

REPORT

INTERNATIONAL DEVELOPMENT AND EARLY LEARNING ASSESSMENT QUALCOMM PROJECT

Background & Objectives

Save the Children, as one of leading agency working for child-right including in education around the globe, was working for ECCD in many years. Many approaches that have been developed and implemented to achieve the goal of ECCD that have impact to children development. These approaches are need to be equipped with a reliable, accessible, and feasible tools to measure the impact of ECCD programming. In line with the need of reliable tools to evaluate the ECCD program, in 2011 Save the Children started to develop comprehensive tools for this purpose.

International Development and Early Learning Assessment (IDELA) or formerly named School Readiness Assessment (SRA) is a comprehensive tool to measure child development outcomes. This tool allows Save the Children to evaluate ECCD program activities based on the result of learning. The IDELA was started to developed by Save the Children based on lesson learned from years of early childhood programs and designed to have twofold of goals; (1) to provide accessible and feasible measures of children's early learning and development and; (2) to provide programs, as well as ministries, with ongoing data to reflect, analyze, and improve practices.

In Save the Children PLAY FOR LEARNING project context, IDELA is a standard tool for measuring the strategic objectives of PLAY FOR LEARNING - ECCD programming. By using this tool, PLAY FOR LEARNING project will be able to collect information as follows:

1. Children development status based on 4 child development domains; (1) Physic-motoric; (2) Language and literacy; (3) Socio-emotional; and (4) Cognitive and Numeracy.
2. Percentage Increased of students at the beginning of the year of ECCE's centers who achieved 50 % on at least two domains of IDELA assessment (early literacy & math)
3. The gap on Children Development Status; what are the critical domains to be improved by PLAY FOR LEARNING -ECCD program intervention in the end of project period.
4. Caregivers practices to support children early literacy and math development

In the Monitoring Evaluation Accountability and Learning (MEAL) context, the result of this study will become point of measurement to be compared with the results of project intervention at the end of this project.

Methodology and sampling

In this assessment, we will measure individual children with IDELA tools and using the compiled data to get description of developmental status of children who enrolled in Play for Learning ECCD centers and children who enrolled in Non-intervention ECCD centers. In the analysis process, descriptive Analytic method will be applied to get the percentage of children who able to complete certain task in IDELA assessment and the average of children score in developmental domains. As a baseline, this study also designed to accommodate project evaluation indicators, by using comparative analysis to two group of children; (1) those who enrolled in Qualcomm Play for Learning project ECCD centers as intervention group; and (2) those who enrolled in other ECCD centers (non-targeted ECCD centers) as control group.

Beside to measure the learning outcomes of children, a small survey to caregivers are applied to see the description on how caregivers or parents support early literacy and math development at home. As results of this study, the data will be used as comparison point to be compared with the results of the project at the end of this year, as well as to develop recommended strategy for the project.

To get reliable data, purposive random sampling techniques have been applied in the sampling process. This approach will allow researcher to select children who meet in the core criteria of the study as follows:

1. For intervention group, the sampling will be selected from children age 3.5, 4, and 5 years old who enrolled in Qualcomm Play for Learning targeted ECCD centers
2. For control group, the sampling will be selected from children age 3.5, 4, and 5 years old who enrolled in non-targeted ECCD centers in Belu.

	Intervention			Control		
	Boy	Girl	Total	Boy	Girl	Total
Children	60	59	119	53	61	114

90% Confident Interval, 80% power of detecting, and assumption that 30% children in control group exposed with intervention, and ratio between intervention group and control group is 1:1.

Primary Findings

I. Motoric Development

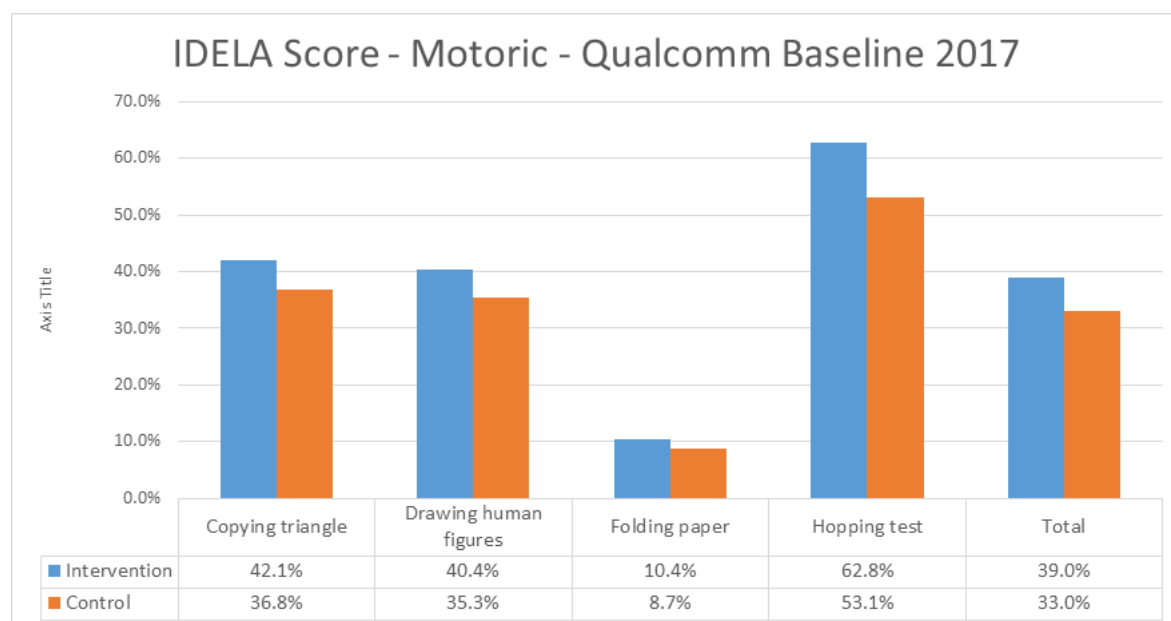
Motoric Development is child's ability to control body movement and respond to their environments. This gradual and individual process are begin to develop even before birth. During ages, children develop their skills to control their muscles and creating controlled movements to help them do many things from eating to walking. With right stimulation, children will develop their motoric skills that help them to survive at school.

In children development perspective, motoric development divided into two; (1) gross motoric, and; (2) fine motoric. Gross motoric skill is the ability of children to control body movements which involve large muscles such as walking, running, and jumping, while the fine motoric skills is the ability of children to control their fingers to do some specific and accurate movements.

In IDELA, the motoric skill development have been measured by 4 tasks; (1) copying triangle; (2) drawing human figures; (3) folding paper, and; (4) hopping with one leg. From the assessment, we

found the motoric skills of children from intervention schools and children from control schools are not different. The average scores of children from intervention schools are higher than children from control schools, 39% versus 33%. They also more advance on 4 motoric tasks. On copying triangle and drawing human figures, the average scores of children from intervention schools is more than 40%, while score for those who came from control schools are below 37% on these two tasks. For folding paper task, children from intervention schools have 10.4% for their average scores, while children from control schools only 8.7%. And for gross motoric test (hopping with one leg), the average score for children from intervention schools is much higher than the average score of those who came from control schools, 62.8% versus 53.1%.

Figure I. IDELA scores on Motoric Development



The IDELA assessment also reveals that the fine-motoric skills of both children from intervention and control schools are still weak. From these 3 fine-motoric skills tests, we found that the accuracy of both children groups are still low. On the copying triangle test, we identified only 25% children from intervention schools and 24% children from control schools who able to finish this task with accurate result (drawing results looks like triangle with 3 edges joined). On drawing human figures, only 12% children from intervention schools and 8% children from control schools who able to drawing complete human figures. And for folding paper task, only 8.8% children from intervention schools and 9.2% children from control schools who able to accurately folding a paper.

Table I. Accuracy for fine-motoric test

<i>% of children with accurate accomplished task</i>	<i>Copying triangle</i>	<i>Drawing human figures</i>	<i>Folding paper</i>
<i>Intervention</i>	25%	12%	8.8%
<i>Control</i>	24%	8%	9.2%

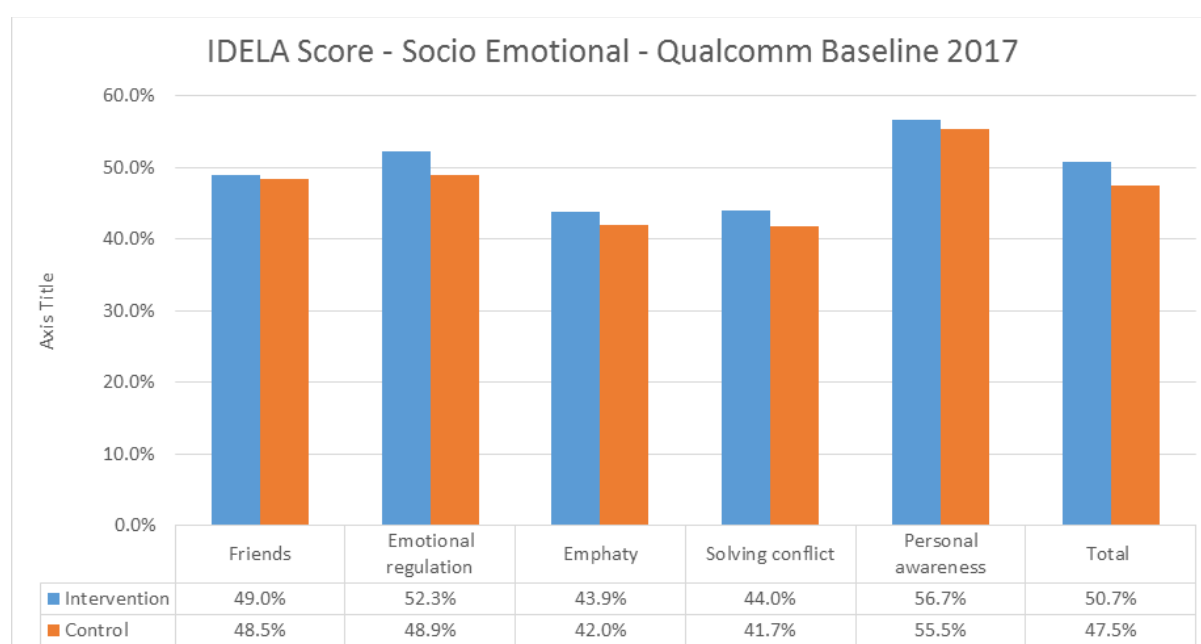
The statistical examination using T-test found it is not convincing enough to say the average scores of motoric development of children from intervention and control schools are significantly different, with P-value 0.068 and 95% Confident Level.

2. Socio Emotional Development

Socio-emotional development is important to ensure children positive self-image and skill of self-control that required to develop good interaction to their environment. In school, this domain will help children to interact with their friends and teachers that will allow them to receive and build positive learning environment.

In IDELA, we measure children’s socio emotional development by using several tests; (1) social circle (friends); (2) Emotional regulation; (3) Empathy; (4) Conflict resolution; and (5) Self-awareness test.

Figure 2. IDELA scores on Socio Emotional Development



The IDELA test found that the average of total IDELA score of children from intervention schools is higher than children from control schools. The table above also showing that the children from intervention schools are more advance on all socio-emotional test. The table also showing that the score of both children from intervention and control schools on socio emotional is quite surprising, considering ages of children who involved in this test is quite young. The highest scores are in the personal/ self-awareness test, which both children from intervention and control schools have average score more than 55%.

Go deeper into details, we found that % of children who able to regulate sad emotion (able to identify sad emotion and know at least one way to get better) in both from intervention and control schools is around 42%. For empathy test, % of children who able regulate empathy (know other’s feeling and know at least one way to get other’s feeling better) in control group is higher than children in intervention schools, 42% versus 40%. While in solving conflict test, we found % of children who able to provide two ways to solving conflict in intervention group is higher than in control group, 28.1% for intervention group and 17.6% for control group.

Table 2. % of children with socio-emotional skills

Socio-emotional skills	Regulate sad emotion	Empathy	Solving conflict
Intervention	42.1%	40.4%	28.1%
Control	42.0%	42.0%	17.6%

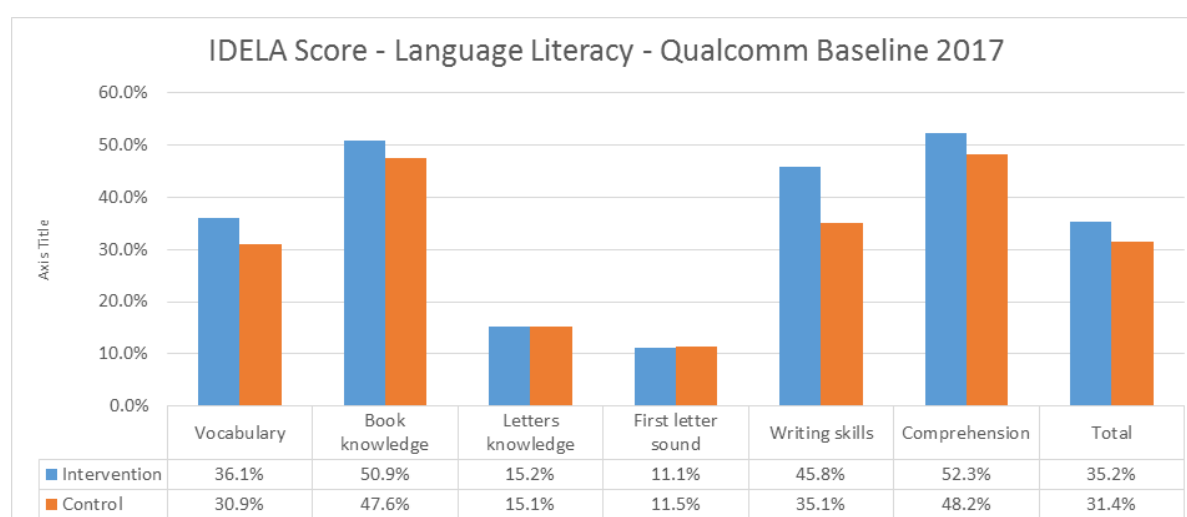
The statistical test using T-test found that there is no different between the average IDELA score of those who came from intervention schools and those who came from control schools on socio emotional development, with P-value 0.214 in 95% Confidence level.

3. Language & Early Literacy Development

Language and literacy is an essential key for learning, communicating, and building relationship with others. Good language and literacy skill will support children in their learning, ensure their understanding, and help them to improve their social-relationship with others. Language and literacy skills also help children to survive in school.

In IDELA, the language and literacy skills measured by some components; (1) Expressive Vocabulary; (2) Book knowledge; (3) Letters knowledge; (4) First letter sound; (5) Writing skills; and (6) Mature grip. In the expressive vocabulary test, children were asked to mention food's name that they can buy at the market and animal's name at their neighborhood, as many as they can (maximum recorded 10 words). This test will help us to know how rich are children vocabulary. The study found that IDELA score for children from intervention schools is higher than those who came from control schools, 36% versus 31%, but these scores are not good enough considering the average numbers of vocabulary that could be mentioned by children is very limited. Children from intervention schools only able to mentioned 4 food names and 3 animal names on average, while children from control schools only able to mentioned 3 food names and 3 animal names on average.

Figure 3. IDELA scores on Language and Early Literacy Development



On book knowledge test, children who came from intervention schools have higher IDELA scores than children who came from control schools. This findings are in line with the results of caregivers/ parents survey. Caregivers/ parents survey found that children from intervention schools are more exposed to books and activity with books than children from control schools.

Table 3. Exposure to book and reading activities

Exposure to book	<i>Control</i>	<i>Intervention</i>
<i>Mothers involve in reading activities with children</i>	25%	26%
<i>Fathers involve in reading activities with children</i>	15%	20%
<i>Story book available at home</i>	41%	67%
<i>Fathers can read</i>	94%	81%
<i>Mothers can read</i>	93%	88%
<i>Average number of type of books available at home</i>	3	4

The table above show that % of children from intervention schools who involved in reading activities with both fathers and mothers in the last 3 days are higher than children from control schools. Children from intervention schools also have more access to story books at home. In contrast, in term of reading skills of parent, parents of children who came from controls schools are better.

In letters knowledge, both children from intervention and control schools have very limited IDELA scores, only around 15%. Both children from intervention and control schools only able to identify 3 of 20 letters on average. In contrast, the caregiver survey reveals that % of parents who have engaged with their children to introduce new letters in the past 3 days is quite high. 64% parents of children from control schools and 77% parents of children from intervention schools (father or mother, at least one) mentioned that they have spent their times to introduce new letters to their children in the past 3 days. These also happened in the first letter sound test. Both children from intervention and control schools got very low IDELA scores in the first letter sound test, only around 11%.

Furthermore, children from intervention schools gained 45% IDELA scores on IDELA scores, while those who came from control schools only 35%. The % of children who able to write their names in intervention group is only 20%, while 18% in the control group. These figures show that the writing skills of these children are still limited. Another findings related writing skills is the way children hold pencil. 77% children from intervention schools and 64% children from control schools are able to do mature and correct pencil grasp.

Another literacy skill that have been assessed in IDELA is listening comprehension skills. In this test, the assessor told a story to children and asked some questions to see whether children are understand the story or not. Based on the assessment, we found that the score of listening comprehension test for children from intervention schools is 52.3%, while for those who came from control schools is 48.2%.

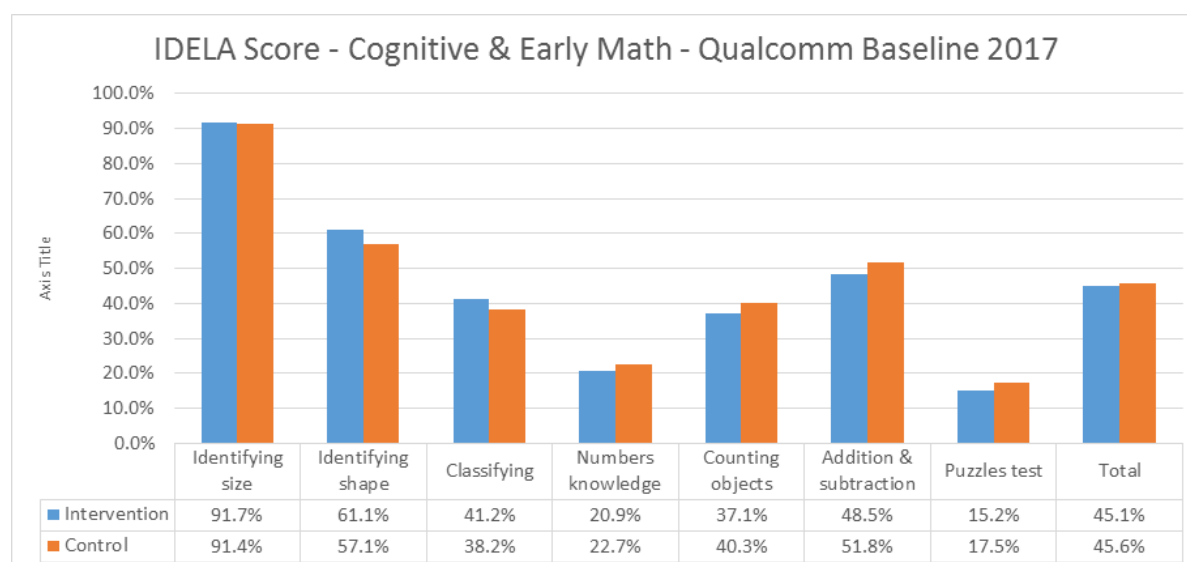
The statistical examination using T-test found that there is not convincing enough to say that the average IDELA score on language and literacy of children from intervention schools and children from control schools are significantly different, with P-value 0.148 in 95% confidence level.

4. Cognitive & Early Math

Cognitive and early math development is important to be stimulated during early childhood. These skills will help children to understanding reasons of anything, help them in their life planning with accurate calculation and decision making, and to develop their logical thinking skills. In this domain, the IDELA have prepared some tasks to be done by children such as; (1) identifying size and shapes; (2) classifying things; (3) numbers knowledge; (4) counting, addition, and subtraction; and (5) puzzle solving.

In total, we found that the average IDELA scores for those who came from control schools are a bit higher than for those who came from intervention schools. But in detail, children from intervention schools are more advance on identifying size, identifying shapes, and classifying things, while children from control schools more advance on numbers knowledge, counting objects, addition and subtraction, and puzzle test.

Figure 4. IDELA scores on Cognitive & Early Math Development



The table above show us that the highest scores on cognitive and early math is on identifying size test, which both children from intervention schools and control schools reached more than 90% IDELA score on this test. Unfortunately, for the numbers knowledge test, both groups have low IDELA score, only around 20%. This mean that knowledge on numbers among assessed children are still limited. From the test, we can see that the average number of numbers that can be identified by children from intervention schools is only 5 of 20 numbers and 4 of 20 numbers for those who came from control schools.

The statistical examination using T-test showed that the IDELA scores of children from intervention schools and children from control schools are not different, with P-value 0.851 in 95% Confidence Interval.

5. Executive Function

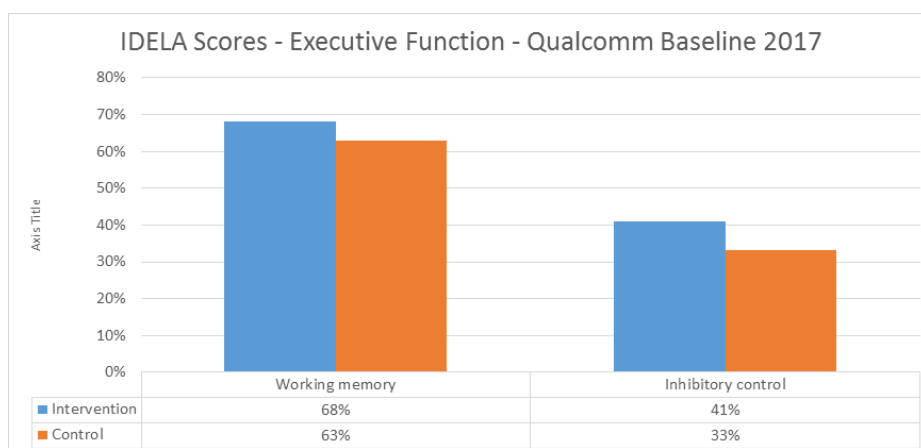
Executive function skills are the mental processes that enable us to plan, focus attention, remember instructions, and juggle multiple tasks successfully. Just as an air traffic control system at a busy airport safely manages the arrivals and departures of many aircraft on multiple runways, the brain needs this skill set to filter distractions, prioritize tasks, set and achieve goals, and control

impulses¹. Executive function skills depends on three types of brain function; (1) working memory; (2) mental flexibility; and (3) self-control.

In IDELA, executive function included in the socio-emotional development, although these skills are seems like multi-tasking skills which include motoric, socio-emotional, language, and cognitive development. There are two tests in IDELA to measure the executive function skills of early children; (1) Working memory test; and (2) Inhibitory control test.

In working memory test, children were told a list of numbers and asked to repeat the numbers in the same order. In this test, we found that the average IDELA score for children from intervention schools are higher than for those who came from control schools, 68% versus 63%.

Figure 5. IDELA scores on Executive Function



The inhibitory control test will measure the mental flexibility skill and self-control skill. In this test, children were asked to follow two-part games. In the first part, children were asked to follow the instruction, when the assessor say head, then children should touch their heads. In the second part, children were asked to do the opposite of the instruction, when the assessor say head, children should touch their toes, instead their head. The changing of rules in the game will test their mental flexibility – or their skills to apply different rules on different setting, while the second part game – playing opposite game, will test their self-control – or their skills to set priorities and resist impulsive actions/ response. In this test, we found that the children from intervention schools gained 41% IDELA score, while children from control schools only 33%.

Table 4. T-test results on Executive Function test

<i>Executive function test</i>	<i>P-value T-Test (95% CI)</i>
<i>Working Memory</i>	0.1600
<i>Inhibitory Control</i>	0.0791

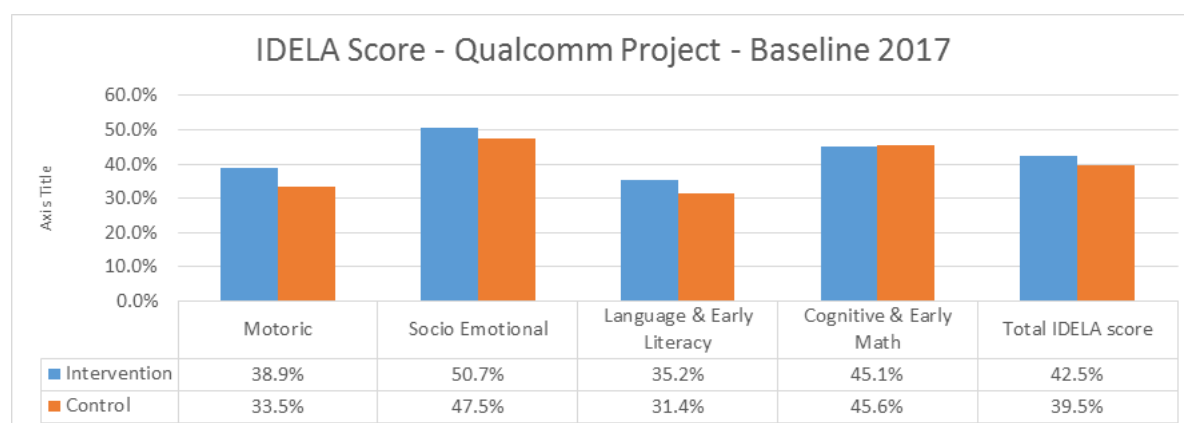
The statistical examination using T-test toward those two executive function test showing that the executive function of both children from intervention schools and children from control schools are not significantly different.

¹ <http://developingchild.harvard.edu/science/key-concepts/executive-function/>

I. Children development status based on 4 child development domains; (1) Physic-motoric; (2) Language and literacy; (3) Socio-emotional; and (4) Cognitive and Numeracy.

From the primary findings we can conclude that the lowest average score for assessed domains in IDELA is language and early literacy, while the highest average scores for assessed domains in IDELA is socio-emotional. From the table below, we can see the total average score for early literacy is only 35.2% for children from intervention schools and 31.4% for children from control schools. The second lowest of the IDELA average score is in the motoric domain, which only 38.9% for children from intervention schools and 33.5% for children from control schools.

Figure 6. IDELA scores on domains



In Cognitive & Early Math, both children from intervention and control schools were doing very good job, their average score for this domain is quite good, more than 45% for both of them. And for the Socio-emotional development, the average IDELA score for children from intervention schools is 50.7%, while for children from control schools is 47.5%. This total average IDELA score for socio-emotional development is include the executive function.

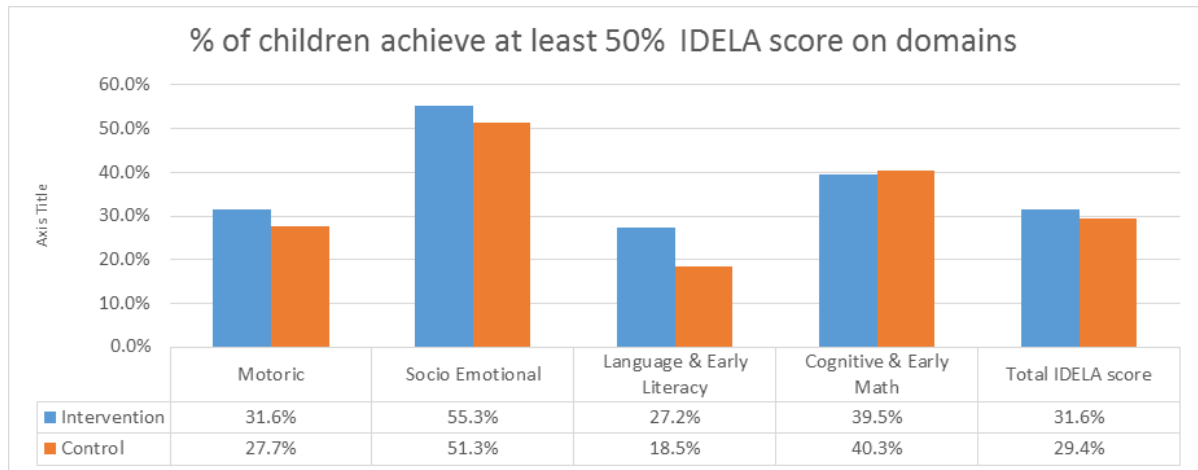
In total score, children from intervention school gained 42.5% average IDELA score while children from control school only 39.5% average IDELA score. Although the total IDELA score of children from control school seems lower than total IDELA score of those who came from intervention school, but the result statistical examination through T-test showing it is not convincing enough to say that the total average IDELA scores of children from intervention schools and children from control schools is significantly different, with P-value 0.195 in 95% Confidence Level.

2. Percentage Increased of students at the beginning of the year of ECCE's centers who achieved 50 % on at least two domains of IDELA assessment (early literacy & math).

Based on the analysis results of the IDELA, we found more than a half of children achieved 50% score on the socio-emotional development. 39.5% children from intervention schools and 40.3% children from control school achieved 50% score on the cognitive and early math development. On the motoric development, there are 31.6% children from intervention schools and 27.7% children from control schools who achieved 50% score, while only 27.2% children from intervention schools and 18.5% children from control schools who have achieved 50% score on

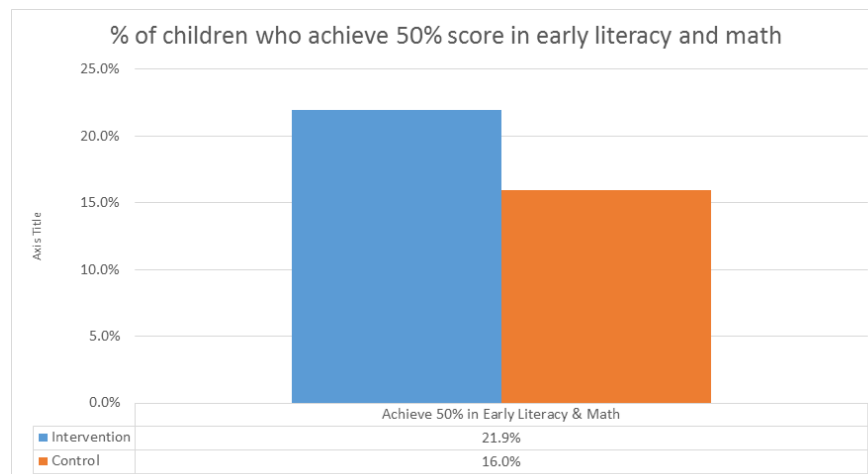
the language and literacy development. On the total score, only 31.6% children from intervention schools and 29.4% children from control schools who achieved 50% total IDELA score.

Figure 7. % of children who achieved at least 50% IDELA score on domains



In this study, we also look at to children who have achieved 50% in language & early literacy and cognitive & early math development. This information will give clear basic information for early literacy and math programming in Belu, especially for *Qualcomm Play for Learning* project. From the assessment results, we found only 21.9% children from intervention schools and 16.0% children from control schools who have achieved 50% IDELA score on language/ early literacy and cognitive/ early math development.

Figure 8. % of children who achieved at least 50% IDELA score on language/ early literacy & cognitive/ early math development.



3. The gap on Children Development Status; what are the critical domains to be improved by PLAY FOR LEARNING -ECCD program intervention in the end of project period.

From the results of IDELA, we can make conclusion that the language/ early literacy is the critical domains to be improved by *Play for Learning* project. If we look with more detail on this domain, we found that the knowledge of children regarding letters are still limited. Both children from intervention schools and control schools only able to identify 3 of 20 letters on average. Even worst, we found there are 47% children from intervention schools and 51% children from control schools who unable to identify letters at all.

Another domains that critical to be improved is motoric development, particularly on fine-motoric development, which from the IDELA assessment we found it was very low. More than 75% assessed children both from intervention schools and control schools were unable to accomplishing fine-motoric tasks with accurate results.

Both letters knowledge and fine-motoric development are related to children’s writing skills, we can assume that the children’s weakness on letters knowledge and fine-motoric development is a causative factors why only 20% children from intervention schools and 18% children from control schools who able to write their names accurately. The Chi-square analysis found that there are correlation between letters knowledge and accurate writing skill, with P-value 0.000 in 95% confidence level. Odds ratio value on this analysis also found that children who able to identify at least 10 letters is 14 times more likely to been able to write their name accurately. Furthermore, the Chi-square analysis also found that there are correlation between accurate folding paper skill and accurate writing skill, with P-value 0.000 (fisher exact) in 95% confidence level. Children who able to fold a folding paper accurately in the assessment are 5.7 times more likely to been able to write their names accurately.

Table 5. Chi-square results on relationship of writing skills with letters knowledge and fine-motoric skills

Variables	Able to write names accurately		Chi-square P-value in 95% CI	OR value
	Yes	No		
Able to mention at least 10 letters	65.6%	34.4%	0.000	14.080
Able to folding a paper accurately	52.4%	47.6%	0.000	5.759

Although in the total score of Cognitive & early math development both children from intervention and control schools seems quite promising, but they have limitation on the particular early math skills, such as puzzle solving, numbers knowledge, and counting skill. These skills also critical to be improved by Play for learning project in Belu, since these skills is very important in their learning in primary school. For the numbers knowledge, this assessment found that only 9.6% children from intervention schools and 10.9% children from control schools who can identify numbers 1 to 10 correctly. Even worst, there are 30.6% children from intervention schools and 29.4% children from control schools who were not able to identify numbers 1 to 10 at all.

4. Caregivers practices to support children early literacy and math development.

Many studies have been proved that the caregivers or parents practices at home is enabling factors for child developments. The engagement of parents to children’s playing time is critical to improve their skills on cognitive, language, socio-emotional, and motoric development.

In this IDELA, 81 parents/ caregivers of children from intervention schools and 81 parents/ caregivers of children from control schools have been surveyed to see the trend of parenting practices of parents in Belu district. These information will help us to understand how parents in Belu providing support for child development at home.

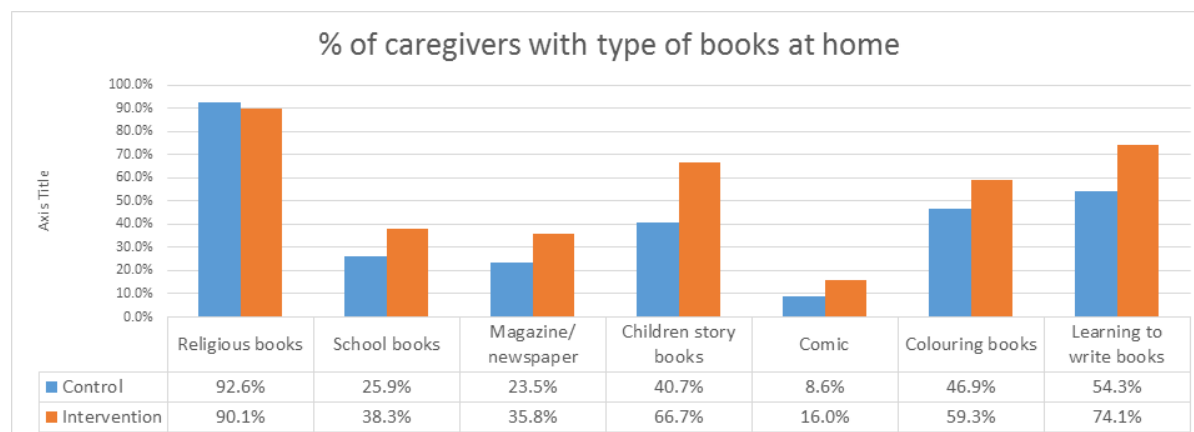
From the survey, we found that the average hours for mothers to spend their time with children for playing, chatting, or go out together is only 3.2 hours for mothers of children from intervention schools and 2.7 hours for mother of those came from control schools. Meanwhile, the average hours that fathers spent with their children for playing, chatting, or go out together is only 2.1 hours for father of children from intervention schools and 1.7 hours for father of children from control schools. We also found that children spent their time alone more than 1 hour a day on average.

Regarding to parents literacy rate, the survey found that 94% fathers and 93% mothers of children from intervention schools can read, while there are 81% fathers and 88% mothers of children from control schools who can read. Although the proportion of mothers who can read is lower than fathers, the caregiver survey found that all literacy and math supporting activities with children are dominated by mothers. From the survey results, there are 25% respondents from control schools and 26% respondents from intervention who mentioned that mother were involved in reading activities with children in the past 3 days, while only 15% respondents from control schools and 20% respondents from intervention schools who mentioned that father were involved in reading activities with children in the past 3 days. We also found that there are 54% respondents from control schools and 65% respondents from intervention schools who mentioned that mother were involved in activities to introduce letters and numbers to children in the past 3 days, while only 46% respondents from control schools and 53% respondents from intervention schools who mentioned that father were involved in activities to introduce letters and numbers to children in the past 3 days. Mothers also dominating other literacy and math supporting activities such as singing with children, telling stories, and counting with children.

Table 6. Parents practices to support early literacy and math in the past 3 days

Parents practices to support early literacy & math in the past 3 days	Control	Intervention
<i>Mothers involve in reading activities with children</i>	25%	26%
<i>Fathers involve in reading activities with children</i>	15%	20%
<i>Mothers introduce letters and numbers</i>	54%	65%
<i>Fathers introduce letters and numbers</i>	46%	53%
<i>Mothers singing with children</i>	62%	60%
<i>Fathers singing with children</i>	43%	49%
<i>Mothers telling stories to children</i>	32%	32%
<i>Fathers telling stories to children</i>	21%	19%
<i>Mothers teach children how to counting</i>	62%	67%
<i>Fathers teach children how to counting</i>	51%	57%

The availability of children’s books at home also became an enabling factors to improve children’s literacy skills. From the survey, we found that children access to books is very limited. The caregiver survey reveals that the most available type of book at home is religious book (The holy bible or Quran), while for children appropriate books such as story books are still limited.



The table showing us that the percentage of caregivers from intervention schools who mentioned that they have children story books at home is quite high, reaching more than 60%, while caregivers from control schools who mentioned that they have children story books is only 40%. Caregivers who mentioned that they have coloring books or learning to write books both from intervention schools and control school is quite promising, reaching more than 45%. Unfortunately, the variety of books available at home is very low. There are a half of caregivers from control schools who mentioned that they only have maximum one type of children books at home, while there are 31% in caregivers from intervention schools.

Recommendation

From the survey, we can conclude that children from intervention schools were more advance than children from control schools on most development domains. Unfortunately, literacy is the least developed domain for children from both intervention and control schools. We also found that only 27.2% children from intervention schools who have reached at least 50% average scores on language and literacy development test in IDELA. The challenges on language and literacy development came from the limited skills of children on letters knowledge, first letters sound, vocabulary and writing skills. These four tests were the most difficult test for children. In the other side, we found the support of mothers and fathers in reading activities was very limited, only 1 of 4 caregivers who mentioned that mothers or fathers have been involved in reading activities with children in the past 3 days. With these findings, we can conclude the recommendation to improve children’s language and literacy skills through:

1. Build awareness of caregivers on the importance of engagement with children, including in the reading related activities.
2. Strengthen caregiver capacity on how to create activities with children, especially to introduce letters to children and how to create print rich environment at home using local and available materials.

3. To improve access of children to books, children's book provision for ECCD centers also important to ensure that children have access to various children appropriate books. Creating print rich environment in ECCD centers also important to improve children's letters knowledge and reading skills.

Fine motoric development also become a major gap for children both from intervention and control schools. The accuracy to do fine motoric movements of children seems weak. We found there are only 8.8% of children from intervention schools and 9.2% of children from control schools who able to complete folding paper test with accuracy. In the other side, this specific and accurate fingers movements is important to support children's writing skills. The Odd-ratio on Chi-square examination have conclusively finding that showing the children who able to fold a folding paper accurately in the assessment are 5.7 times more likely to been able to write their names accurately. With these findings, we can give some recommendation for Qualcomm project as follows:

1. Promote toys and games which stimulate fingers movement and accuracy.
2. Provision of toys and materials in ECCD centers to support fine-motoric development.
3. Build capacity of parents or caregivers on how to support children's fine motoric development at home using local materials and games.

On the Cognitive and Early Math development, numbers knowledge of children both from intervention and control schools seems weak. From the assessment, we found that only 11% of children from control schools and 10% children from intervention schools who able to recognize numbers 1 to 10. Even there are only 5% children in both intervention and control groups who able to recognize numbers 1 to 20. To address this gap, there are some recommendation for Qualcomm project:

1. Establish print rich environments in ECCD centers which stimulate numbers knowledge of children.
2. Provision of toys and materials which promote numbers knowledge for ECCD centers
3. Build capacity of parents/ caregivers and ECCD tutors on how to create activities at home and at ECCD centers which promote numbers knowledge.