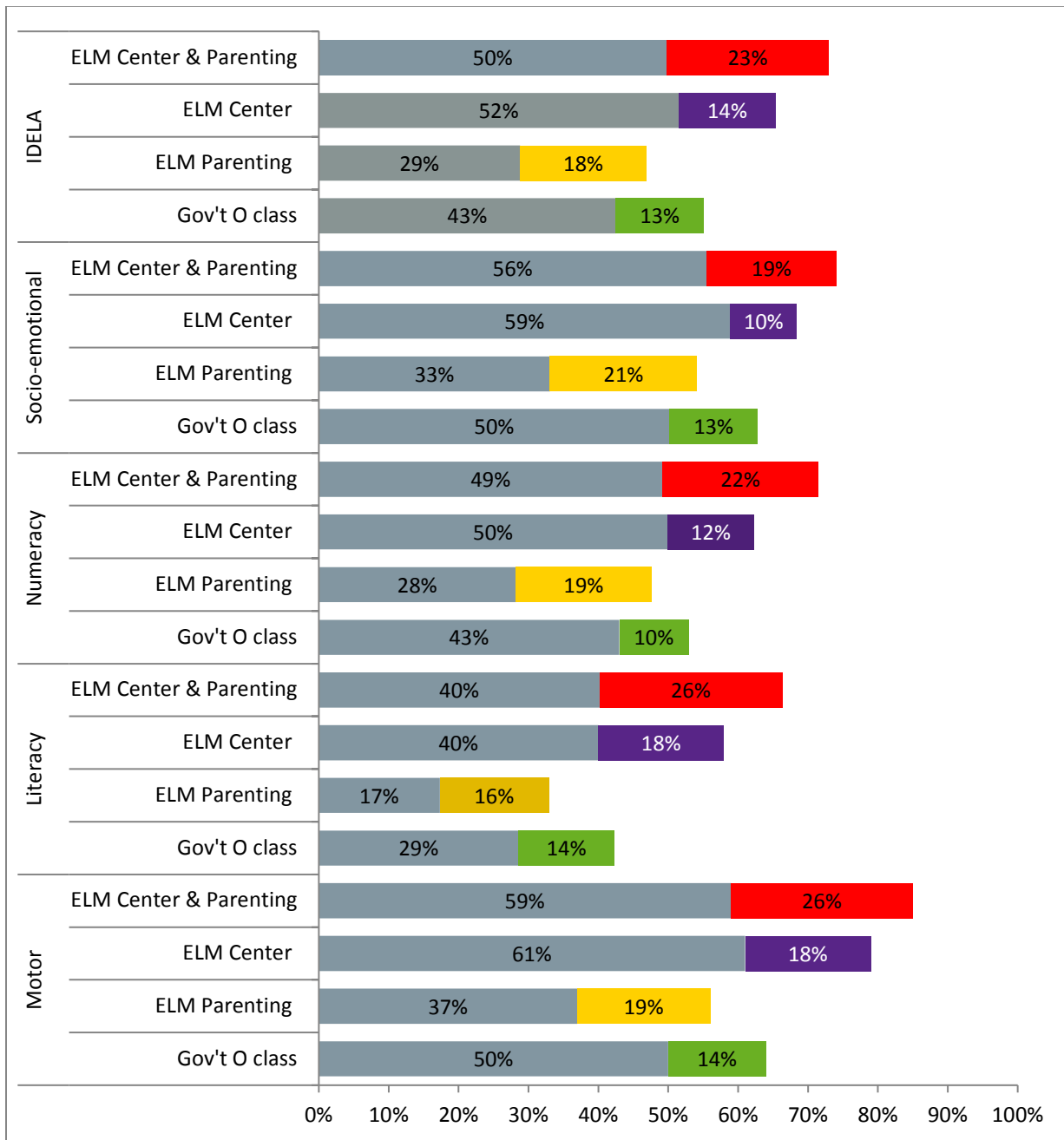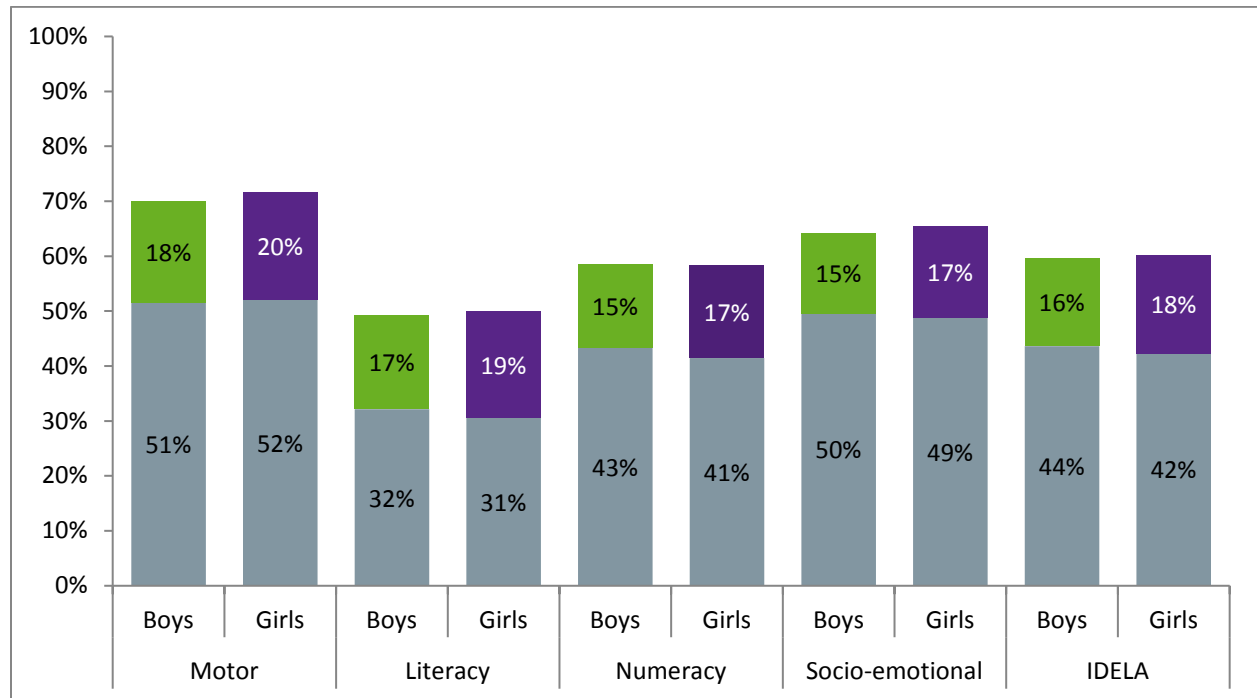|	Group	Baseline	Gain
IDELA	ELM Center & Parenting	50%	23%
	ELM Center	52%	14%
	ELM Parenting	29%	18%
	Gov't O class	43%	13%
Socio-emotional	ELM Center & Parenting	56%	19%
	ELM Center	59%	10%
	ELM Parenting	33%	21%
	Gov't O class	50%	13%
Numeracy	ELM Center & Parenting	49%	22%
	ELM Center	50%	12%
	ELM Parenting	28%	19%
	Gov't O class	43%	10%
Literacy	ELM Center & Parenting	40%	26%
	ELM Center	40%	18%
	ELM Parenting	17%	16%
	Gov't O class	29%	14%
Motor	ELM Center & Parenting	59%	26%
	ELM Center	61%	18%
	ELM Parenting	37%	19%
	Gov't O class	50%	14%

Figure 6. IDELA baseline and gain scores, by gender

Approaches to learning

Finally, a number of assessor-rated items are included in the IDELA to measure the way in which children approach learning and problem solving. At baseline four questions were asked during the assessment and there was one observation question after the assessment. However, with lessons learned from other partners and Sponsorship teams these questions were expanded to 13 in-assessment questions and 5 post-assessment observation questions for the endline assessment. Given the substantial changes to these items over time a direct comparison of gains over time is not appropriate, but the trends on this scale match those seen in other subscales: children in the ELM Center and Parenting group appear to be the most advantaged at baseline and in terms of gains, and children in the ELM Parenting group overall have the weakest skills but they gain substantially from baseline to endline.

Table 9. Approaches to learning

	Gov't O class		ELM Parenting only		ELM Center only		ELM Center & Parenting	
	Baseline	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline
Persistence during assessment	66%	77%	49%	67%	78%	79%	79%	89%
Observation after assessment	59%	69%	46%	65%	67%	71%	61%	78%
Total Approaches to Learning	N/A	73%	N/A	66%	N/A	75%	N/A	83%

Home environment

Family characteristics

Analysis of the endline sample finds that children in the ELM Parenting and Center group are significantly younger than children in all other groups. In addition, mothers in the ELM Parenting only group tend to be less educated than mothers in the government "O" class group. On average fathers in the ELM Parenting and Center group and fathers in the government "O" class group were more educated than fathers in the ELM Parenting only and ELM Center only groups There were less children on average in households in the ELM Parenting group compared to the ELM Center and government "O" class groups. Finally, looking at resources in the home, analyses do not find any significant differences in the home possessions owned by families in the study groups.

Table 9. Family characteristics, by group

	Gov't O class	ELM Parenting only	ELM Center only	ELM Center & Parenting
Child sex (Female=1)	49%	55%	54%	51%
Child age	5.9	5.9	6.0	5.7
Mother age	32.3	32.0	31.9	32.1
Mother education (0=none, 6=university)	0.7	0.5	0.5	0.7
Mother is literate	32%	19%	25%	31%
Father age	40.4	39.9	40.1	39.5
Father education (0=none, 6=university)	1.6	1.1	1.1	1.7
Father is literate	69%	50%	52%	75%
# of children at home	5.6	4.3	5.1	5.0
# home possessions	3.0	3.0	3.2	3.2

Learning materials

This section describes learning materials found in children's homes. At baseline, analyses found that children in the government "O" class group had a significantly greater variety of reading materials at home compared to children in all other groups, and a significantly greater variety of toys at home compared to the ELM Parenting only and ELM Parenting and Center groups. At endline, parents in the ELM Parenting group continue to report having the fewest reading and play materials compared to parents in other groups. However, although none of the ELM programs provide additional reading materials or toys for families they do educate parents about the importance of these materials for their children's early learning and encourage families to use locally available materials to engage with their children. This could help to explain the increase in the parental report of reading materials and toys in homes from baseline to endline in all three ELM groups but not the government "O" class group.

Table 10. Home learning materials, by group

	Gov't O class		ELM Parenting only		ELM Center only		ELM Center & Parenting	
	Baseline	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline
Storybooks	66%	50%	43%	26%	43%	30%	33%	23%
Textbooks	92%	89%	54%	75%	64%	82%	63%	87%
Magazine	89%	75%	43%	75%	76%	86%	67%	75%
Newspaper	28%	33%	7%	17%	18%	14%	22%	49%
Religious book	62%	59%	23%	28%	47%	49%	27%	38%
Coloring book	12%	26%	0%	23%	14%	30%	16%	39%
Comic	35%	24%	22%	20%	33%	34%	19%	25%
# types reading material (0-7)	3.8	3.6	1.9	2.6	2.9	3.3	2.5	3.4
Homemade toy	32%	25%	13%	28%	26%	24%	25%	17%
Manufactured toy	9%	11%	4%	10%	9%	16%	8%	20%
Household object	94%	100%	86%	99%	93%	97%	87%	99%
Outdoor object	98%	100%	95%	99%	96%	99%	90%	98%
Writing material	65%	70%	11%	43%	63%	70%	54%	80%
Problem solving toy	15%	27%	16%	10%	5%	35%	11%	30%
Puzzle	6%	4%	4%	1%	4%	3%	2%	1%
# types of toys (0-7)	3.2	3.4	2.3	2.9	3.0	3.4	2.8	3.4

Learning behaviors

This section describes learning behaviors that parents' report engaging in with their children at home. **Baseline analysis found that parents in the ELM Parenting group were engaging in significantly fewer learning and play activities at home with their children compared to the other groups of parents. While all parents reported gains in this area, the caregivers in ELM Parenting group gained significantly more than parents in all other groups.** Reports of negative discipline are relatively low, and there were no significant differences between groups at baseline or endline.

Table 11. Home learning activities, by group

	Gov't O class		ELM Parenting only		ELM Center only		ELM Center & Parenting	
	Baseline	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline
Read books	69%	81%	13%	61%	48%	64%	52%	84%
Tell stories	82%	75%	44%	71%	67%	66%	75%	86%
Sing	75%	79%	31%	75%	61%	66%	66%	88%
Take outside	28%	49%	28%	43%	24%	41%	27%	46%
Play	90%	86%	74%	83%	82%	78%	86%	93%
Name things/draw	20%	65%	2%	51%	25%	48%	36%	67%
Teach new things	26%	67%	2%	53%	34%	46%	44%	65%
Teach alphabet	74%	82%	20%	72%	62%	69%	80%	88%
Teach numbers	73%	84%	17%	74%	63%	69%	77%	88%
Hug	83%	75%	58%	81%	69%	76%	80%	86%
# learning/play activities (0-10)	6.2	7.4	2.8	6.6	5.3	6.2	6.2	7.9
Spank	41%	37%	36%	38%	34%	36%	34%	27%
Hit	21%	17%	19%	16%	12%	16%	21%	9%
Yell	28%	5%	22%	8%	18%	16%	23%	4%
Negative discipline (0-3)	.9	.6	.8	.6	.7	.7	.8	.4

Figure 7. Learning and play activities, by group
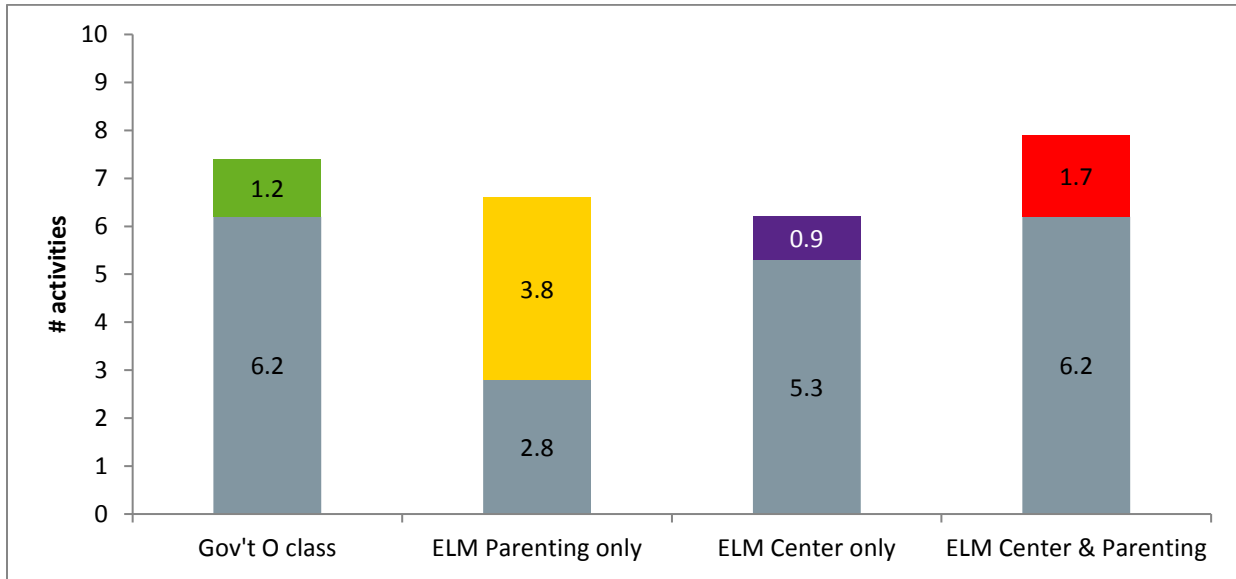
Parenting attitudes

This section reviews parents' attitudes towards their role in their children's development. Table 12 displays that parents in the ELM Parenting group had the lowest efficacy about their role in their children's development at baseline and also gained the most during the course of the year. All groups of parents report strong positive attitudes about their roles in children's development.

Table 12. Parental attitudes, by group

	Gov't O class		ELM Parenting only		ELM Center only		ELM Center & Parenting	
	Baseline	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline
I play crucial role in development of my child.	2.6	2.6	2.6	2.8	2.9	2.8	2.9	2.9
It is important to take good child care.	2.7	2.6	2.6	2.8	2.8	2.8	2.9	2.9
It is important to make enough time for child.	2.5	2.6	2.3	2.7	2.6	2.5	2.8	2.7
Knowing to read/ write is important for child.	2.5	2.6	2.3	2.7	2.7	2.5	2.8	2.7
I will encourage child to complete secondary school.	2.7	2.6	2.4	2.7	2.8	2.7	2.8	2.9
I think I can teach school readiness at home.	2.5	2.5	2.3	2.6	2.7	2.4	2.8	2.6
I think my child learns skills by playing.	2.6	2.5	2.5	2.6	2.8	2.6	2.8	2.8
I spend time with child naming things while cooking, etc.	2.4	2.5	2.3	2.6	2.6	2.5	2.7	2.7
I talk to child while doing house work.	2.4	2.5	2.4	2.5	2.7	2.4	2.7	2.7
I tell stories to child at least 3 times per week.	2.5	2.3	2.2	2.4	2.6	2.3	2.7	2.6
I read stories or show picture books to child at least 2 times per week.	2.5	2.3	2.2	2.3	2.6	2.2	2.6	2.5
I praise my child when s/he does sth impressive.	2.7	2.6	2.5	2.6	2.8	2.7	2.7	2.8
Total score	30.8	30.2	28.5	31.1	32.8	29.1	33.4	32.2

Learning equity

Multivariate regressions clustering for children within communities were used to investigate drivers of early learning and development. Also, given that many important differences were found between children and parents in the different intervention groups, multivariate analysis were run to investigate

children's learning gains controlling for relevant background characteristics and baseline skills. **These analyses find that overall, children ELM Center and Parenting group gained significantly more than children in all other groups. Further, children in the ELM Center only group gained significantly more than children in government "O" classes and children in the ELM Parenting only group. Overall, there were no significant differences between gains made by children in the ELM Parenting group and those in the government "O" class group but government "O" class children did learn significantly more than children in the ELM Parenting group in the areas of emergent literacy and socioemotional development.**

At baseline analyses found that older children, those with more educated parents, more ECCD experience and stronger home learning environments had more advanced IDELA scores. Looking at learning gains after 6 months of programming, these background factors are not found to significantly drive learning for children in any group. Especially important within the ELM Parenting group, we find that children from families with more education, higher socioeconomic status or stronger home learning environments are NOT gaining more than others with less of these resources. This suggests that all parents are equally able to engage in the ELM Parenting sessions.

Conclusion

This study includes four diverse groups of children and families. Most notably, at baseline the children in the ELM Parenting only group display significantly lower learning and development skills than children in the other groups. In addition, parents in this group reported engaging in significantly fewer learning and play activities at home with their children in the ELM Parenting only group compared to the other groups. These results reinforce the fact that early learning interventions are greatly needed in these communities.

Looking at learning gains we see that even without access to an ECD center, children who receive the ELM program at home gain substantial early skills. While their overall scores are still below those of children in communities with access to ECD services, the magnitude of the gains children in ELM Parenting group make is similar or better than those seen for children enrolled in ECD centers. Given that extension of ECD services to children throughout Ethiopia will take time, it is important to know that ELM Parenting can serve as an effective, low cost way to improve children's early learning experiences and help to prepare them for the transition to primary school.

Further, children who received both ELM Center and ELM Parenting programs show stronger gains than any other group. Given that these children began the year with relatively strong early learning skills it's impressive that they continued to learn more advanced skills at a faster pace than children in ELM Centers only or government "O" classes. This suggests that where possible, parenting sessions should be added to existing center-based early learning programs to further enhance children's early skill development. It should also be noted that parents reported that many children in the ELM Center and ELM Center and Parenting group were in their second year of ECD. The stronger baseline and endline scores for children in these groups compared to children in government "O" class group suggests that more than one year of preprimary education may be more beneficial than one year of exposure to an early learning program.

Results of this study find that children without access to ECCD centers whose parents attended a parenting program focused on promoting early literacy and math gain early skills at the same or faster rates than their peers who are enrolled in ECCD centers. Further, children who are enrolled in ECD centers and whose parents also attend a parenting program focused on promoting early learning gain more than children who are enrolled in ECCD centers with no parental training component. Analyses find also that children from poorer or less educated families benefit equally from the ECCD center and parenting interventions compared to children from families with more resources.

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Next Steps

Early Literacy and Math intervention in preschool program continues to be one of the Save the Children's global breakthroughs with a substantive focus on early literacy and math skills development. It is developed in response to the fact that young children have limited exposure to foundational emergent literacy and math skills prior to entering primary school and the paradox is doubled for children from families with limited economic background. The result in this report also demonstrated that parents (though they are from different socio-economic background) do have significant roles in supporting their children's foundational literacy and math development. On top of this, Save the Children envisages to continuously advocate and scale up at large the result of ELM at center and parenting intervention (ELM at HOME). Throughout the program implementation, the following key principles will be focused on:

- Strengthen parents' capacity and confidence to support the development of early language and literacy skills at home. Parent education programs can encourage parents, no matter their education or literacy levels, to talk with their young children and to develop shared storytelling and book reading habits.

- Create access to books and reading opportunities for families in low income settings through mobile libraries, book banks and through teaching communities how to make or write their own stories.
- Improve access to quality preschool programs, especially for the most vulnerable children, which can significantly increase children's school readiness and their chances of becoming skilled readers in early primary grades.
- Strengthen early childhood practitioners' knowledge and skills to support early language and literacy skills in preschool classrooms and provide effective teaching resources -in the form of games, activities, songs- to help foster language skills in age appropriate and enjoyable ways.
- Improve transitions between preschools (or homes) and early primary school classrooms. The majority of children still lack opportunities to attend an early learning program, so early grades classrooms and curriculum may need to be adapted to better accommodate children's varied levels of early literacy skills and scaffold their learning appropriately.

Appendix A

Table A1. Multivariate equity analysis results clustered by village, all children

VARIABLES	(1) Motor Gain	(2) Literacy Gain	(3) Numeracy Gain	(4) Socio- emotional Gain	(5) IDELA Gain
Child is female	0.0121	0.00166	-0.0154	0.0143	-0.00229
	(0.0181)	(0.0204)	(0.0181)	(0.0179)	(0.0165)
Child age (years)	0.0196	0.0425	0.0158	0.0338	0.0192
	(0.0229)	(0.0213)	(0.0222)	(0.0188)	(0.0200)
Mother is literate	0.00794	0.00379	-0.00877	-0.00124	-0.00127
	(0.0159)	(0.0228)	(0.0175)	(0.0249)	(0.0165)
# toys at home	0.00219	0.0131	0.00425	0.00485	0.00584
	(0.00659)	(0.00836)	(0.00728)	(0.00812)	(0.00687)
# HLE activities	-0.00276	-0.00351	-0.00425	-0.00269	-0.00416
	(0.00321)	(0.00355)	(0.00282)	(0.00328)	(0.00253)
# home possessions	-0.00933	-0.00485	-0.00813	-0.00820	-0.00835
	(0.00788)	(0.00896)	(0.00832)	(0.00994)	(0.00756)
Years in ECCD	0.0111	0.00596	0.0155	0.0238	0.0164
	(0.0164)	(0.0135)	(0.00866)	(0.0133)	(0.00990)
Intervention group (Govt' O class)	Reference	Reference	Reference	Reference	Reference
ELM Home	-0.0225	-0.0580	0.00824	-0.0468	-0.0266
	(0.0487)	(0.0409)	(0.0322)	(0.0473)	(0.0367)
ELM Center	0.0945**	0.104***	0.0714**	0.0230	0.0616**
	(0.0265)	(0.0254)	(0.0204)	(0.0209)	(0.0182)
ELM Center & Home	0.161***	0.188***	0.167***	0.0830**	0.144***

	(0.0281)	(0.0330)	(0.0173)	(0.0238)	(0.0204)
Motor Development baseline	-0.573***				
	(0.0377)				
Literacy baseline		-0.576***			
		(0.0478)			
Numeracy baseline			-0.622***		
			(0.0361)		
Socio-emotional baseline				-0.783***	
				(0.0437)	
IDELA baseline					-0.586***
					(0.0425)
Constant	0.332*	0.0511	0.302*	0.319*	0.284*
	(0.163)	(0.130)	(0.136)	(0.122)	(0.122)
Observations	542	542	525	542	525
R-squared	0.345	0.271	0.362	0.423	0.341
Adjusted R-squared	0.331	0.256	0.348	0.411	0.327

Robust standard errors in parentheses

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

Appendix B

A measure of test re-test reliability was undertaken in June 2015 after the endline data collection was completed in May 2015. On average three weeks passed between endline data collection and re-test data collection. A sample of 100 children in six villages from the endline data collection was assessed in order to measure test-retest reliability. The results in table B1 display that the differences between original and re-test averages are in the expected direction. Intra-cluster analysis of the data finds that the test-retest reliability of the IDELA subscales are good or excellent and the overall IDELA score is excellent.

Table B1. Test-retest reliability results

	Original Average (N=100)	Retest Average (N=100)	Retest – Original Average	Intra-cluster correlation	Rating*
Motor	90%	90%	0%	0.82	Excellent
Literacy	68%	70%	3%	0.79	Excellent
Numeracy	70%	72%	2%	0.66	Good
Socio-emotional	73%	79%	6%	0.62	Good
IDELA	73%	76%	3%	0.79	Excellent

* Fleiss J. The Design and Analysis of Clinical Experiments. New York: John Wiley & Sons, 1986.