National ECCD Impact Evaluation Study 2015

Save the Children®

Executive Summary

The need for early childhood care and development (ECCD) services is growing as family and social structures evolve with development and changing times. There is growing awareness amongst parents and government stakeholders about the benefits of early childhood care and development. This is reflected in the Education Sector Strategy which states that "All children aged 0-5 years will be supported to enhance their intellectual, emotional and physical development through a program that enables them to grow in their familiar and natural environment. Priority will be given to home- and family-based approaches, with additional inputs from institutional structures and options, which recognize the increasing diversity of life-styles and settings in which children are now being raised." In recognition of the prevailing reality and the urgent need for early childhood care and development services, and the government's emphasis on providing services for the holistic development of Bhutanese children 0-6 years of age, the Ministry of Education, in collaboration with development partners, NGOs and other stakeholders, have begun the process of establishing and expanding different forms of ECCD services.

Although ECCD center programing has been steadily expanding, no systematic evaluation has ever been completed to gauge the most impactful and sustainable model(s) for Bhutan. This study will create evidence for advocacy about the importance of early childhood education programs and allow for data-driven decision making at various levels from community to national policy making. The findings of the study will also be used for informing and improving ECCD centre programming by designing and implementing appropriate interventions to enhance the learning outcomes and development of young children in Bhutan.

This report documents the baseline assessment for a national impact evaluation of available ECCD programs in Bhutan. A follow up assessment with the same children will occur at the end of the school year (November 2015) to investigate learning growth related to available ECCD programs. The International Development and Early Learning Assessment (IDELA) was used to measure children's learning and development across six domains (Motor, Literacy, Numeracy, Socio-emotional, Approaches to learning, and Spiritual/moral/cultural), and a caregiver questionnaire was used to gather information about parenting practices and home environments.

In summary, this baseline study reveals that children in private ECCD centers are more advantaged than their peers who are not enrolled in these centers both in regards to their family resources (socioeconomic resources as well as learning materials and activities at home) and also in their overall early learning skills. Families enrolling their children in corporate ECCD centers also show some family advantages over children in other groups, but there are no significant skill differences between children in this group and others. Overall all children other than those in private ECCD centers are found to be comparable and well suited for an endline evaluation of learning growth. However, it is interesting to note that children in Save the Children ECCD centers have more advanced early learning skills than children in other groups, controlling for relevant background characteristics, despite being newly enrolled in ECCD centers and not having more family resources.

When reviewing relationships between family characteristics and child development, a number of trends emerge. On average, older children and those whose parents have more education, especially those whose fathers are more educated, are found to have stronger early learning skills. In addition, children from families with more economic resources tend to have stronger early learning skills. These findings confirm that ECCD programs need to focus on children from the most disadvantaged families, with fewer resources and lower parental education. Finally, home learning environment (HLE) emerges as a strong predictor of early skills. That is, children with more stimulation at home tend to have significantly stronger early skills than children with less stimulation at home. Unlike other background characteristics like socioeconomic status and parental education, HLE is actionable by groups implementing ECCD center and parent-based programs.

Contents

Overview

Background

The need for early childhood care and development (ECCD) services is growing as family and social structures evolve with development and changing times. There is growing awareness amongst parents and government stakeholders about the benefits of early childhood care and development. This is reflected in the Education Sector Strategy which states that "All children aged 0-5 years will be supported to enhance their intellectual, emotional and physical development through a program that enables them to grow in their familiar and natural environment. Priority will be given to home- and family-based approaches, with additional inputs from institutional structures and options, which recognize the increasing diversity of life-styles and settings in which children are now being raised." In cognizance of the prevailing reality and the urgent need for early childhood care and development services, and the government's emphasis on providing services for the holistic development of Bhutanese children 0-6 years of age, the Ministry of Education, in collaboration with development partners, NGOs and other stakeholders, had begun the process of establishing and expanding different forms of ECCD services.

Save the Children started partnering with the MOE in 2008 in enhancing access to quality ECCD program. This effort culminated in designing and implementing the ECCD center program which provides an ECCD program for 3-5 year-old children, and ECCD parenting education program for parents/caregivers of 0-6 year-old children. The program design was guided by the findings of the first ever situational analysis of ECCD programs in Bhutan conducted in 2008 by Save the Children. Curriculum, training manuals, and teaching learning materials required for the implementation of the ECCD center program was developed and used nationally to train ECCD center facilitators. Save the Children and the Ministry of Education considers the ECCD Program as a long-term approach to improving the quality of education and its goal is to provide every child from conception until the age of eight, including those with disabilities, with care and quality learning opportunities that enable them to attain their developmental potential. Gradually other players such as Non formal Education sector, corporate sector and local CSOs introduced ECCD programs for 3 -5 year old children and the ECCD parenting education component. In 2007 there were six private daycare centers for 3 to 5 year old children in Thimphu, the capital of the country. This number has now grown to 200 spread across the 20 districts of the country. There are now different models of the ECCD center program available throughout the country. The ECCD center program in the country now includes community ECCD centers, private daycare centers, and workplace ECCD centers. Over 3,500 children of 3-5 years of age are enrolled in these centers reaching 7% of the 3-5 year-old children in the country. According to the 2005 Population and Housing Census, there are some 90,000 children under the age of 6, representing some 14 percent of the country's total population.

Although the ECCD center program has been steadily expanding no systematic evaluation has ever been completed to gauge the most impactful and sustainable model(s) for Bhutan. The only study done has been a small case study completed in 2014 to investigate the impact of an ECCD centre program on the

school readiness of children enrolled in the Royal Bhutan Police Community ECCD Center in Thimphu. One of the recommendations from this case study was to commission a national level comprehensive evaluation study considering critical factors such as parental engagement, environmental factors, and program inputs that influence the learning and developmental outcomes in children.

Purpose of study

The study will create evidence for advocacy about the importance of early childhood education programs and data-driven decision making at various levels from community to National policy making. The findings of the study will also be used for informing and improving the ECCD centre program by designing and implementing appropriate interventions enhance the learning outcomes and development of young children in Bhutan.

Methodology

Study design

This study is an impact evaluation of available ECCD programs in Bhutan. Therefore a baseline assessment of children's learning and development was undertaken at the beginning of the school year (March 2015), and a follow up assessment with the same children will occur at the end of the school year (November 2015). The International Development and Early Learning Assessment (IDELA) was used to measure children's learning and development across six domains (Motor, Literacy, Numeracy, Socio-emotional, Approaches to learning, and Spiritual/moral/cultural), and a caregiver questionnaire was used to gather information about parenting practices and home environments. In order to be able to directly relate program inputs to child learning and development, quality information will also be collected during the school year through the Quality Monitoring Tool for ECCD Centres (QMTEC) with additional items from the Early Childhood Environment Rating Scale (ECERS) as well as an ECCD Parenting Education monitoring tool. QMTEC is adapted from Quality Learning Environment (QLE) framework of SCI and assesses the quality learning environment at the ECCD Centre based on the four guiding principles of QLE. It also assess one of the sessions of parenting education program as part of the QMTEC.

Sample and sampling strategy

In order to ensure representative sample of ECCD centers for the evaluation the study uses National Statistics Bureau's (NSB's) regional classification of districts. According to the NSB's criterion 20 districts in the country are divided into three regions namely western, central and the eastern region. For the purpose of this study three districts from each region were selected based on the prevalence and diversity of ECCD programming in each district. To understand the impact of various types of ECCD program models across the country a random sample by type of ECCD centres (NGO, Community, Private, Corporate), is represented in the study, including non-formal education (NFE) parenting programs and a comparison group of children who have no access to any ECCD programming. The evaluation therefore required to have minimum sample size of 20 randomly selected centers under each

type of ECCD Centers (NGO, Community, Private , Corporate) with a total of 80 ECCD centers, in addition to 20 NFE centers with parenting programme and 20 NFE centers without parenting programme giving us a total of 120 evaluation centers spread across nine districts. The exception is that only nine corporate centers were available so all are included in the sample, and the remaining 11 centers were allocated to the community center group as this is the most prevalent ECCD center model in the country.

The study sample size per center was statistically determined using the power calculations[1] to determine the appropriate number of children needed in order to compare learning gains over time between groups. This calculation resulted in interviewing minimum of ten children and a maximum of 15 children present at baseline and end line per center. For the purpose of the impact evaluation only new enrollments at the selected ECCD center were considered for the interview and the same children will be interviewed at the end line. During the baseline efforts were made to interview the maximum of fifteen children to account for an average of 20 percent attrition from baseline to endline. Therefore all children were interviewed if a ECCD center had below 15 new enrollments. If a selected ECCD center had more than fifteen new enrollments a random selection of fifteen children was considered for the interview. In total the required minimum and maximum sample children was 800 and 1200 respectively for the 80 ECCD centers, 200 to 300 children for the 20 NFE centers with parenting programme and similarly 200- 300 children for NFE centers without parenting programme. In total the maximum sample size required for the 120 centers was 1800 children with equal number of caregivers and minimum requirement was 1200 children with equal number of parents/caregivers. Table 1 displays the final study sample by ECCD program type and region of the country while tables 1b and 1c show the actual study sample size from the 120 centers (children) disaggregated by sex and age .

[1] Stata command: clustersampsi, samplesize mu1(1) mu2(1.35) sd1(1) base_correl(0.6) m(12) rho(0.15) beta(0.8)

Table 1a. Sites included in study sample

District		Chhukha	Samtse	Thimphu	Dagana	Wangdue	Zhemgang	Monggar	Samdrup Jongkhar	Trashigang	**Total Sample**
NGO	Planned	0	5	0	6	0	4	5	0	0	**20**
	Actual	0	5	0	5	0	2	2	0	0	**14**
Community	Planned	2	5	2	5	2	2	7	2	4	**31**
	Actual	2	5	3	5	2	4	10	2	4	**37**
Private	Planned	2	1	13	0	3	0	1	0	0	**20**
	Actual	2	1	13	0	2	0	1	1	0	**20**
Corporate	Planned	5	0	2	0	1	0	0	0	0	**8**
	Actual	5	0	1	0	1	0	1	0	0	**8**
NFP with Parenting	Planned	0	0	0	5	3	1	9	2	0	**20**
	Actual	0	0	0	5	3	2	8	2	0	**20**
NFP without Parenting	Planned	5	5	3	0	0	0	0	0	7	**20**
	Actual Sample	5	5	3	0	0	0	0	0	7	**20**
Planned Total Sample		14	16	20	16	9	7	23	4	11	**120**
Actual Sample Size		14	16	20	15	8	8	22	5	11	**119**

Table 1b. Final study sample size (Children), by gender

	Community	**Corporate**	**Private**	**CSO**	**NFE parenting**	**No ECCD**	**Total Sample**
Boys	231	62	109	65	92	131	690
Girls	224	39	121	87	95	121	687
Total	455	101	230	152	187	252	1377

Table 1c. Final study sample size (Children), by age

	Community	**Corporate**	**Private**	**CSO**	**NFE parenting**	**No ECCD**	**Total Sample**
Age 3	149	55	97	52	64	74	491
Age 4	169	28	101	61	61	100	520
Age 5	137	18	32	39	62	78	366
Total	455	101	230	152	187	252	1377

Instruments

For baseline data collection, the International Development and Early Learning Assessment (IDELA) tool was used to measure children development and learning, and the IDELA Caregiver questionnaire was

used to with parents. The IDELA child assessment contains 22 questions in four domains: motor development, emergent literacy, emergent numeracy and socio-emotional development. It also contains two questions related to executive functioning (short-term memory and inhibitory control), as well as assessor-rated questions related to children's approaches to learning. In addition, three questions have been added specifically for Bhutan to measure spiritual, moral, and cultural development.

Table 2. IDELA Domains and Skills

Gross and Fine Motor Development	**Emergent Literacy and Language**	**Emergent Numeracy**	**Socio-emotional Development**	**Executive control**	**Spiritual, Moral, Cultural Development**
Hopping on one foot	Print awareness	Measurement and comparison	Peer relations	Short-term memory	Bhutanese flag
Copying a shape	Expressive vocabulary	Classification/ Sorting	Emotional awareness	Inhibitory control	Kindness to animals
Drawing a human figure	Letter identification	Number identification	Empathy		Environmental consciousness
Folding Paper	Emergent writing	Shape identification	Conflict resolution		
	Initial sound discrimination	One-to-one correspondence	Self-awareness		
	Listening comprehension	Simple operations			
		Problem solving			
Approaches to Learning: Persistence, motivation and engagement					

Table 3. IDELA Caregiver questionnaire

Section	Description
1. General family information	Sex of child, child age, number of children at home, parental literacy, parental education, languages spoken at home
2. ECCD experience and educational expectations	Child participation in ECCD programs, details of participation, parental expectation and aspirations of child's educational attainment
3. Access to early learning materials and resources at home	Types of reading materials at home, types of toys at home
4. Parenting practices and support for learning and development	Adults in the home engaging with children to promote learning and development
5. Inadequate care	Children left alone or in the care of another young child
6. Caregiver self-efficacy	Attitudes about parent's role in child's development
7. Socioeconomic status	Housing materials, objects/appliances owned, land/animals owned

Data collection procedures

The enumerators were selected by a team comprising of one official from Ministry of Education and two from Save the Children. Twenty four university graduates (21 females and 3 males) with previous data collection experience were hired for the baseline data collection. The graduates underwent six days of intensive training which included use of the baseline data collection tools in actual setting, techniques in interviewing young children, procedures for random selection of classrooms and children, getting consent from children and adults, ethical considerations and Child Safeguarding Policy. The training was supported through detailed presentations of the survey tools/instruments, role playing, actual practice in using the tool and discussions. The training was facilitated by MEAL Manager and Education Manager of SCI Bhutan Country Office who had earlier attended the ToT on IDELA in the Philippines. The presentation slides and the IDELA training manual were used to facilitate the training. The training was also remotely supported by Senior Specialist Learning Research, Department of Education and Child Development, Save the Children US.

The tools were pilot tested in the ECCD centres in Thimphu. Two days were dedicated for field practice in the actual setting – day one was dedicated for determination of inter rater reliability among the data enumerators and on clarifying the statements and questions included in the tool. Day two was used for actually using the tool individually and feeding the data into the data entry platform. Feedback from the

pilot test informed the final tools and guidance documents used by the enumerators during data collection.

Ethical considerations

This evaluation received the study approval from the National Statistics Bureau (NSB) of the Royal Government of Bhutan. Enumerators were trained on Ethical Standards, Child Safeguarding Policy and on taking the consent from children and adults who contributed to the data collection. Official letters were sent to all the district governors of the districts in sample seeking permission to collect data in their districts.

Field operations

The baseline data collection took 25 days, on average, in the nine districts. The district governors and the district education Officers of the selected nine districts were informed about the purpose and baseline process, and their permission and assistance sought during the actual field data collection. The 24 trained enumerators were divided into six teams consisting of four enumerators. Each team had an appointed supervisor with defined roles and responsibilities. The supervisors were two officials from the ECCD and SEN division of MoE, three from SCI and a District Education Officer with extensive involvement in ECCD. Depending upon the remoteness and number of centers per district, each team was assigned either one or two districts. The baseline data collection was conducted simultaneously in nine districts.

During the data collection the DEOs from the participating districts were contacted by the respective team leaders at least three days before the actual data collection took place to confirm whether the centers were informed on the process of data collection and to invite them to participate in the baseline evaluation. On the day of the data collection respective centers were visited and data collected as per the data collection protocol. The scoring sheets of the enumerators were counted and verified every evening by the team leaders to ensure that all the score sheets were filled correctly and appropriately.

Data processing and analysis

The data entry application was designed in excel and twelve trained enumerators on field data collection were hired and given hands on training for two days on using the data entry application. Prior to the data entry all collected questionnaires from the field were cross checked with the sample management form maintained in the field for data consistency and other errors. All completed questionnaires from the respective Dzongkhags corresponding to each ECCD centers were then assigned unique serial numbers in order to ease the data entry and cleaning process. Data entry was done in pairs and it took eleven days to complete the entry. Raw data from excel was compiled by Dzongkhags which was then

exported to STATA for data appending, cleaning, merging and analysis.

Limitation

The data collection tools could not be translated into local languages as there are many dialects spoken in Bhutan. Therefore, the enumerators had English tools and translated on the spot, which could have led to inconsistencies in the way questions were asked. To minimize this issue as much as possible during the training the enumerators were paired to practice translating the tools on the spot and received feedback from colleagues. In addition, a glossary of key terms in the major dialects was developed to ensure consistency in translation. One further limitation is that the study groups were not randomly assigned because of limited program availability across the country. However, centers and children were randomly chosen for participation in the study. So the study sample is not representative of all 3-5 year old children in Bhutan but it is representative of children in ECCD programs currently operating across the country.

Baseline Results

IDELA

This section describes children's performance on the direct child assessment, with a focus on differences between the skills of children in different ECCD groups. Total domain scores are calculated by adding the weighted score of each item in the domain so that all items contribute equally to the domain score. The total direct child assessment score is calculated by adding the weighted total scores from the domains (motor, literacy, numeracy, socio-emotional, executive function and spiritual/moral/cultural) so that all domains contribute equally to the total score. Due to the difference in administration style between the direct child assessment items and the enumerator reported learning approaches items, the learning approaches items are not included in the total IDELA score. Therefore the analyses presented below show on average, children in different sample groups correctly answered a certain percentage of questions and/or completed certain percentage of activities in the different domains.

Motor skills

Looking at baseline motor development skills for children in this study analyses find that on average children in private ECCD centers have significantly stronger motor development than children in other groups, and children in the CSO and NFE parenting groups have weaker skills than children in all other groups. Overall, children had the strongest skills in the gross motor area of hopping and the weakest in the fine motor areas of drawing and copying. There are no significant differences between boys' and girls' skills in this area.

Table 4. Baseline motor skills by ECCD program type

	Community (N=455)	Corporate (N=101)	Private (N=230)	CSO (N=152)	NFE parenting (N=187)	No ECCD (N=252)
Hop on 1 foot	38%	31%	45%	26%	20%	36%
Draw person	21%	18%	35%	16%	11%	22%
Fold paper	31%	31%	42%	17%	18%	32%
Copy shape	15%	12%	28%	12%	8%	16%
Total Motor Development	26%	23%	38%	18%	14%	26%

Figure 1a. Baseline motor development scores, by group and gender

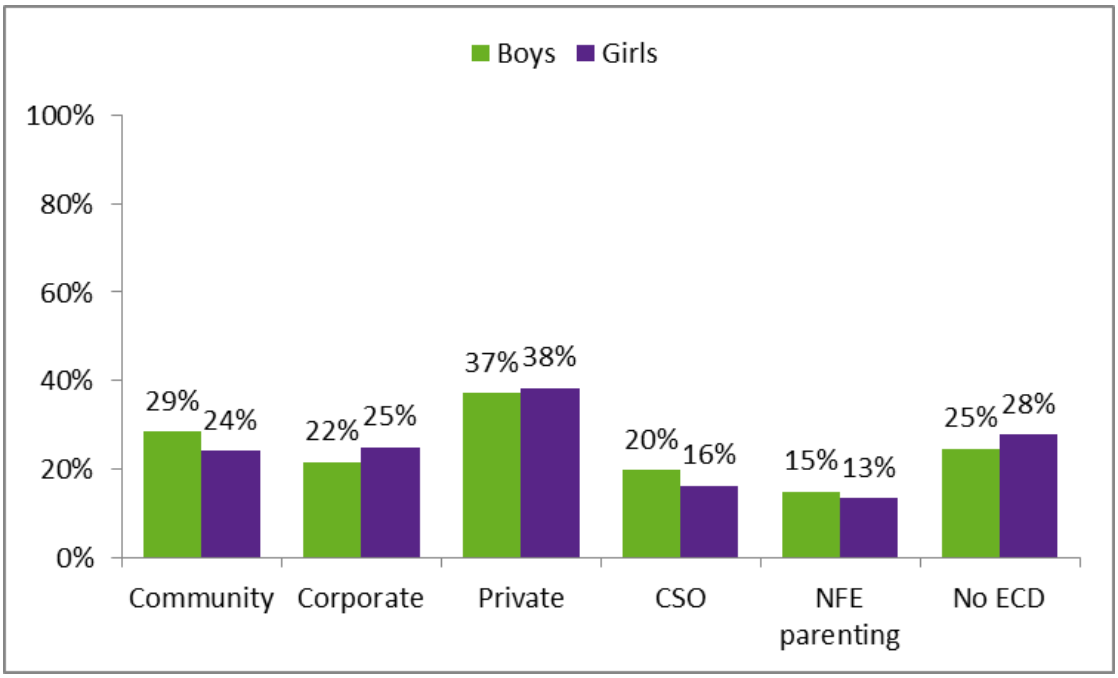
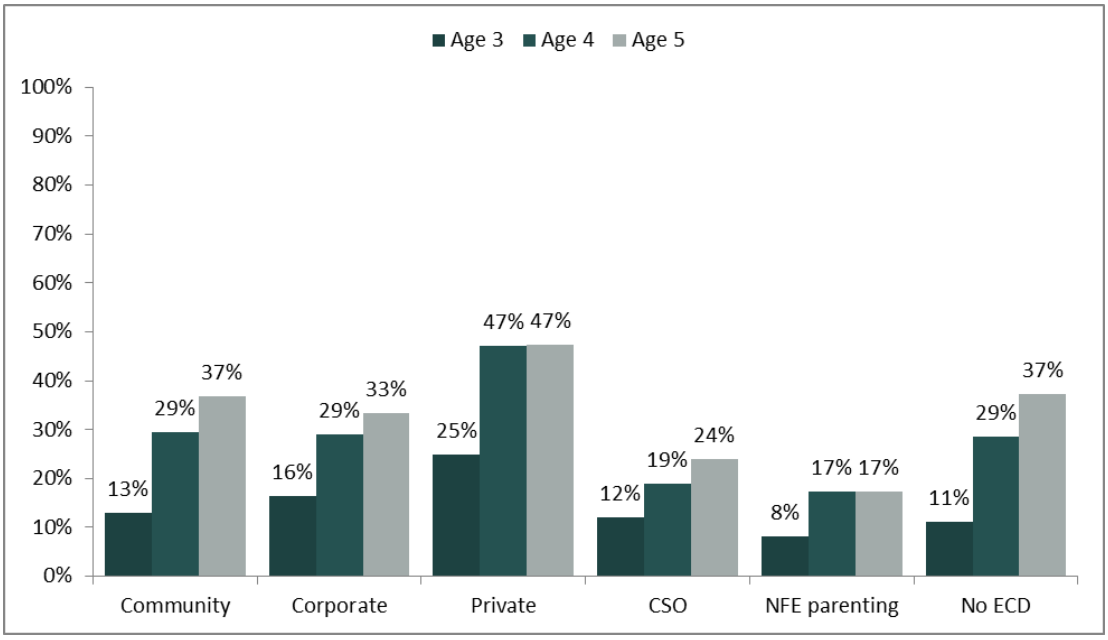


Figure 1b. Baseline motor development scores, by group and age



Emergent Numeracy

Looking at baseline emergent numeracy skills for children in this study analyses find that on average children in private ECCD centers have significantly stronger emergent numeracy skills than children in other groups. Overall, children had the strongest skills in size/length differentiation and the weakest in number identification. There are no significant differences between boys' and girls' skills in this area.

Table 5. Baseline numeracy skills by ECCD program type

	Community (N=455)	Corporate (N=101)	Private (N=230)	CSO (N=152)	NFE parenting (N=187)	No ECCD (N=252)
Size/length	79%	72%	84%	66%	66%	76%
Sorting	30%	19%	27%	24%	24%	20%
Shape ID	31%	23%	44%	21%	23%	28%
Number ID	5%	2%	8%	1%	3%	3%
One-to-one correspondence	16%	10%	17%	9%	11%	11%
Simple operations	24%	14%	29%	18%	14%	17%
Puzzle	15%	12%	32%	8%	6%	16%
Total Emergent Numeracy	29%	22%	35%	21%	21%	24%

Figure 2a. Baseline emergent numeracy scores, by group and gender

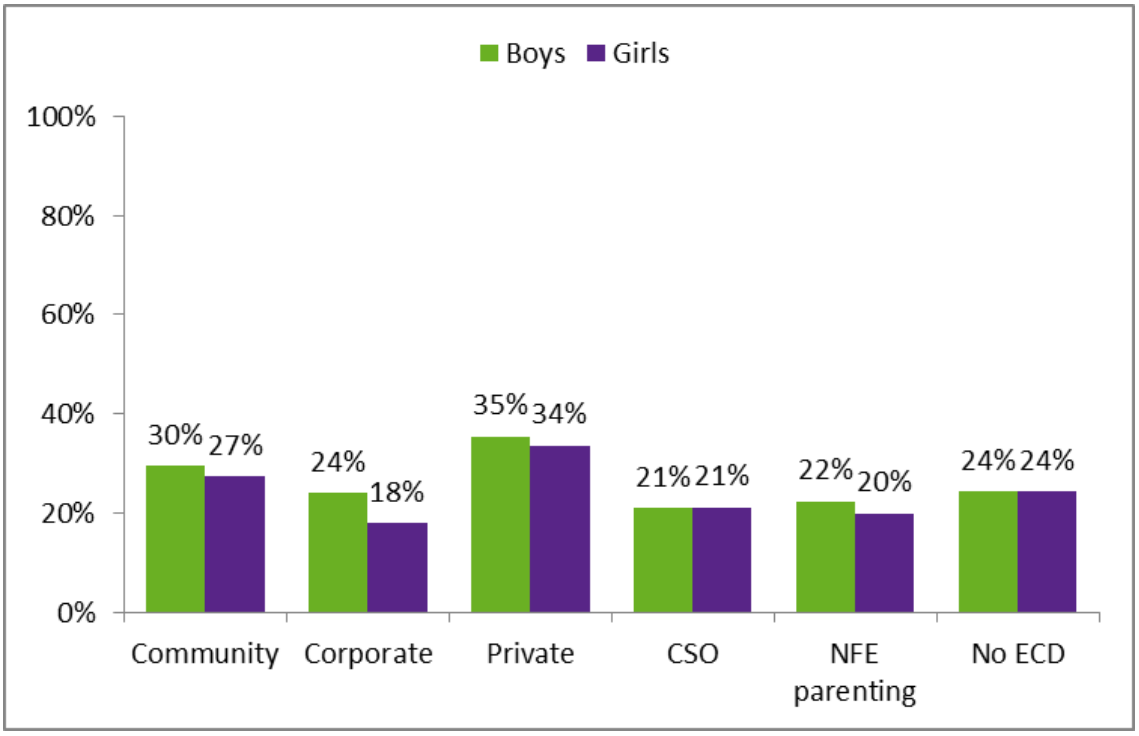
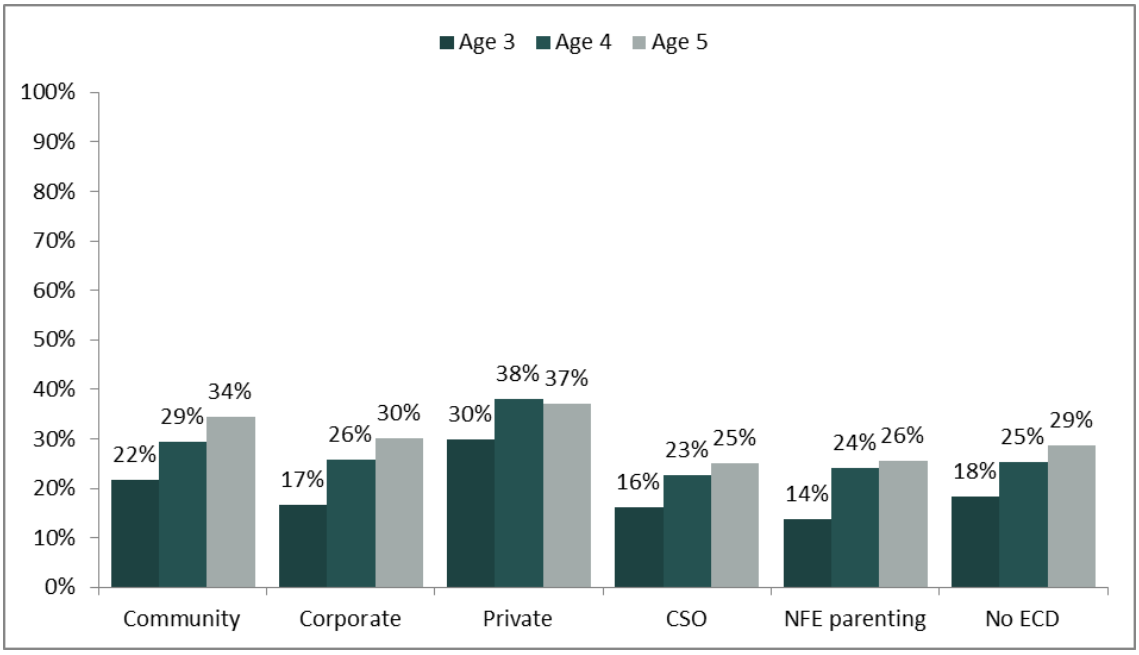


Figure 2b. Baseline emergent numeracy scores, by group and age



Emergent Literacy

Looking at baseline emergent literacy skills for children in this study analyses find that on average children in private ECCD centers have significantly stronger emergent literacy skills than children in other groups. Overall, children had the strongest skills in print awareness and listening comprehension,

and the weakest in phonemic awareness. There are no significant differences between boys' and girls' skills in this area.

Table 6. Baseline emergent literacy skills by ECCD program type

	Community (N=455)	Corporate (N=101)	Private (N=230)	CSO (N=152)	NFE parenting (N=187)	No ECCD (N=252)
Print awareness	26%	24%	36%	20%	14%	20%
Letter ID	5%	5%	12%	3%	4%	5%
Expressive vocabulary	14%	13%	20%	10%	11%	13%
Listening comprehension	30%	22%	36%	22%	21%	24%
Phonemic awareness	1%	1%	2%	2%	0%	1%
Writing	20%	23%	36%	13%	8%	19%
Total Emergent Literacy	16%	14%	24%	11%	10%	14%

Figure 3a. Baseline emergent literacy scores, by group and gender

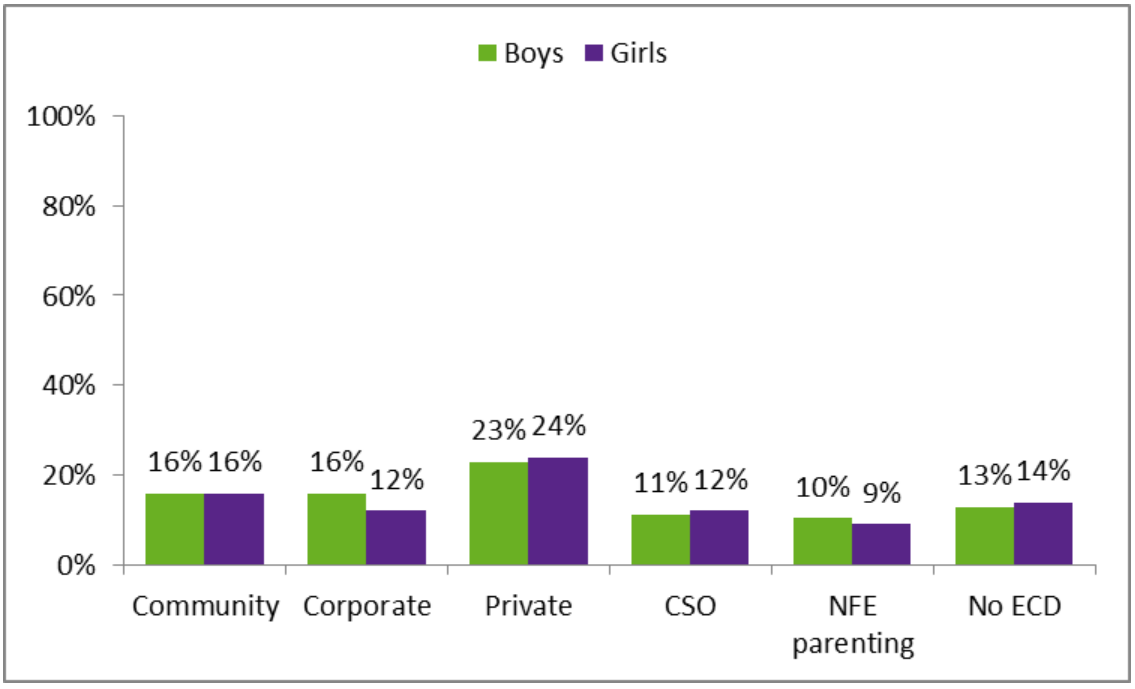
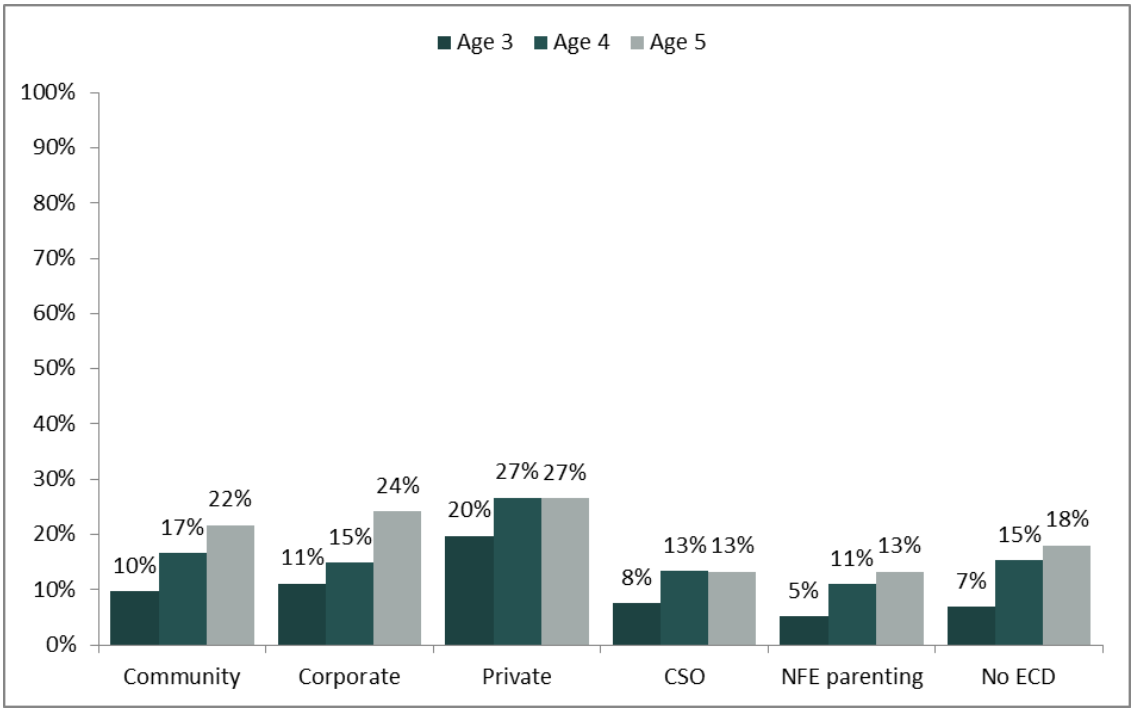


Figure 3b. Baseline emergent literacy scores, by group and age



Socio-emotional development

Looking at socio-emotional development skills for children in this study analyses find that on average children in private ECCD centers have significantly stronger socio-emotional development than children in other groups, and children in the NFE parenting group have the weakest skills in this area compared to all other groups. Overall, children had the strongest skills in knowing personal information and the weakest in identifying friends/peer relationships. There are no significant differences between boys' and girls' skills in this area.

Table 7. Baseline socio-emotional skills by ECCD program type

	Community (N=455)	Corporate (N=101)	Private (N=230)	CSO (N=152)	NFE parenting (N=187)	No ECCD (N=252)
Personal information	47%	44%	55%	36%	35%	39%
Friends	15%	12%	22%	12%	11%	12%
Recognizing emotions	36%	42%	42%	34%	22%	38%
Empathy	38%	48%	45%	37%	26%	38%
Conflict resolution	34%	45%	48%	36%	17%	35%
Total Socio-emotional Development	34%	38%	42%	31%	22%	32%

Figure 4a. Baseline socio-emotional scores, by group and gender

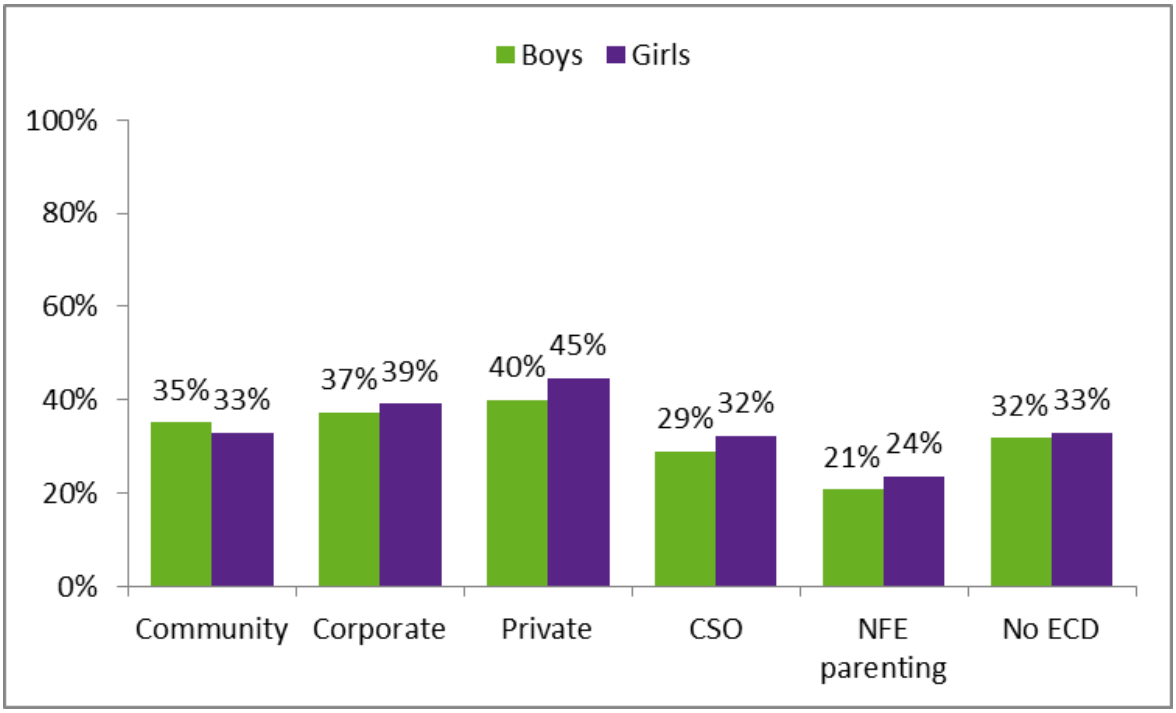
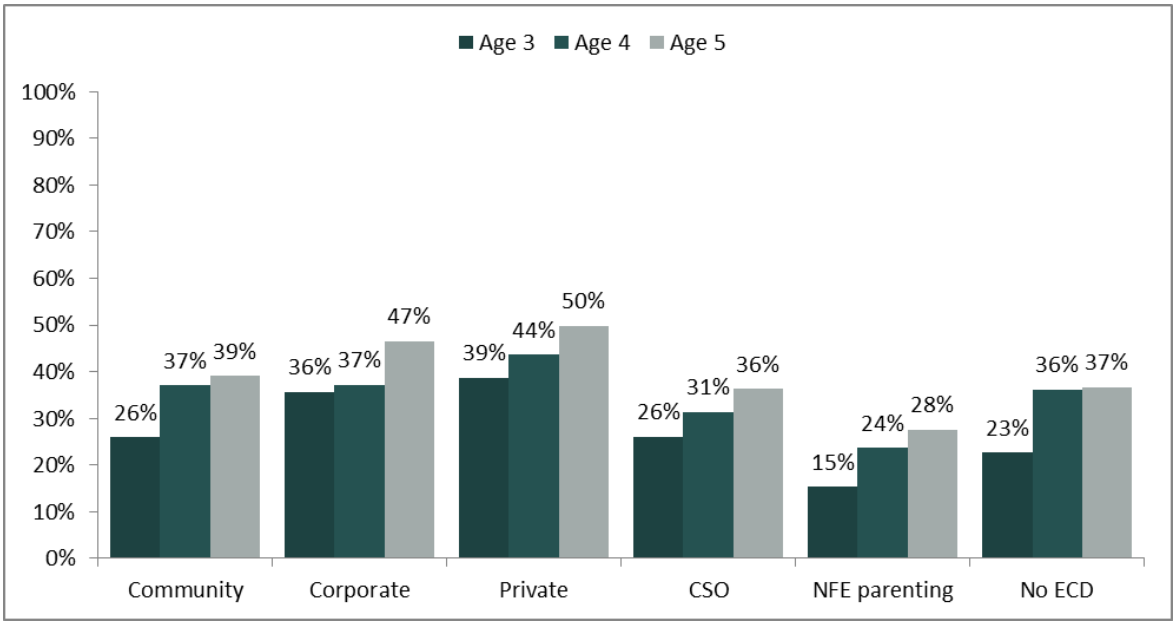


Figure 4b. Baseline socio-emotional scores, by group and age



Spiritual/moral/cultural development

Looking at baseline spiritual, moral and cultural development skills for children in this study analyses find that on average children in private ECCD centers display significantly stronger skills in this area than children in other groups. Overall, children had the strongest skills in flag identification and the weakest

in knowledge about kindness to animals. There are no significant differences between boys' and girls' skills in this area.

Table 8. Baseline spiritual/moral/cultural skills by ECCD program type

	Community (N=455)	Corporate (N=101)	Private (N=230)	CSO (N=152)	NFE parenting (N=187)	No ECCD (N=252)
Bhutanese flag	61%	57%	67%	45%	48%	62%
Kindness to animals	49%	44%	59%	39%	37%	46%
Littering/environment	50%	45%	62%	37%	42%	48%
Total Cultural Development	54%	48%	63%	38%	42%	52%

Figure 5a. Baseline spiritual/moral/cultural scores, by group and gender

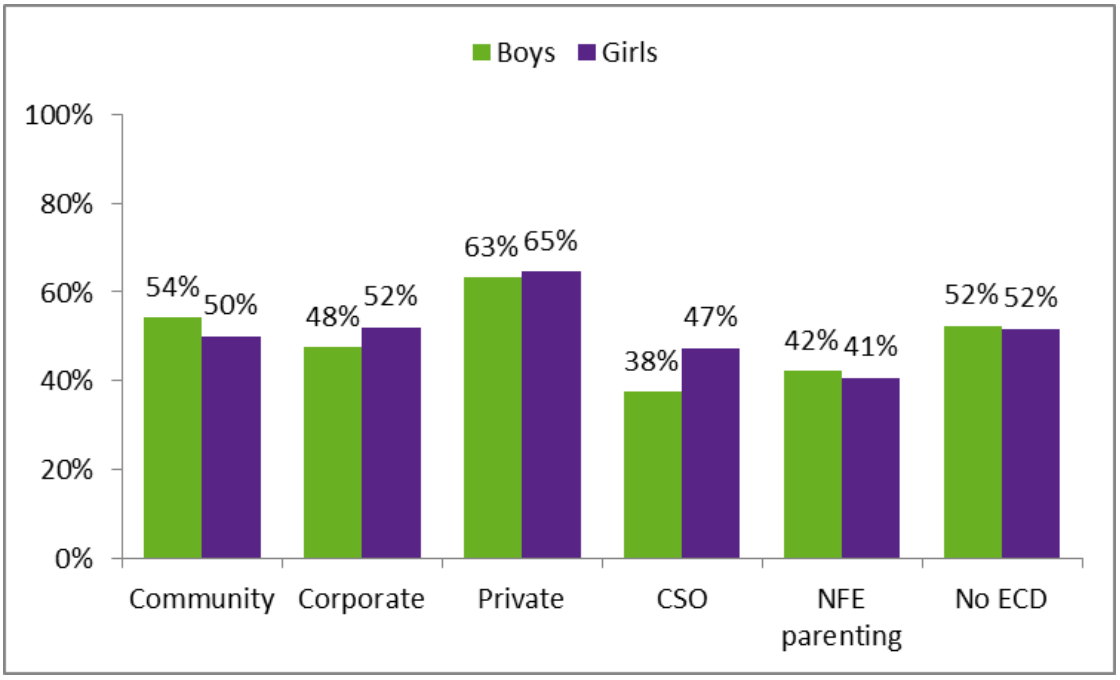
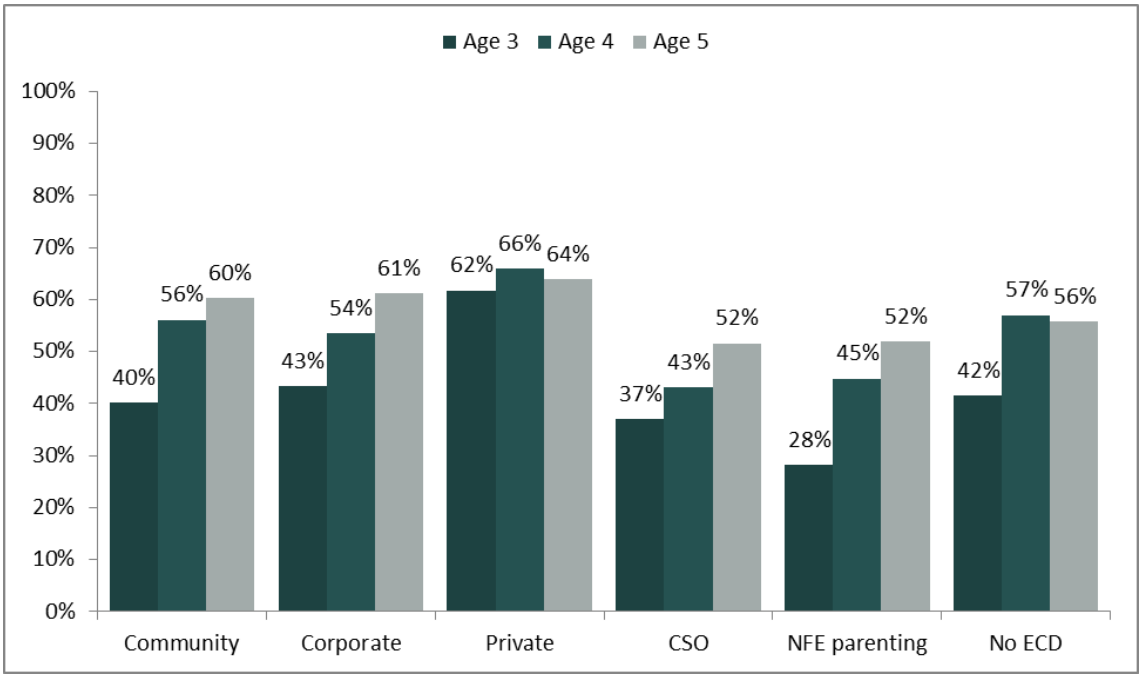


Figure 5b. Baseline spiritual/moral/cultural scores, by group and age



Executive functioning

In addition to the core domains, the child assessment also included items related to executive functioning. These items focuses on how children process information as opposed to learned skills like letter or number identification, and underlie children's ability to learn new information. Similar to the other domains, children in private ECCD centers significantly outperformed children in other groups.

Table 9. Baseline executive functioning skills by ECCD program type

	Community (N=455)	Corporate (N=101)	Private (N=230)	CSO (N=152)	NFE parenting (N=187)	No ECCD (N=252)
Short-term memory	37%	31%	47%	23%	26%	29%
Inhibitory control	33%	29%	43%	24%	27%	30%
Executive function Total	35%	30%	45%	23%	26%	30%

Figure 6a. Baseline executive function skills, by group and gender

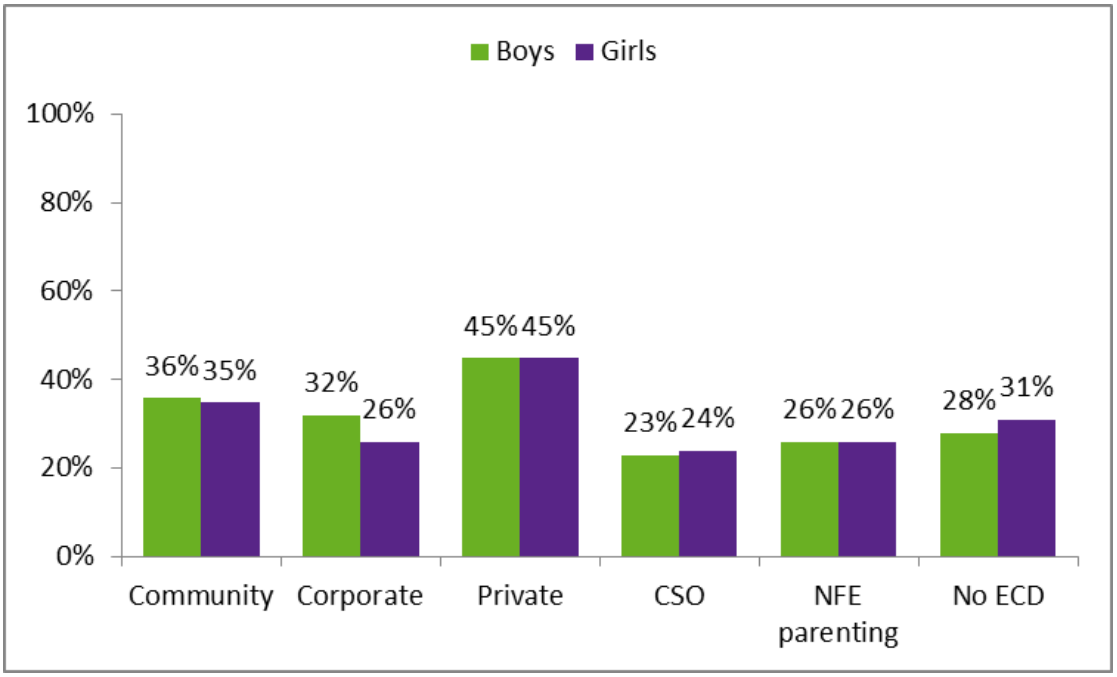
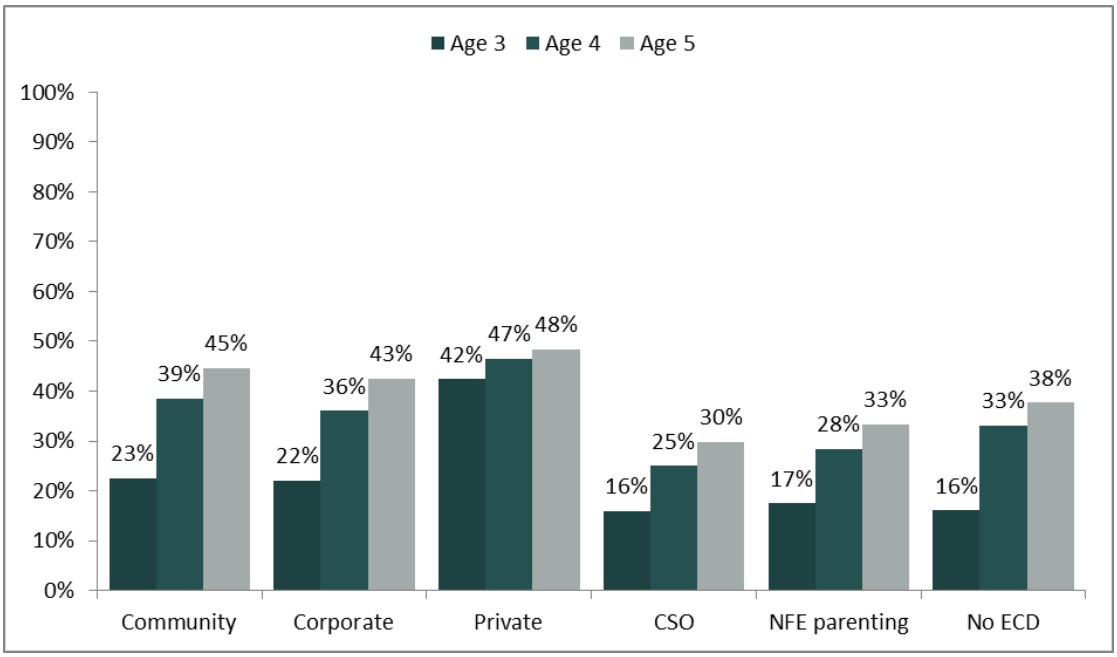


Figure 6b. Baseline executive function skills, by group and age



Approaches to Learning

In order to measure children's learning approaches (i.e., the way they approach complicated problems) assessors were asked to rate children on a number of dimensions immediately after the assessment was completed (see table 10). Children were rated on a scale from 1=Almost never; 4=Almost always. Analyses of children's baseline learning approaches are in line with findings in other domains. On

average children in private ECCD centers have significantly stronger approaches to learning skills than children in other groups, and there are no significant differences between boys' and girls' skills in this area.

Table 10. Baseline approaches to learning skills by ECCD program type

	Community (N=455)	Corporate (N=101)	Private (N=230)	CSO (N=152)	NFE parenting (N=187)	No ECCD (N=252)
a) Did the child pay attention to the instructions and demonstrations throughout the assessment?	2.4	2.4	2.8	2.1	1.9	2.4
b) Did child show confidence when completing activities; did not show hesitation.	2.3	2.2	2.6	2.0	1.9	2.2
c) Did the child stay concentrated and on task during the activities and was not easily distracted?	2.2	2.1	2.5	2.0	1.8	2.2
d) Was child careful and diligent on tasks? Was child interested in accuracy?	2.1	2.1	2.3	1.9	1.8	2.0
e) Did child show pleasure in accomplishing specific tasks?	2.1	1.9	2.5	1.9	1.8	2.1
f) Was child motivated to complete tasks? Did not give up quickly and did not want to stop the task?	2.1	2.0	2.4	1.8	1.8	2.0
g) Was the child interested and curious about the tasks throughout the assessment?	2.1	2.1	2.5	1.9	1.8	2.2
Total Learning Approaches	55%	53%	63%	49%	46%	54%

Figure 7a. Baseline approaches to learning scores, by group and gender

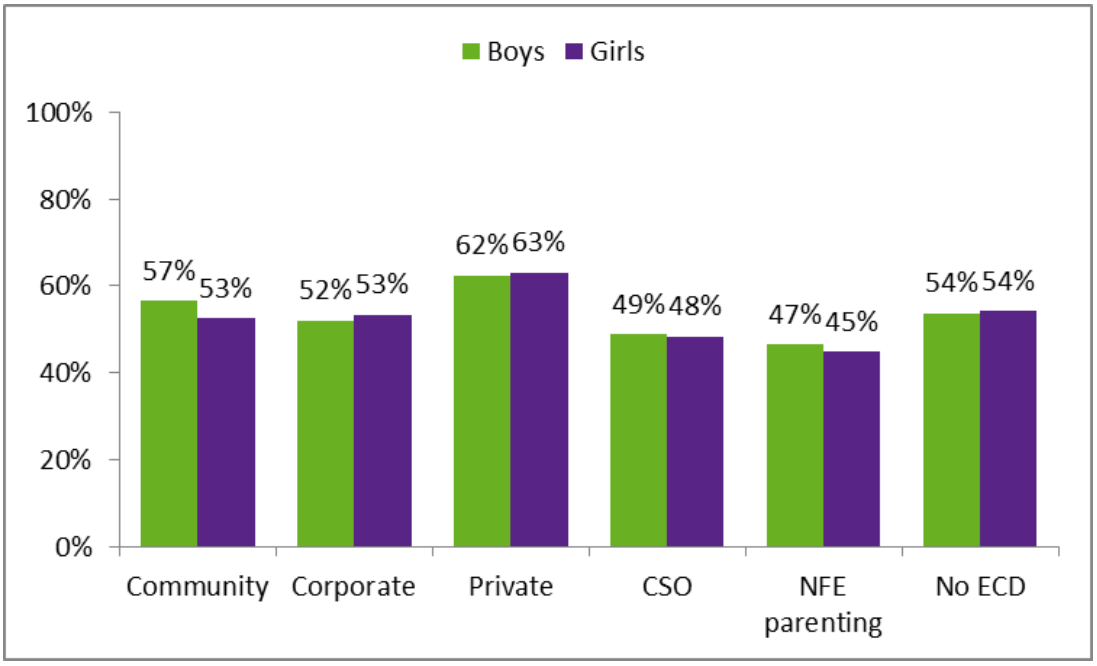
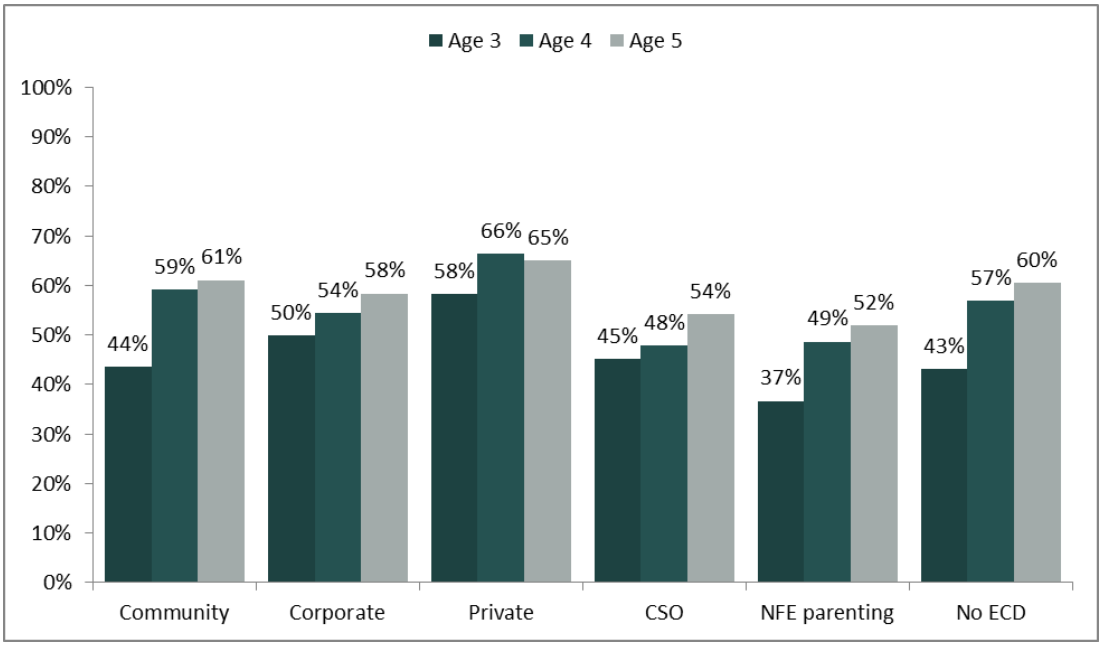


Figure 7b. Baseline approaches to learning scores, by group and age



Total IDELA

To calculate a total IDELA proportion correct for each direct child assessment item was added together and divided by the total number of items. Given that the learning approaches score was obtained through assessor observation, it is not included in the total IDELA score. As seen in the domain scores,

overall, children in private ECCD centers had the strongest school readiness skills at the beginning of the 2015 school year, and children whose parents were attending NFE parenting education classes had the weakest skills. On average, there were no gender differences in children's baseline skills.

Figure 8a. Baseline IDELA scores, by group and gender

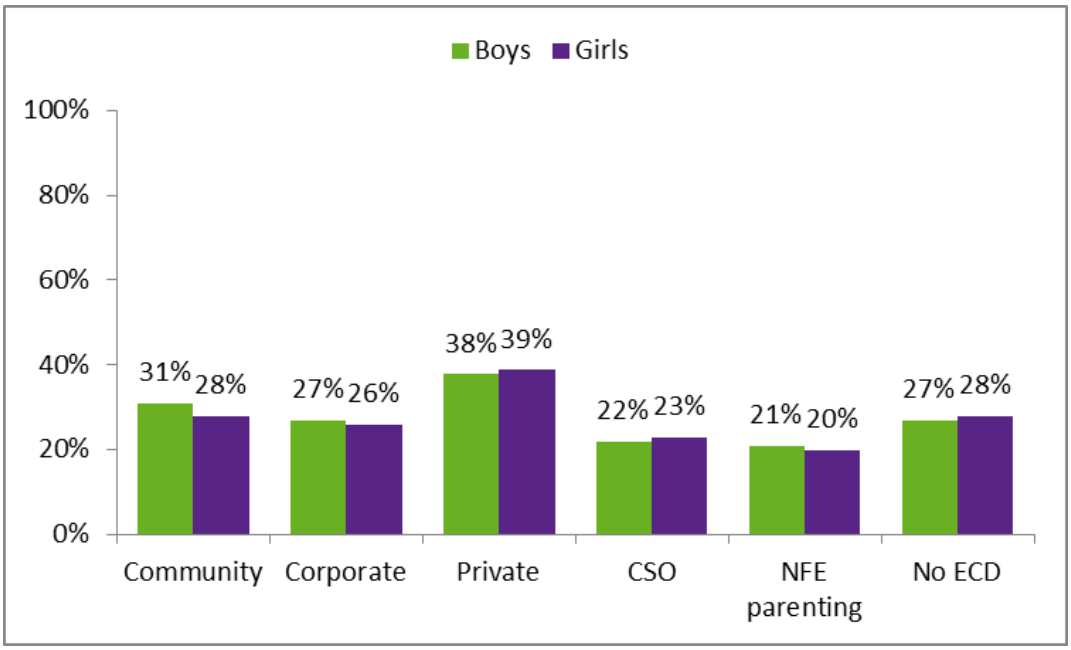
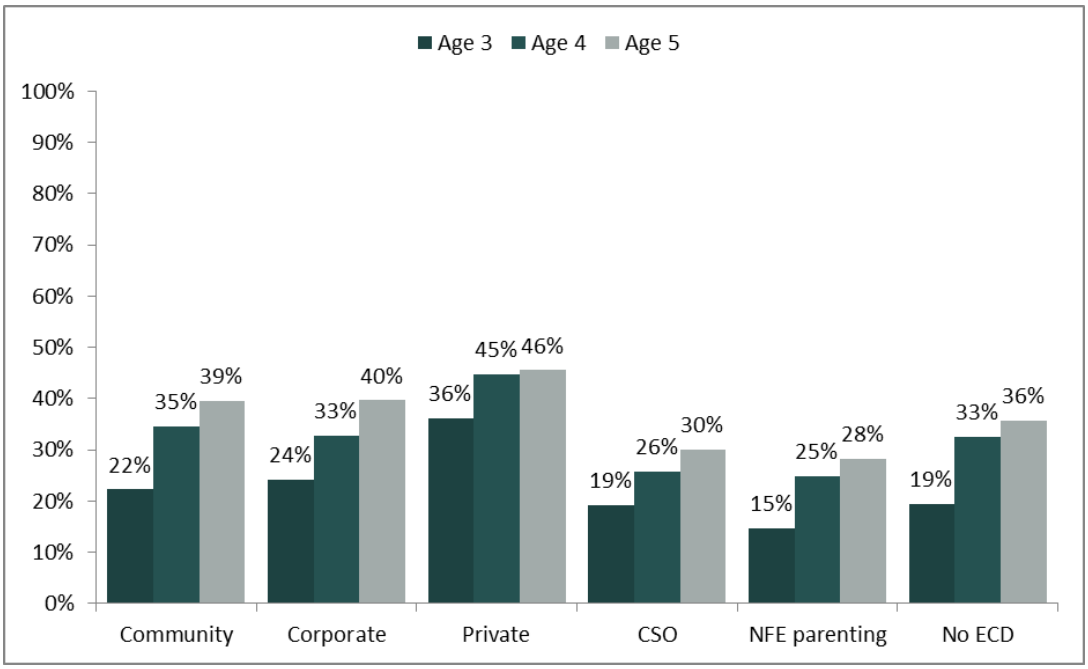


Figure 8b. Baseline IDELA scores, by group and gender



Looking at differences between children in rural (N=1,042) and urban areas (N=335) data display that children in rural areas have significantly weaker skills than urban children on the overall IDELA score

(figure 9). The differences between children's skills in the individual subdomains are marginally statistically significant ($p < .1$) so it will be important to continue to monitor these differences at endline.

Figure 9. Baseline IDELA scores, by urbanicity

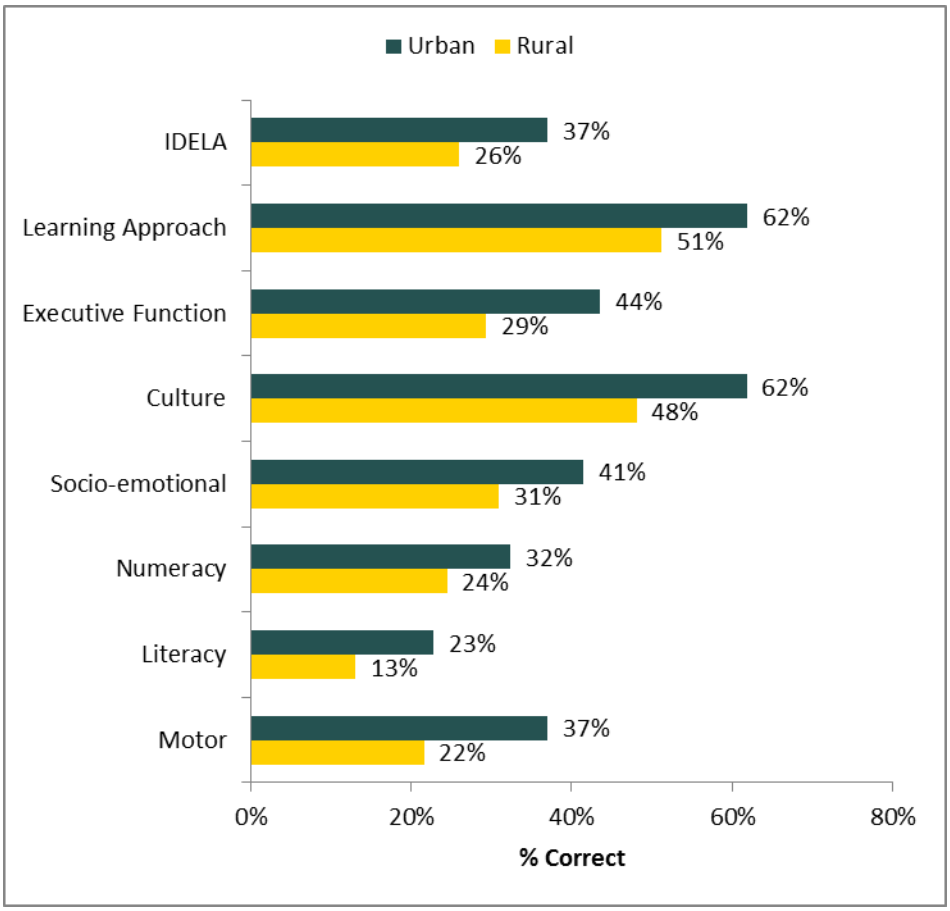
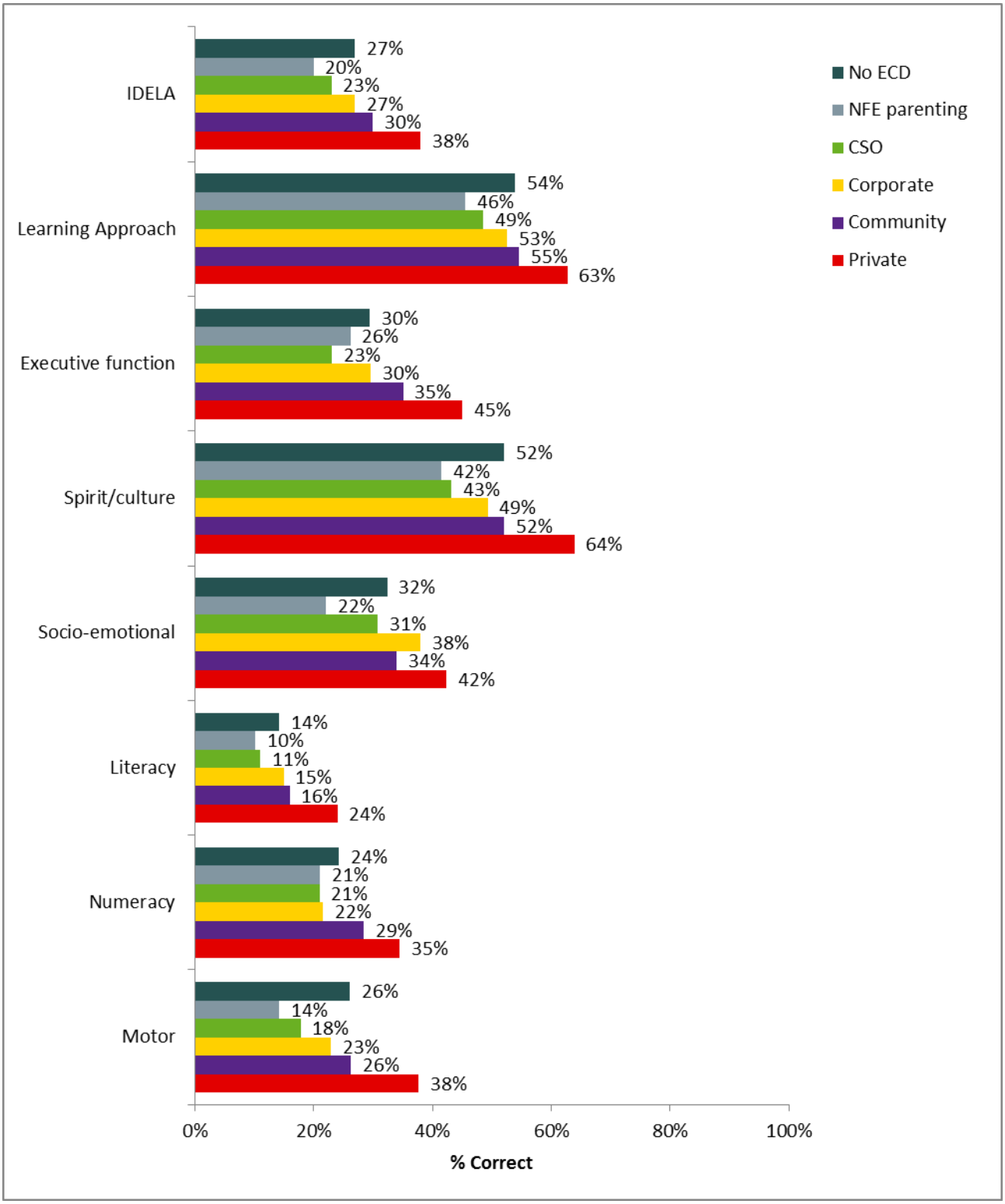


Figure 10. Summary baseline IDELA scores, by group



Home environment

Family characteristics

Looking at parent and household characteristics across study groups, data display a range of household environments in which children are developing. Mothers and fathers of children in private ECCD centers are more likely to be literate and have higher education than parents in other groups. Families with children in private ECCD centers also tend to have fewer children than other groups. There are a range of languages spoken in children's home across all study groups, but overall Dzongkha is the most common language spoken across groups. English is the most uncommon language spoken in homes, except for in the private ECCD group.

Table 11. Family characteristics by ECCD program type

	Community (N=455)	Corporate (N=101)	Private (N=230)	CSO (N=152)	NFE parenting (N=187)	No ECCD (N=252)
Mother age	29.5	30.2	31.3	29.0	29.6	30.2
Mother education (0=No formal education 4=Higher education)	1.3	1.5	3.0	1.0	1.5	1.3
Mother literate	54%	62%	93%	41%	70%	55%
Father age	32.4	34.8	35.0	33.2	32.6	34.0
Father education (0-4)	1.6	2.1	3.3	1.2	1.3	1.4
Father literate	73%	78%	97%	58%	64%	63%
# children at home	2.3	2.4	1.8	2.5	2.5	2.5
Home language: Dzonkha	39%	68%	80%	34%	26%	41%
Home language: Lhotsham	20%	21%	21%	41%	16%	27%
Home language: Sharchop	44%	41%	31%	16%	56%	48%
Home language: Khengkha	9%	1%	0%	18%	16%	2%
Home language: Kurtoe	1%	5%	6%	1%	4%	1%
Home language: English	3%	7%	35%	1%	4%	2%
Home language: Other	12%	1%	5%	19%	3%	3%

Similarly, analysis of family socioeconomic status finds that parents sending their children to private ECCD centers have more financial resources than families in other groups. Families of children in

corporate ECCD centers have fewer resources than families sending their children to private centers but more than all other groups. Similarly, results find that families in urban areas tend to have higher socioeconomic status than families in rural areas. There are no significant differences between family resources for children in any other study groups.

Table 12. Family socioeconomic status by ECCD program type

	Community (N=455)	Corporate (N=101)	Private (N=230)	CSO (N=152)	NFE parenting (N=187)	No ECCD (N=252)
Electricity	100%	98%	100%	98%	100%	99%
Water	95%	100%	100%	94%	95%	100%
Radio	32%	32%	34%	27%	39%	33%
TV	74%	95%	98%	60%	65%	85%
Refrigerator	50%	76%	95%	32%	39%	54%
Power till	5%	4%	4%	1%	6%	2%
Car	22%	42%	81%	24%	20%	19%
Microwave	8%	14%	60%	8%	7%	8%
Water boiler	79%	95%	99%	64%	60%	79%
Computer	19%	26%	83%	16%	11%	12%
Washing machine	12%	30%	80%	9%	13%	14%
Land	88%	72%	76%	92%	93%	88%
Livestock	64%	42%	25%	70%	78%	60%

ECCD participation and expectations

Parents of children who were enrolled in ECCD were asked why they send their children to ECCD centers. On average, a child learning reading and writing skills is the most reported response for why parents send their children to ECCD, followed by children learning in general and children being prepared for primary school.

Table 13. ECCD enrollment and expectations by ECCD program type

	Community (N=455)	Corporate (N=101)	Private (N=230)	CSO (N=152)
The child gets food to eat	2%	1%	2%	2%
Child is kept occupied and out of mischief	18%	17%	25%	15%
Child learns something/general child development	53%	61%	62%	43%
Child learns reading and writing skills	66%	55%	55%	64%
Child learns math/numeracy skills	17%	10%	16%	15%
Child learns to sit and listen	25%	16%	17%	20%
Child gets prepared for primary school	62%	42%	59%	51%
Neighborhood children go to the center	8%	6%	2%	8%
Child likes to go to the center	18%	9%	8%	11%
Other	9%	24%	17%	10%

Home learning environment

All parents were asked about the activities they engage in with their children at home in the past week, and also about the books and toys their children have access to. On average, parents of children enrolled in private ECCD centers engage in more home literacy activities with their children, own more reading materials and more toys than parents in other groups. Families in the corporate ECCD group have fewer resources than families sending their children to private centers but more than all other remaining groups. There are no significant differences between the materials and activities in homes between the other study groups or between boys and girls. However analyses find that children in urban areas tend to have significantly more reading materials, toys and more home learning engagement than children in rural areas.

Table 14. Home learning environment by ECCD program type

	Community (N=455)	Corporate (N=101)	Private (N=230)	CSO (N=152)	NFE parenting (N=187)	No ECCD (N=252)
Read to child	65%	49%	80%	59%	55%	43%
Tell stories	60%	63%	76%	65%	49%	50%
Sings	80%	87%	87%	87%	67%	69%
Takes child out	88%	95%	96%	90%	90%	93%
Plays with child	72%	94%	91%	76%	65%	75%
Draws with child	66%	78%	89%	52%	48%	64%
Teaches new things	76%	87%	94%	63%	64%	74%
Teaches letters	76%	85%	95%	74%	59%	71%
Teaches numbers	71%	81%	90%	64%	59%	72%
Hugs	93%	97%	99%	95%	92%	94%
Spanks	79%	91%	72%	78%	73%	90%
Hits	51%	32%	27%	49%	40%	39%
Yells	44%	42%	30%	49%	28%	45%

Figure 11. Average learning and play activities happening in children's homes weekly

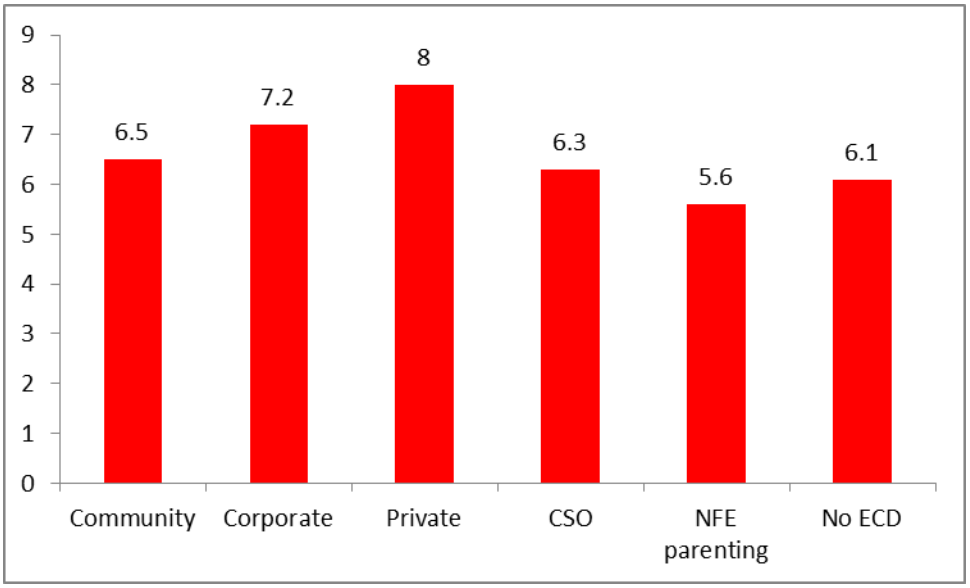


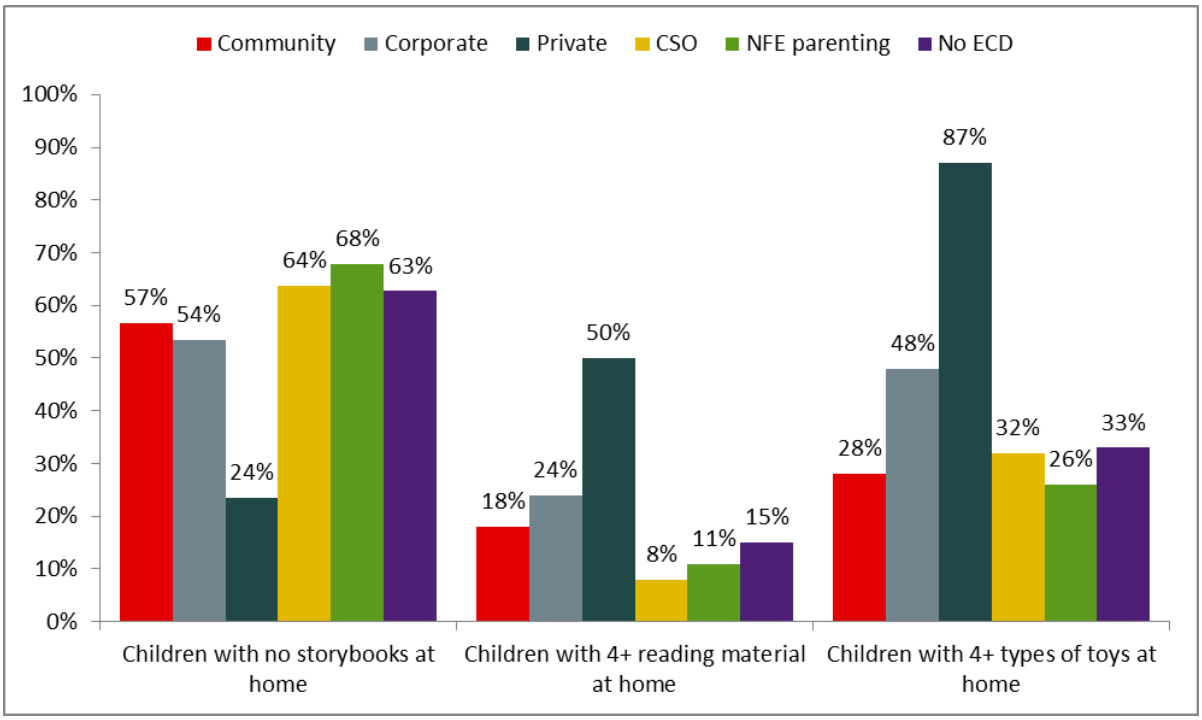
Table 15. Reading materials in homes by ECCD program type

	Community (N=455)	Corporate (N=101)	Private (N=230)	CSO (N=152)	NFE parenting (N=187)	No ECCD (N=252)
Storybook	43%	47%	77%	36%	32%	37%
Textbook	36%	52%	51%	30%	23%	46%
Magazine	26%	34%	51%	16%	16%	19%
Newspaper	33%	41%	58%	14%	32%	35%
Religious book	56%	72%	70%	43%	55%	65%
Coloring book	41%	55%	84%	30%	19%	27%
Comic book	14%	23%	46%	13%	9%	7%
# type of reading materials	2.5	3.2	4.4	1.8	1.8	2.4

Table 16. Toys in homes by ECCD program type

	Community (N=455)	Corporate (N=101)	Private (N=230)	CSO (N=152)	NFE parenting (N=187)	No ECCD (N=252)
Homemade	48%	21%	30%	37%	43%	25%
Store-bought	84%	90%	99%	78%	87%	95%
Household objects	72%	59%	67%	72%	74%	63%
Outside objects	83%	65%	65%	81%	85%	77%
Drawing	65%	81%	92%	61%	40%	62%
Puzzle	19%	26%	71%	19%	12%	14%
Hand-eye coordination	23%	45%	74%	13%	16%	26%
Shapes	24%	40%	71%	20%	18%	20%
Numbers	26%	45%	70%	21%	16%	20%
Other	6%	12%	27%	5%	4%	2%
# types of toys	4.5	4.8	6.6	4.1	3.9	4.0

Figure 12. Reading materials and toys present in children's homes



Attitudes about parenting

Finally, parents were asked for their attitudes about their roles in their children's development. The questions were rated on a scale 0-4 (almost never – almost always). In general, parents reported feeling like they were important contributors to their children's development and overall parents in the private ECCD group had significantly more positive attitudes compared to other groups of parents.

Table 17. Parenting attitudes by ECCD program type

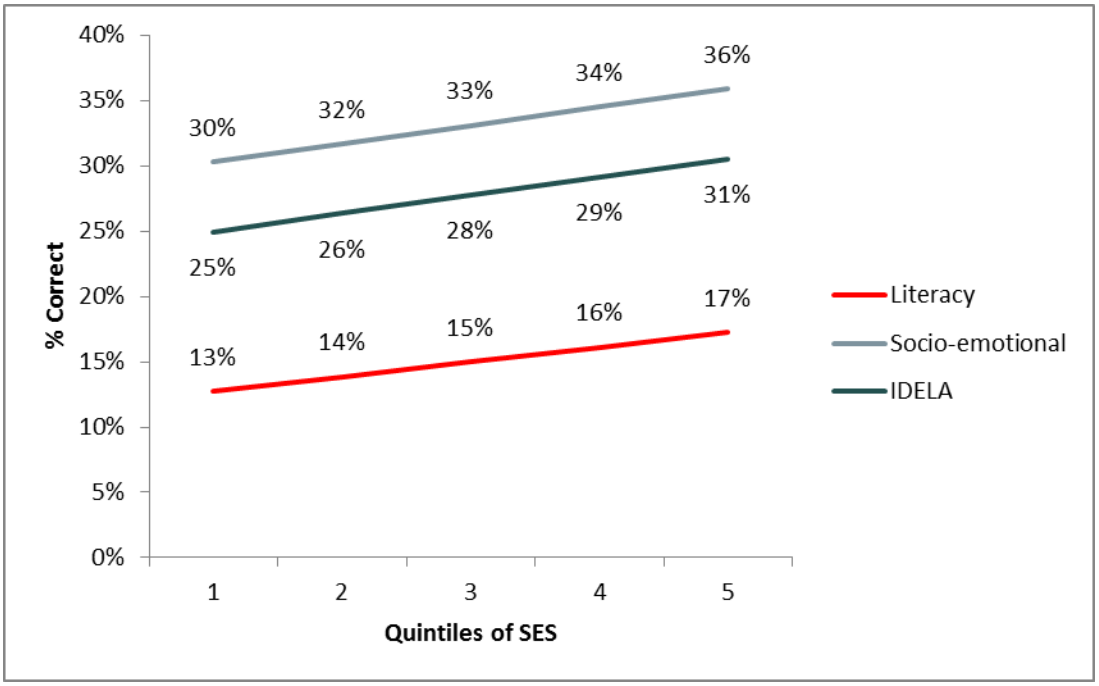
	Community (N=455)	Corporate (N=101)	Private (N=230)	CSO (N=152)	NFE parenting (N=187)	No ECCD (N=252)
I play a crucial role in my child's physical and cognitive development.	3.6	3.7	3.7	3.4	3.6	3.6
It is important to take a good care of children at an early age.	3.7	3.6	3.9	3.5	3.6	3.6
Even when I am busy with my work, I can make time for my child in order to take care of him/her.	3.6	3.5	3.6	3.4	3.5	3.5
Knowing how to read and write is important for my child to have a good/productive life.	3.7	3.5	3.8	3.5	3.6	3.6
I will encourage my child to complete at least secondary school (i.e., SSC).	3.7	3.5	3.8	3.5	3.6	3.6
I think I can teach my child important school readiness skills at home	3.4	3.3	3.5	3.3	3.4	3.3
I think my child can learn a lot of skills by playing games	3.5	3.3	3.6	3.3	3.4	3.3
I find ways to talk with or engage my child in games while I am doing my daily work	3.4	3.2	3.4	3.2	3.4	3.2
I think praising children whenever he/she tries to do something new is important	3.6	3.5	3.8	3.3	3.5	3.5
Parent Attitude Total (out of 36)	32.2	31.1	33.2	30.4	31.6	31.3

Connection between caregivers and child skills

Using both children's early skills and caregiver questionnaires allows for analysis of the relationships between children's development and their home environments. When looking at family characteristics that research from the international community has shown to typically be related to child development,

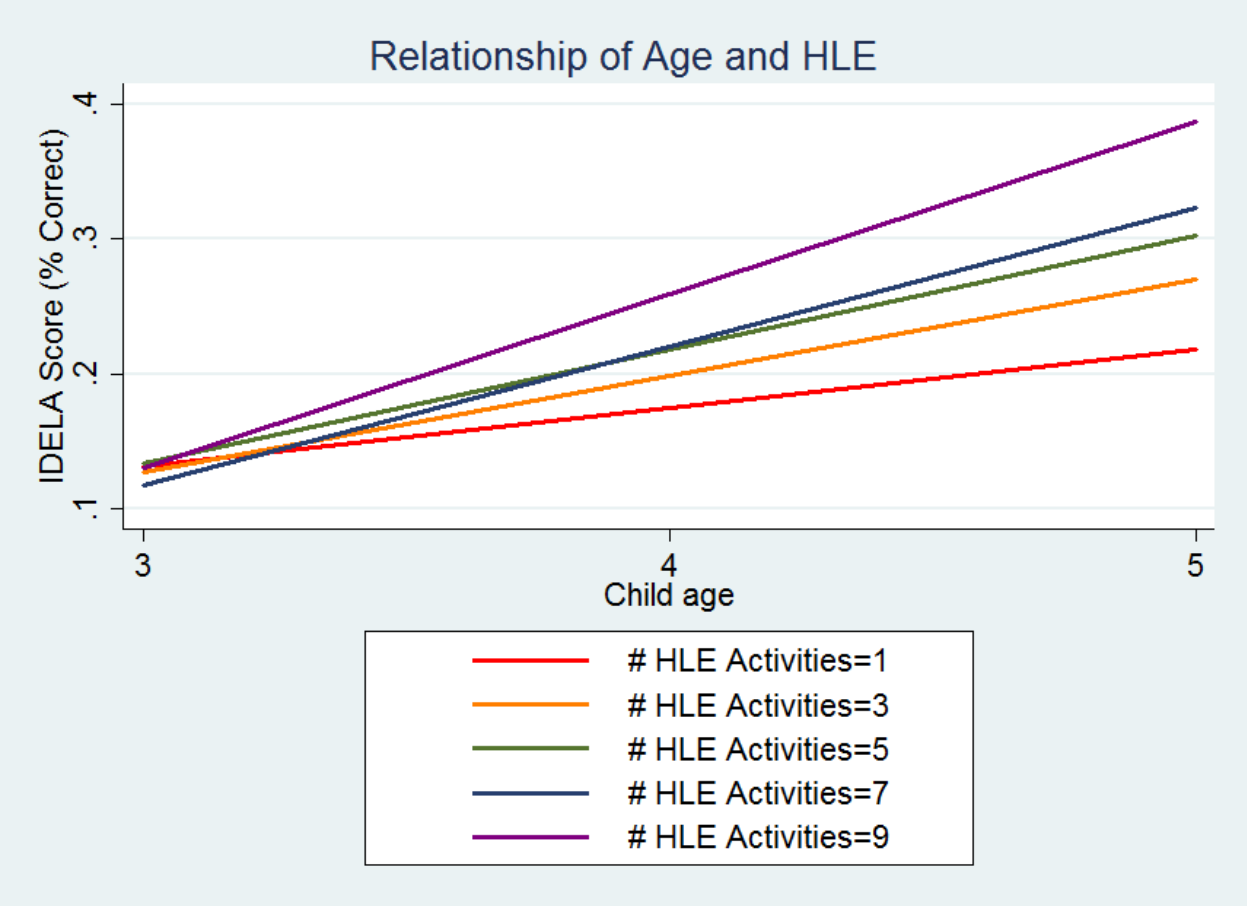
we find similar relationships in communities in Bhutan. For example, older children and children of parents with more education (especially fathers) tend to score higher on the IDELA. Similarly, analyses find that children from families with higher income tend to have stronger earlier development scores compared to their peers with fewer financial resources in all domains except emergent numeracy (Figure 13).

Figure 13. Relationship between socioeconomic status and children's skills



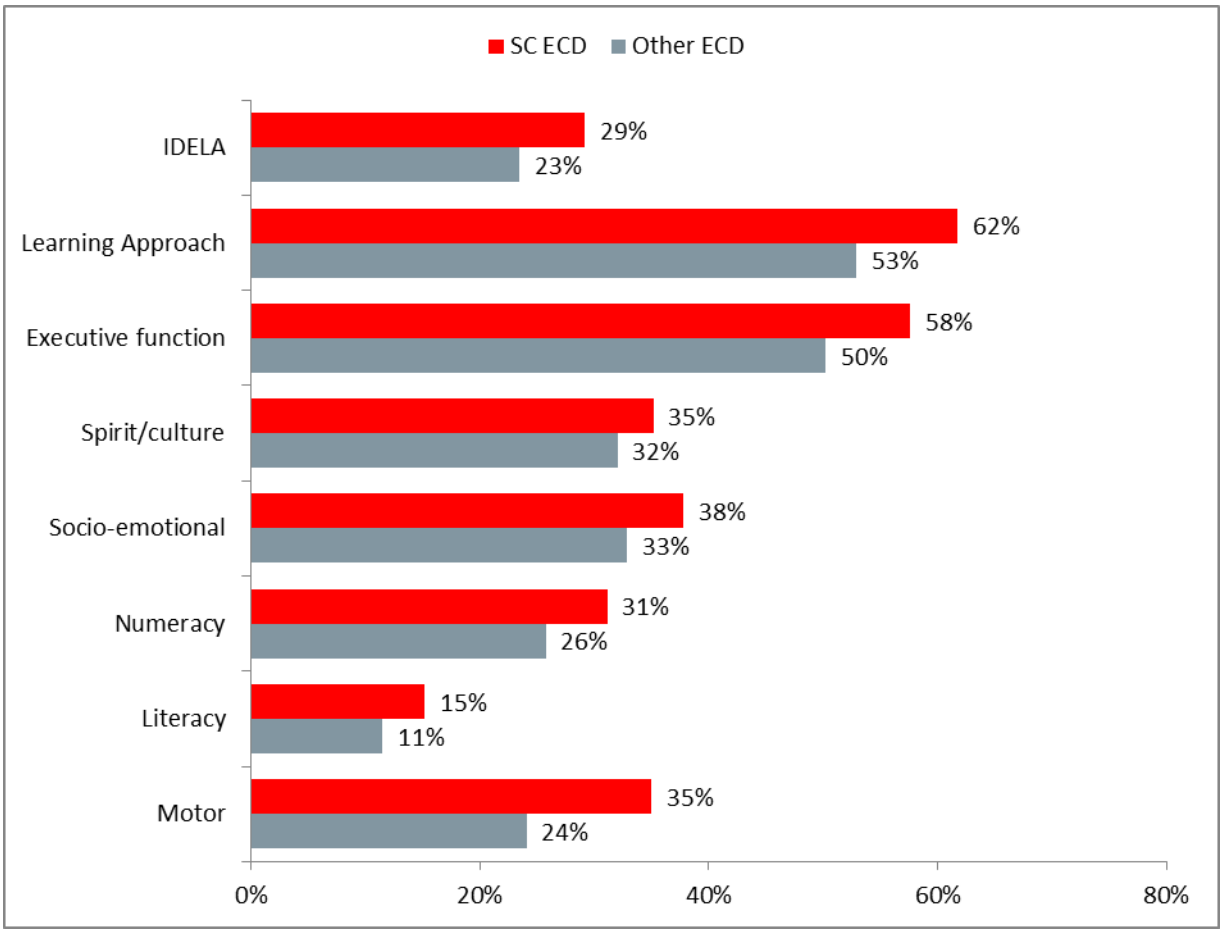
In addition, we see strong relationships between the home learning environment (HLE) in children's homes and their early skills, especially as children get older. Figure 14 displays that the gap in learning between children with strong and weak HLE expands as children mature. As you can see in the figure, data show that all children start at about the same low score on the assessment when they're very young (age 3), but for the older children who have more skills we can see the widening gap between those who have more learning support at home and to those who have less.

Figure 14. Relationship of HLE with child development by age



Finally, two interesting findings were also that children who speak Khengkha at home tended to have weaker early skills motor development and emergent literacy compared to children speaking other languages at home, and children in Save the Children ECCD centers had significantly more advanced motor, literacy, numeracy and overall skills than children in other ECCD programs, after controlling for the key background characteristics discussed above. Full regression results are shown in Appendix B.

Figure 15. SC ECCD Centers compared to other ECCD programs, controlling for background characteristics



Conclusions

In summary, this baseline study reveals many interesting pieces of information for future programming and considerations for the follow-up study. First, both child and caregiver information clearly display that children in private ECCD centers are more advantaged than their peers who are not enrolled in these centers. As most centers as located in urban areas it follows that children in urban areas are also found to have relatively more advanced skills than children in rural areas. Families enrolling their children in corporate ECCD centers also show some family advantages over children in other groups, but overall all groups other than private appear comparable for future analysis of learning growth. It is interesting to note also that children in SC ECCD centers have more advanced early learning skills than children in other groups despite not having more family resources even at the beginning of the school year.

When reviewing relationships between family characteristics and child development, home learning environment emerges as a strong predictor of early skills. Unlike other background characteristics like socioeconomic status and parental education, HLE is actionable by groups implementing parenting education programs.

Recommendation for follow-up data collections and endline assessment

1. **Follow up data collection on quality**

- Training of the monitors for data collection on quality and communicating linkages between quality data collection to National ECCD Impact Evaluation study.
- Provide a guideline for monitors on data collection and submission.
- Ensure Intensive involvement from MoE & SCI for Quality data verification.

2. **Cost analysis**

- Finalize the template for data collection and orient MoE ECCD focal persons to facilitate the collection of data.
- Ensure that factual data is collected and data verification for data quality is done.

3. **Endline**

- Hire only 18 enumerators, 3 per team. The learning from the baseline data collection is that three enumerators will be able to complete data enumeration of 15 children and parents in 5 hours time. It takes about 20 minutes per child and 10 to 15 minutes per adult. The supervisors must assist the enumerators in interviewing parents/caregivers but not children.
- Thimphu being the major urban town where almost all the parents/caregivers are working and can participate only on certain time of the day which can extend from 8.30 AM to 6.00 PM, it is recommended that all teams should be mobilized to complete the enumeration in Thimphu first and then move to other eight districts.
- Send the list of the children as well as parents/caregivers from the baseline to all the centres with a request that listed children and parents will be required to participate for endline study.
- Develop data enumeration plan at least a month in advance of the enumeration starting date and communicate this to the District governors and District Education Officer for completing logistical arrangements.
- Inform and explain the process of data collection to the centre in-charges at least three days before the actual day of data enumeration. Clearly communicate to them the assistance that you are expecting from them such as informing the parents/care givers (those who participated in baseline) to be present on the day of data enumeration.

Appendix A.

Table A1. Internal consistency

Internal consistency	Alpha
Motor	0.90
Numeracy	0.83
Literacy	0.79
Socio-emotional	0.90
Spirit/culture	NA
Executive function	0.87
Learning Approach	0.96
IDELA	0.94

Note: Overall IDELA internal consistency measure does not include spiritual/cultural/moral items or learning approach items.

Appendix B

Table B1. Multivariate regression with equity factors, all ECCD centers

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Motor	Literacy	Numeracy	Socio-emotional	Executive function	Spiritual	Approach to learning	IDELA
Child age	0.158***	0.0772***	0.0885***	0.0906***	0.137***	0.127***	0.105***	0.104***
	(0.0253)	(0.00989)	(0.00954)	(0.0166)	(0.0141)	(0.0197)	(0.0146)	(0.0124)
Home language: Khengkha	-0.0476*	-0.0389*	-0.0298	-0.0550	-0.0547	-0.0260	0.0136	-0.0405*
	(0.0185)	(0.0115)	(0.0144)	(0.0271)	(0.0289)	(0.0270)	(0.0317)	(0.0128)
Dad education	0.0125	0.0133**	0.00894	0.0102	0.0114	0.0212*	0.0140*	0.0122*
	(0.00637)	(0.00264)	(0.00423)	(0.00652)	(0.00681)	(0.00655)	(0.00569)	(0.00376)
SES Quintile (z-score)	0.0198**	0.0113***	0.00911	0.0141**	0.0183*	0.0195*	0.0133*	0.0140***
	(0.00509)	(0.00201)	(0.00485)	(0.00368)	(0.00553)	(0.00763)	(0.00401)	(0.00218)
# home learning activities	0.0140*	0.00729	0.00755*	0.0148**	0.0170*	0.0242**	0.0147***	0.0123**
	(0.00545)	(0.00318)	(0.00227)	(0.00346)	(0.00533)	(0.00490)	(0.00289)	(0.00307)
# toy types	0.0120*	0.00943**	0.0117*	0.00664	0.0114	0.00614	0.00441	0.00966*
	(0.00491)	(0.00261)	(0.00420)	(0.00393)	(0.00721)	(0.00799)	(0.00396)	(0.00311)
ECCD type	-0.00783	-0.00654**	-0.00939*	-0.00760	-0.0129**	-0.00396	-0.00566	-0.00784*
	(0.00493)	(0.00158)	(0.00284)	(0.00444)	(0.00359)	(0.00514)	(0.00395)	(0.00271)
Constant	-0.615***	-0.301***	-0.227***	-0.211*	-0.447***	-0.294*	-0.0738	-0.322***
	(0.105)	(0.0403)	(0.0409)	(0.0709)	(0.0731)	(0.111)	(0.0825)	(0.0526)
Observations	1,144	1,144	1,144	1,143	1,144	1,144	1,144	1,143

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Motor	Literacy	Numeracy	Socio-emotional	Executive function	Spiritual	Approach to learning	IDELA
R-squared	0.253	0.277	0.213	0.177	0.190	0.155	0.178	0.317
Adjusted R-squared	0.249	0.272	0.208	0.172	0.185	0.150	0.173	0.313

Robust standard errors in parentheses

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

Table B2. Multivariate regression with equity factors and SC Center

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Motor	Literacy	Numeracy	Socio-emotional	Executive function	Spiritual	Approach to learning	IDELA
Child age	0.153***	0.0754***	0.0860***	0.0884***	0.134***	0.124***	0.102***	0.102***
	(0.0248)	(0.0010)	(0.0104)	(0.0170)	(0.0149)	(0.0196)	(0.0142)	(0.0128)
Home language: Khengkha	-0.0736**	-0.0472**	-0.0417*	-0.0662*	-0.0603	-0.0436	-0.00753	-0.0537**
	(0.0153)	(0.0121)	(0.0150)	(0.0213)	(0.0304)	(0.0236)	(0.0241)	(0.0098)
Dad education	0.0124	0.0137**	0.00947	0.0106	0.0125	0.0211*	0.0139*	0.0126*
	(0.00628)	(0.00275)	(0.00425)	(0.00656)	(0.00707)	(0.00679)	(0.00557)	(0.00386)
SES	0.0197**	0.0111***	0.00876	0.0139**	0.0176*	0.0195*	0.0133*	0.0137***
	(0.00561)	(0.00206)	(0.00511)	(0.00332)	(0.00645)	(0.00747)	(0.00413)	(0.00236)
# home learning activities	0.0134*	0.00740*	0.00770*	0.0149**	0.0177*	0.0238**	0.0142**	0.0123**
	(0.00530)	(0.00308)	(0.00237)	(0.00375)	(0.00536)	(0.00520)	(0.00304)	(0.00308)
# toy types	0.0128*	0.0094**	0.0124*	0.00725	0.0122	0.00657	0.00499	0.0103*
	(0.00493)	(0.00270)	(0.00421)	(0.00411)	(0.00719)	(0.00803)	(0.00416)	(0.00327)
SC Center	0.108*	0.0368*	0.0527*	0.0488	0.0301	0.0718	0.0869	0.0571*
	(0.0459)	(0.0144)	(0.0202)	(0.0291)	(0.0183)	(0.0670)	(0.0401)	(0.0223)
Constant	-0.628***	-0.319***	-0.253***	-0.231*	-0.488***	-0.298*	-0.0820	-0.342***
	(0.104)	(0.0408)	(0.0409)	(0.0724)	(0.0704)	(0.101)	(0.0820)	(0.0539)
Observations	1,144	1,144	1,144	1,143	1,144	1,144	1,144	1,143

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Motor	Literacy	Numeracy	Socio-emotional	Executive function	Spiritual	Approach to learning	IDELA
R-squared	0.260	0.273	0.208	0.176	0.184	0.158	0.184	0.316
Adjusted R-squared	0.256	0.269	0.204	0.171	0.179	0.153	0.179	0.312

Robust standard errors in parentheses

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