



## Mozambique's Early Childhood Development Program



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**Rapid Assessment Data Analysis Report**  
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## 1. Executive summary

This report reviews results from the implementation of Extracts also known as named as Rapid Assessment of International Early Learning and Development Assessment (IDELA) Tool in Mozambique. Save the Children staff assessed 972 children in schools where Save the Children implements its Early Childhood Care and Development (ECCD) programs in rural areas of Xai Xai, Manjacaze in Gaza, Angonia, Changara in Tete and Erati, Memba in Nampula.

The Rapid Assessment results, paint a fairly positive picture of children's learning and development in the schools surveyed, and highlight the importance of learning opportunities in school and at home. We find that children who had attended an ECD program have significantly higher IDELA scores compared to their peers who had not accessed these services.

We find that the Rapid Assessment tool performs well in the context of locations where the data was collected. Internal consistency of the tool is strong (overall Cronbach's Alpha = .90). In addition, all domains were significantly and highly correlated with each other, with correlations between core domains ranging from a low of 0.533 (Concept about Prints) to a high of 0.770 between Emergent Literacy domains. The distribution of Total assessed domains scores is relatively normal, and does not appear to have substantial "ceiling" effects that would limit the utility of the instrument. Finally, IDELA domains exhibit the expected relationship with age and sex.

Only 93% of the entire sample was assessed due to fact that in some of the schools it was not possible to find 10 children who have been exposed or not to the ECCD. However, it was ensured a balanced number of those who attended and did not.

## 2. Introduction and Context

Founded in 1919, Save the Children International (SCI) is an International Non-Governmental Organization, leader in defending the rights of children, in more than 120 countries worldwide. SCI has been present in Mozambique since 1986 where it has been implementing projects in different developmental areas across the country such as emergency relief, repatriation of refugees, and rehabilitation of children in response to the long civil war.

Early Childhood Care and Development (ECCD) programs help ensure that young children fulfill their right to healthy development and education, and ultimately assist them in reaching their full potential.

There is mounting evidence from around the world demonstrating that the first years of life are critical in the development of children as they shape cognitive, social and language skills, as well as lifelong approaches to learning (Scarborough, 1998; Lonigan, Schatschneider & Westberg, 2008; Lonigan, Burgess & Anthony, 2000; Wagner, Torgesen, Rashotte, Hecht, Barker, Burgess, & Garon, 1997; Young Lives, 2010). Furthermore, children's early learning and development is directly related to their future academic success. Children who begin school with weak prior knowledge and skills in relevant emergent literacy domains, most notably general verbal abilities, basic phonological awareness, familiarity with the basic purposes and mechanisms of reading, and letter knowledge, are particularly likely to have difficulty with learning to read in the primary grades (Snow, Burns, & Griffin, 1998).

Reducing the number of children who enter school with inadequate early learning experiences is an important step toward preventing school dropout and later learning difficulties and enabling long-term school success (Engle et al, 2011). SCI is one of the partners supporting the Government of Mozambique to extend the reach and quality of essential services to disadvantaged children and their families in rural areas, through different projects. Save the Children has been implementing in Mozambique, Early Childhood Care and Development (ECCD) projects funded by a multitude of donors since 2004.

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.

SCI's extensive experience working in Mozambique in the education sector, including implementing ECCD projects were among the main reason for it being selected by Government of Mozambique, through Ministry of Education and Human Development as one of the implementing agencies of DICIPE (Integral Development of Pre-School aged Children) strategy.

Steemed from the lessons learned in Phases I and II of DICIPE strategy implementation, SCI is currently implementing the Phase III of the project that entails consolidating and strengthening the nationwide structure for management of community-based pre-schooling and to fortify the capacities and abilities of the set of actors to effectively manage this subsector of the system. The Phase III was specifically an incubation period in preparation for the transfer of preschool management from the service providers to the MINEDH and the multi-sectorial actors.

There is consensus that reliable measurement of early learning and development is needed. Assessment of early learning and development ensures that ECCD programs are accountable to families, communities, and donors. In addition, high-quality assessments help to demonstrate that investments in early childhood education are in fact affecting positive change in children's lives. It is thus with this objective that Save the Children conducted a Rapid assessment with the objective to measure the reading outcomes of children that participated on DICEPE phase III.

### **3. Methodology**

#### **3.1 Sampling design**

For this assessment, the project has adopted a purposive sampling design in order to allow effectiveness use of available resources including budget. The sampling methodology has considered the number of ECCD centres rather than the number of students per school. This approach has considered the following assumptions, a total of 210 ECCD Centres, Confidence level = 90% and Margin of Error  $\pm 10\%$

The sampling process have used the most conservative method assuming that in one of the province (Tete) might not be able to use equivalent data collection effort for this process.

The total Sample Size is not proportionally distributed considering the above assumption. With that said, the project have a sample size of 52 primary schools assessed, where 40 school was proportionally distributed between Gaza and Nampula and the remaining 12 for Tete.

At the child level the project have use purposive random sampling where in each School 10 children who attended ECCD and other 10 who did not, on those were randomly selected for the assessment. A table below shows the sampling distribution.

**Table 1: Sample Distribution**

District	Schools	Total sampled schools	Sample Children (No ECCD)	Sample Children (with ECCD)	Total Sample Children
Gaza	70	20	200	200	<b>400</b>
Tete	70	12	120	120	<b>240</b>
Nampula	70	20	200	200	<b>400</b>
<b>Total</b>	<b>210</b>	<b>52</b>	<b>520</b>	<b>520</b>	<b>1,040</b>

### 3.2 Measurement

Since the main objective of this rapid assessment was to assess children's reading outcomes, the IDELA segment questions used on the Rapid assessment with children that had participated in ECCD (treatment group) and others that had never been exposed to ECCD (control group). The IDELA Rapid assessment tool used questions covering one domains namely: 1) Emergent literacy with focus on:

- Concept about Prints
- Expressive vocabulary
- Letter identification
- Emergent writing
- Initial sound discrimination
- Listening comprehension

### 3.3 Data collection process

The data collection for the current Rapid assessment was held from 6<sup>th</sup> to 17<sup>th</sup> June 2019 in all the enumeration areas. The coverage of the survey was excellent and 972 were interviewed out of the 1,040 forecasted (response rate 93%).

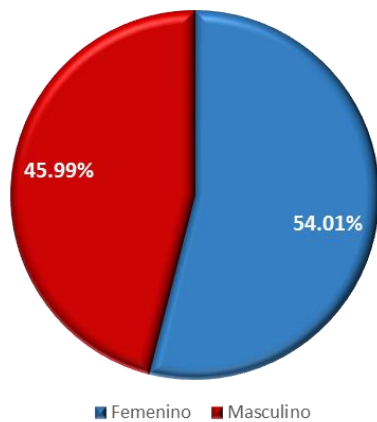
There were two issues faced during data collection. The first issue was that some children refuse to take part on the assessment. The second issue is that in some of the schools it was not possible to find 10 children who had been exposed or not to the ECCD.

The data collection process was conducted by trained Save the Children ECCD/DICIPE project staff with participation of 972 children from six district of Gaza, Tete and Nampula.

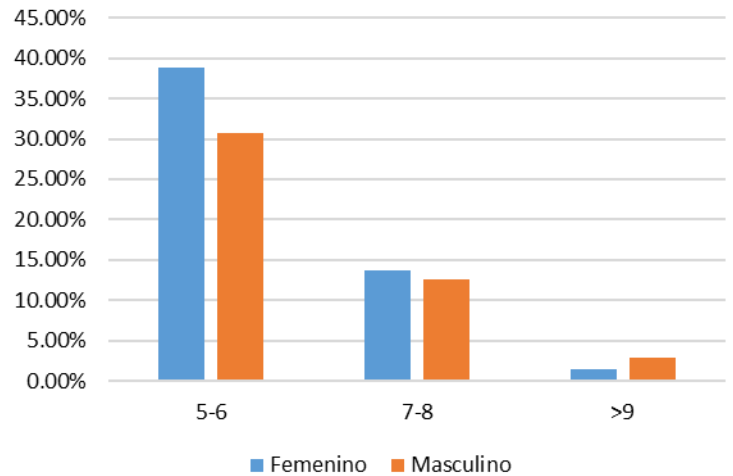
While the schools are all in communities served by the ECCD/DICIPE program, the sample for this assessment included children outside of the program attending the same class. The entirety of each class were invited to participate in the assessment, where 10 children in each class were selected. As such, the sample should be considered a convenience sample and should not be considered representative of children from these communities, or programs overall.

As Figure 1 shows, the breakdown by sex reveals that the majority of student in the sample were female. 525 out of the 972 students interviewed for the child assessment were female. Most students (69%) in the sample were 5-6 years old. There were also about 4% of the total sample above nine-year-old.

**Figure 1: Sample distribution by gender**



**Figure 2: Sample distribution by age**



### 3.4 Analysis

The main purpose of this analysis is to present a profile of children's early reading abilities. Summary statistics will be presented to display children's performance in the domain of emergent literacy.

A second key purpose of this report is to investigate the performance of the tool in this study context. To this end, floor and ceiling effects will be reported on for all direct child assessment items, and internal consistency will be reported for all child. In addition, correlations between children who attended ECCD and those who did not items will be reported on where relevant.

We will present a snapshot summary of the early learning status of the average child in the sample. We will also present the average scores of each subtask in the child assessment sub-task, and the composite Scores that summarize children's learning in the core domains Emergent Literacy. In addition the results of the Rapid assessment, we also briefly outline the performance of the tool from a technical perspective.

#### ***a) Data cleaning and processing***

The methodology for quantitative data cleaning and processing included verification of questions adapted on the data sets, checking their alignment with the codification, verification of participants on the data sets, per each of the targeted provinces and districts, data cleaning for error that included identification of missing data, invalidation of questionnaire due to inconsistencies, incomplete questionnaires and cleaning for any errors of wrong or missing codifications and afterwards, followed by identification of any duplication of data on the data set.

In order to measure defendant hypothesis, a T-Test was used very frequently, using basic comparison quantities the mean acquired in the samples, the standard deviation and the standard error of the mean.

A sample t-test is a statistical procedure used to determine whether a sample of observations could have been generated by a process with a specific average. It was intended to determine whether students' reading skills have a specific average. We could from the collected sample determine the average of letters

and or words and make a comparison between the results obtained and the average to which we want to compare using a T-test of a sample.

There are two types of hypotheses for a t-test of a sample, the null hypothesis and the alternative hypothesis. The alternative hypothesis assumes that there is some difference between the true mean ( $\mu$ ) and the comparison value ( $m_0$ ), while the null hypothesis assumes that there is no difference. The purpose of a sample t-test is to determine if the null hypothesis should be rejected by comparing the sample data.

T-Test on different samples analyzes the equality of variance through the significance value. In this context, if this significance value is less than 0.05, there is a homogeneity of variance in the compared samples, therefore using the sig-2tailed significance value. If sig 2 tailed is equal to or greater than 0.05 there is evidence of statistically significant differences between the two samples. If the significance value is less than 0.05, then instead of the 2 tailed the mean difference is used.

One-way analysis of variance (ANOVA) is used to determine if there are statistically significant differences between the means of two or more independent (unrelated) groups. For example, you could use a one-way ANOVA to understand if student reading performance differed based on test anxiety levels among students by dividing students into three independent groups (eg, students with low, medium, and high anxiety levels).

Linear regression is a kind of extension of the correlation of variables or samples and has been widely used in hypothesis testing. While the correlation determines the degree of mutual relationship between variables or samples, the regression aims, in addition to determining the relationship of variables or samples, to analyze whether the value of one variable or sample can predict the value of the other. Simple regression analyzes two variables, one dependent and one control.

### ***b) Data analysis***

After all the data was verified and when data cleaning was fully done on the data sets, the clean data sets was converted from excel format to the SPSS for adaptation and data analysis. The consultants used preliminary frequency tests as part of final verification of data sets to identify incomplete, inaccurate or irrelevant data and then either replace, modify or delete, and look for outliers. The use of frequency test was done to check for logical consistency of answers-Cross-tabulating pairs of variables is one way that was used for rooting out inconsistencies on the data sets.

Moreover, statistical significant test to Rapid Assessment sub-task was conducted. Most of the analysis was done around descriptive frequencies and where relevant disaggregation and cross tabulations was constructed. Analysis of correlations was done and Rapid Assessment results tracked to establish significance differences between the groups (for example between boys and girls, treatment and control).

In the whole data analysis process and interpretation, the consultant took special attention to guarantee quality and management of data, to ensure that the performance data meet the required data quality standards that are:

***Validity***, through assessing how well the data measures the intended project result, and whether the data reflects a bias such as interviewer bias, unrepresentative sampling, or transcription bias,

***Integrity***, through practicing transparency as a way to eliminate or reduce the possibility that the consultant were manipulated to influence the Rapid Assessment results for political or personal reasons.

***Precision***, to ensure that the data present a fair picture of performance and enable decision-making by the Save the Children management.

***Reliability***, that stems from stable and consistent data collection processes and analysis

***Timeliness*** is a critical aspect of data collection and reporting. Data should be timely enough (and current enough when they are available) to support decision-making.

## 4. Results

### 4.1 Characteristics of Children Interviewed

From 6<sup>th</sup> to 17<sup>th</sup> June 2019, SCI conducted a rapid assessment using IDELA tool. Six districts across the provinces of Gaza, Nampula and Tete took part in the rapid assessment namely Manjacaze and Xai-Xai for Gaza province, Erati and Memba for Nampula province and Angonia and Changara for Tete province. In total, 972 children (54,01% female and 45,99% male) participated in the rapid assessment where Nampula province stood out with 398 children (40,95%), followed closed by Gaza province with 346 children (35,60%) and then Tete province with 228 children (23,46%).

**Table 2: Children sample distribution by province**

Province	N	Female		Male		Total	
		N	%	N	%	N	%
GAZA	186	19.14%	160	16.46%	346	35.60%	
NAMPULA	213	21.91%	185	19.03%	398	40.95%	
TETE	126	12.96%	102	10.49%	228	23.46%	
<b>Grand Total</b>	<b>525</b>	<b>54.01%</b>	<b>447</b>	<b>45.99%</b>	<b>972</b>	<b>100.00%</b>	

**Table 3: Children sample distribution by district**

Province	District	Female		Male		Total	Total
		N	%	N	%	N	%
<b>GAZA</b>	Manjacaze	86	8.85%	66	6.79%	152	15.64%
	XaiXai	100	10.29%	94	9.67%	194	19.96%
<b>SubTotal</b>		<b>186</b>	<b>19.14%</b>	<b>160</b>	<b>16.46%</b>	<b>346</b>	<b>35.60%</b>
<b>NAMPULA</b>	Erati	110	11.32%	88	9.05%	198	20.37%
	Memba	103	10.60%	97	9.98%	200	20.58%
<b>SubTotal</b>		<b>213</b>	<b>21.91%</b>	<b>185</b>	<b>19.03%</b>	<b>398</b>	<b>40.95%</b>
<b>TETE</b>	Angonia	70	7.20%	48	4.94%	118	12.14%
	Changara	56	5.76%	54	5.56%	110	11.32%
<b>SubTotal</b>		<b>126</b>	<b>12.96%</b>	<b>102</b>	<b>10.49%</b>	<b>228</b>	<b>23.46%</b>
<b>Grand Total</b>		<b>525</b>	<b>54.01%</b>	<b>447</b>	<b>45.99%</b>	<b>972</b>	<b>100.00%</b>

Table 4 displays the average child age across participating children was of 6.5 years across the provinces of Gaza, Nampula and Tete. However, in the district of Changara is where the minimum average of children was found (3.0) which contributed for Tete province to have the same minimum average age if compared with the provinces of Gaza (average of 5.0) and Nampula (average of 6.0).

**Table 4: Children age distribution**

Province	District	Min. Age	Average Age	Max. Age
<b>GAZA</b>	Manjacaze	5.0	6.6	11.0



	XaiXai	5.0	6.5	14.0
<b>GAZA Total</b>		<b>5.0</b>	<b>6.5</b>	<b>14.0</b>
<b>NAMPULA</b>	Erati	6.0	6.5	13.0
<b>NAMPULA Total</b>		<b>6.0</b>	<b>6.5</b>	<b>13.0</b>
<b>TETE</b>	Angonia	5.0	6.2	8.0
	Changara	3.0	6.4	11.0
<b>TETE Total</b>		<b>3.0</b>	<b>6.3</b>	<b>11.0</b>
<b>Grand Total</b>		<b>3.0</b>	<b>6.5</b>	<b>14.0</b>

From the 972 children that participated on the rapid assessment, slightly more than half of them (50,31%) were ECCD participants (table 5). Non-ECCD participants children was comprised of 483 (49,69%) or otherwise 6 children lesser than ECCD participants.

**Table 5: ECCD Participants**

Province	District	Non-ECCD Participants	ECCD Participants
<b>GAZA</b>	Manjacaze	50.00%	50.00%
	XaiXai	50.00%	50.00%
<b>Total</b>		<b>50.00%</b>	<b>50.00%</b>
<b>NAMPULA</b>	Erati	50.51%	49.49%
	Memba	50.00%	50.00%
<b>Total</b>		<b>50.25%</b>	<b>49.75%</b>
<b>TETE</b>	Angonia	50.85%	49.15%
	Changara	45.45%	54.55%
<b>Total</b>		<b>48.25%</b>	<b>51.75%</b>
<b>Grand Total</b>		<b>49.69%</b>	<b>50.31%</b>

## 4.2 Children's Learning and Development

This section will detail children's learning on the direct child assessment, IDELA. Direct child assessment items for this rapid assessment was comprised of 1 category (emergent literacy) out of 5 that comprises the IDELA tool.

Table 6 below displays the average amount of time taken to evaluate learning and development skills of 972 children.

**Table 6: Average interview time**

Average of Avg: Time				
Province	District	Female	Male	Average
<b>GAZA</b>	Manjacaze	0:11:06	0:22:12	0:15:55
	XaiXai	0:13:52	0:18:31	0:16:07
<b>Average</b>		<b>0:12:35</b>	<b>0:20:02</b>	<b>0:16:02</b>

<b>NAMPULA</b>	Erati	0:13:52	0:98:31	0:16:07
<b>Average</b>		<b>0:13:52</b>	<b>0:98:31</b>	<b>0:16:07</b>
<b>TETE</b>	Angonia	0:08:09	0:07:33	0:07:54
	Changara	0:09:04	0:09:47	0:09:25
<b>Average</b>		<b>0:08:34</b>	<b>0:08:44</b>	<b>0:08:38</b>

### 4.3 Emergent Literacy assessment

#### 4.3.1 Graphic convention

To assess graphic convention, children were put through tests where they were handed books on upside down position, to 1) ascertain if in case of wanting to read how would they open the book; 2) on a new page of a story on the book, where the reading of the story should start and 3) where should someone continue reading after stopping at a given sentence.

Below, the analysis was spread according to the different tests conducted on graphic convention and described accordingly:

#### 1) If you wanted to read this book, how would you open it?

For this graphic convention test, the trend for both ECCD and non-ECCD participants children was the same with more children pointing correctly how to proceed with the opening of the book, with ECCD students having more accuracy rate than non-ECCD participants (84,84% against 67,29%). For ECCD students, it can be seen also that for this target group, there were few children that did not respond to the exercise (1,23% compared to 4,35% from non-ECCD participants).

**Table 7: Children book-opening capacity by gender**

How to open a book correctly	Non-ECCD Participant			ECCD Participant		
	Participant		Total	Participant		Total
	Female	Male		Female	Male	
Correct	68.44%	66.11%	67.29%	85.00%	84.62%	84.84%
Incorrect	27.05%	29.71%	28.36%	13.57%	14.42%	13.93%
Did not respond	4.51%	4.18%	4.35%	1.43%	0.96%	1.23%
<b>Grand Total</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.0%</b>	<b>100.00%</b>

Table 8 below shows that the bigger the children age, the more capable the children get on knowing how to open a book adequately irrespective if they are ECCD participants or non-participants. The same trend is seen on the opposite, the bigger the age the less incorrect answers the children give and for ECCD participants children aged 11-14 respond correctly to the exercise while non-ECCD participants still have a 22,22% incorrect answers performance

**Table 8: Children book-opening capacity by age**

How to adequately open a book										
Answers	Non-ECCD Participant				Total	ECCD Participant				ECCD Total
	<3 or (blank)	3-6	7-10	11-14		<3 or (blank)	3-6	7-10	11-14	
Correct	100.00%	65.00%	69.95%	77.78%	67.29%	100.00%	83.33%	91.11%	100.00%	84.84%
Incorrect	0.00%	30.00%	26.42%	22.22%	28.36%	0.00%	15.15%	8.89%	0.00%	13.93%
Did not respond	0.00%	5.00%	3.63%	0.00%	4.35%	0.00%	1.52%	0.00%	0.00%	1.23%
<b>Grand Total</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

\*p < .05, \*\*p < .01, \*\*\*p < .001

**2) On a new page of a story on a book, where the reading of the story should start?**

Most of the ECCD participating and non-participating tested children know where the reading of a story should start. As it can be seen on table 9, there is significant proficiency of ECCD participants (82,38%) if compared with non-ECCD participants (52,80%).

**Table 9: Children identification of where to start reading a book**

Where the reading starts		
Answers	Non-ECCD Participants	ECCD Participants
Correct	52.80%	82.38%
Incorrect	37.27%	13.93%
Did not respond	9.94%	3.69%
<b>Grand Total</b>	<b>100.00%</b>	<b>100.00%</b>

**3) Where should someone continue to read after stopping at a given sentence?**

The proficiency to continue to read after stopping for ECCD and non-ECCD children is not widely spread between the two groups. Both groups had a good response score (80,39% and 92,04% for non-ECCD and ECCD group respectively).

**Table 10: Children identification of where to continue reading a book**

Where to continue to read		
Answers	Non-ECCD Participant	ECCD Participant
Correct	80.39%	92.04%
Incorrect	16.47%	7.46%
Did not respond	3.14%	0.50%
<b>Grand Total</b>	<b>100.00%</b>	<b>100.00%</b>

**4.3.2 Letter identification**

To assess letter identification, a role-play was conducted with the children where the interviewer would point to some letters and the children asked to identify what was the pointed letter. For the purposes of this exercise, a copy of a table with letters was shown to children.

The children were asked to identify letter by letter. As the children were identifying correctly or incorrectly the letters, the results were being recorded.

Tables below displays the average number of letters read correctly per province (Table 10) and districts (Table 11). On average children (both girls and boys) that participated from ECCD had almost the same accuracy average in Gaza and Nampula provinces. In Tete province this tendency could not be observed as 9,7% of boys participating on ECCD were able to point correctly to the letters, which was considerably below the average attained by girls in the same province (12,7%).

On the other hand, for non-ECCD participant children, in Gaza province the average number of children that read the letters correctly wasn't considerably below than the ECCD participant children in the provinces of Gaza and Nampula. On the contrary, non-ECCD participants from Tete and Nampula provinces recorded very low averages of 8,4% and 3,5% respectively.

**Table 11: Average number of letters read correctly by province**

Provinces	ECCD Participant		Total	Non-ECCD Participant		Total
	Female	Male		Female	Male	
	Average of # Letters read correctly					
GAZA	14.8	14.4	14.6	12.6	12.0	12.3
NAMPULA	12.2	12.4	12.3	3.0	4.0	3.5
TETE	12.7	9.7	11.6	7.5	9.1	8.4
<b>Grand Total</b>	<b>13.2</b>	<b>12.6</b>	<b>12.9</b>	<b>7.5</b>	<b>8.0</b>	<b>7.8</b>

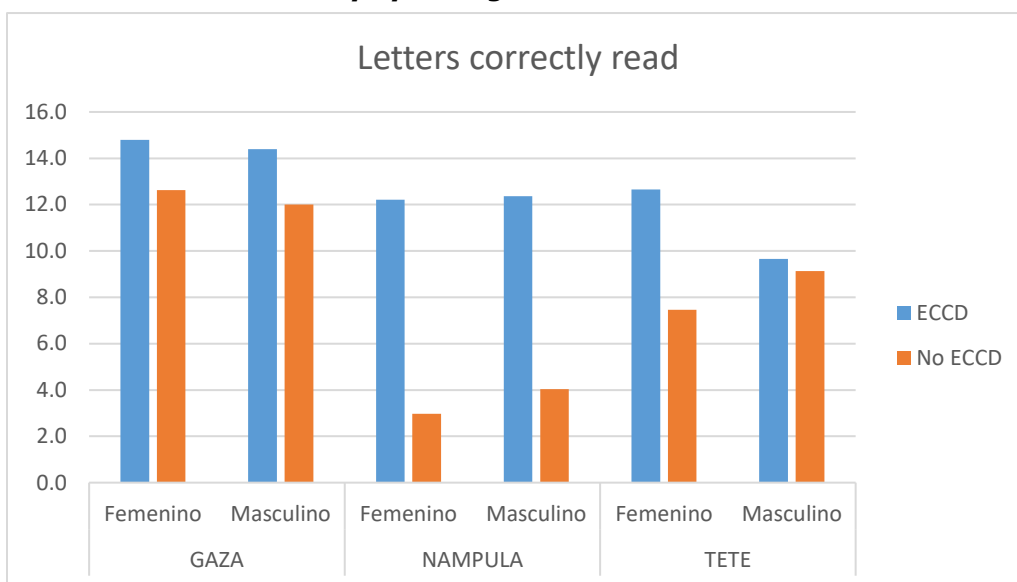
\*p < .05, \*\*p < .01, \*\*\*p < .001

**Table 12: Average number of letters read correctly by district**

Districts	ECCD Participant		Total	Non-ECCD		Total
	Female	Male		Female	Male	
	Average of # Letters read correctly					
Angonia	16.7	12.9	15.7	10.5	11.6	11.2
Changara	7.3	8.0	7.6	4.1	5.9	5.0
Erati	12.2	11.5	11.9	3.3	3.6	3.5
Manjacaze	15.3	15.5	15.4	13.6	12.0	12.9
Memba	12.2	12.9	12.6	2.7	4.6	3.5
XaiXai	14.3	13.6	14.0	11.8	12.0	11.9
<b>Grand Total</b>	<b>13.2</b>	<b>12.6</b>	<b>12.9</b>	<b>7.5</b>	<b>8.0</b>	<b>7.8</b>

\*p < .05, \*\*p < .01, \*\*\*p < .001

**Figure 3: Letter read correctly by average**



\*p < .05, \*\*p < .01, \*\*\*p < .001

### 4.3.3 Vocabulary

A listening game was used with ECCD participant and non-participants children to assess expressive vocabulary. The game is on sounds in words. The sound of the first letter of the word is made and the children were to identify which starting letters did the words had. The results below are presented for letters S, T and D.

Table 12 below displays children’s identification ability of words that start with the letter S. Children that participated from ECCD gained better results on identifying the sound of the letter (48,67% against 14,91% of non-ECCD participants). It can be seen also that for non-ECCD participants, most of the children either had incorrect answers or did not respond (accounting for 85,1% for both).

**Table 13: Children identification of Words that start with the letter ‘S’**

Answers	ECCD Participants			Non-ECCD Participants		
	Female	Male	Total	Female	Male	Total
Correct	47.69%	50.00%	48.67%	11.48%	18.41%	14.91%
Incorrect	35.59%	38.46%	36.81%	57.38%	50.63%	54.04%
Did not respond	16.73%	11.54%	14.52%	31.15%	30.96%	31.06%
<b>Grand Total</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

\*p < .05, \*\*p < .01, \*\*\*p < .001

**Figure 4: Identification of letter 'S' in the beginning of Words**

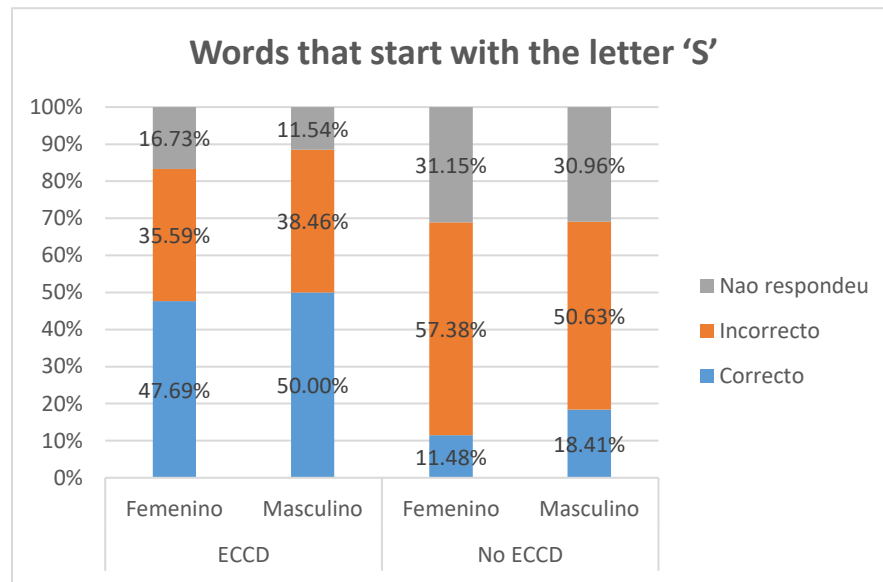


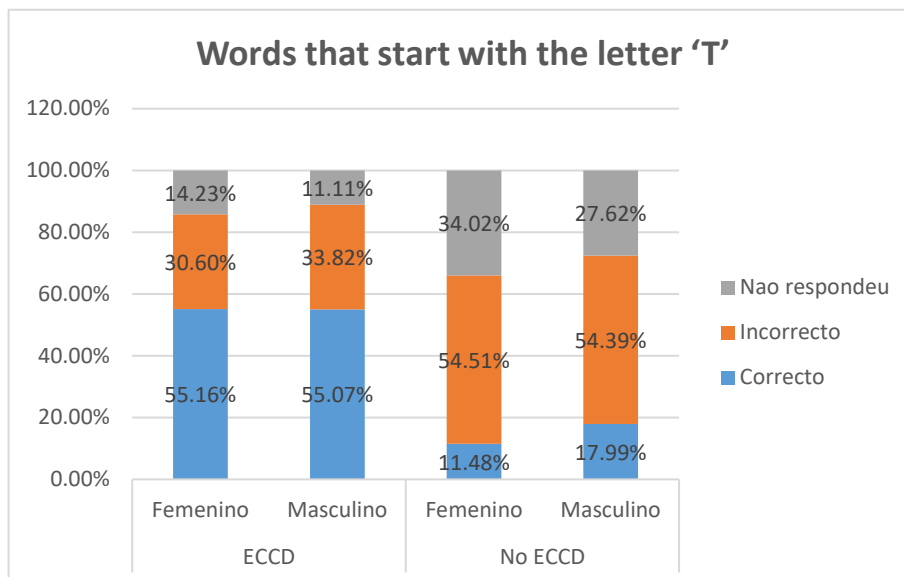
Table 14 below shows the same expected trend of ECCD participant children being better able to identify the letter, if compared with non-ECCD participants (55,12% against 14,70%). Within ECCD participants there is balance with girls and boys who were able to correctly identify the letter (55,16% vs 55,07% respectively).

**Table 14: Children identification of Words that start with the letter 'T'**

Words that start with the letter 'T'						
Answers	ECCD Participant		Total	Non-ECCD Participant		Total
	Female	Male		Female	Male	
Correct	55.16%	55.07%	55.12%	11.48%	17.99%	14.70%
Incorrect	30.60%	33.82%	31.97%	54.51%	54.39%	54.45%
Did not respond	14.23%	11.11%	12.91%	34.02%	27.62%	30.85%
<b>Grand Total</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

\*p < .05, \*\*p < .01, \*\*\*p < .001

**Figure 5: Identification of letter 'T' in the beginning of Words**



Compared to the letters S and T, the children participating from ECCD had better results in identifying the letter D (28,63% innaccuracy against 36,81% for letter S and 31,97% for letter T). Overall, it can be seen for the comparison of the last two tables that being an ECCD participants influences significantly the capacity of a given children of being able to identify letters.

**Table 15: Children identification of Words that start with the letter 'D'**

Words that start with the letter 'D'						
Answers	ECCD Participant			Non-ECCD Participant		Total
	Female	Male	Total	Female	Male	
Correct	57.30%	57.69%	57.46%	13.93%	21.34%	17.60%
Incorrect	27.76%	29.81%	28.63%	52.46%	51.46%	51.97%
Did not respond	14.95%	12.50%	13.91%	33.61%	27.20%	30.43%
<b>Grand Total</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

\*p < .05, \*\*p < .01, \*\*\*p < .001

#### 4.3.4 Oral comprehension

For the oral comprehension assessment, a storytelling approach was used. Interesting stories were shared with children, after which some questions to evaluate the children comprehension of the story were made. Table 15 showcases the results of the assessment done on oral comprehension for both ECCD and non-ECCD participants.

Overall there is no significant discrepancy between ECCD participants and non-participants when it comes to oral interpretation. 58,60% of ECCD participants and 41,40% of ECCD non-participants succeeded with oral interpretation. This trend might be interpreted by the fact that storytelling is one of the efficient approaches to convey knowledge as people tend to easily recall what was told.

At district level, it can be seen that the districts of Angonia and Changara of Tete province were the ones that recorded low levels of oral interpretation accuracy both for ECCD and non-ECCD participants.

**Table 16:**

<b>Oral interpretation</b>						
<b>Districts</b>	<b>ECCD Participants</b>		<b>Total</b>	<b>Non-ECCD Participant</b>		<b>Total</b>
	<b>Female</b>	<b>Male</b>		<b>Female</b>	<b>Male</b>	
Angonia	4.99%	1.60%	6.59%	1.36%	1.63%	2.98%
Changara	3.16%	2.84%	6.00%	1.92%	1.98%	3.90%
Erati	8.54%	4.55%	13.09%	3.58%	4.93%	8.51%
Manjacaze	4.91%	3.52%	8.42%	3.22%	2.69%	5.91%
Memba	5.91%	7.15%	13.06%	5.94%	4.52%	10.46%
XaiXai	5.88%	5.56%	11.44%	4.64%	4.99%	9.63%
<b>Grand Total</b>	<b>33.39%</b>	<b>25.21%</b>	<b>58.60%</b>	<b>20.66%</b>	<b>20.74%</b>	<b>41.40%</b>

\*p < .05, \*\*p < .01, \*\*\*p < .001

#### 4.4 Technical performance of the Rapid Assessment tool

The Rapid Assessment tool used for this assessment, performed strongly well from an internal consistency standpoint. All sub-tasks on the Emergent Numeracy domain were significantly and highly correlated with each other, suggesting that they were measuring a holistic construct of early reading outcomes.

The Internal Consistency measurement was applied to assess the correlations between each sub-task of the Emergent Literacy, the results demonstrate a range from a low of 0.478 (Concept about Prints and Letter Knowledge) to a high of 0.832 between Letter Knowledge and Listening Comprehension in both ECCD and Non-ECCD Participants as well as Boys and Girls.

We have also applied a Chi-Square test in order to assess whether an association exists between the two variables by comparing the observed pattern of responses in the cells to the pattern that would be expected if the variables were truly independent of each other

**Table 17:**

<b>ECCD Participants</b>	<b>Non-ECCD Participants</b>	<b>Marginal Row Totals</b>	<b>Marginal Row Totals2</b>
Boys	208 (224.88) [1.27]	239 (222.12) [1.28]	447
Girls	281 (264.12) [1.08]	244 (260.88) [1.09]	525
<b>Marginal Totals</b>	<b>489</b>	<b>483</b>	<b>972 (Grand Total)</b>

The chi-square statistic is 4.7207. The p-value is .029802. This result is significant at p < .05.

The chi-square statistic with Yates correction is 4.4451. The p-value is .035001. Significant at p < .05.

## 5. Limitations & recommendations

A number of limitations arise from this analysis. The first is related to the fact that the data sets were presented in different files and format, this has taken considerable amount of time during the data processing and cleaning.



The selection process of children in the classroom was not uniform in the 3 provinces. This may be due to the fact that in some schools, especially smaller schools it was not possible to find a minimum of 10 children for assessment.

Future assessments should not take place after the first quarter of primary school year as this will minimize the contamination from grade 1 primary content and would also benefit from greater emphasis placed on a rigorous sampling strategy that aims to create generalizable findings. As a cross-sectional study, all results should be interpreted as correlational. While we find many statistically significant relationships, we cannot interpret any causally.

## **6. Conclusion**

The results have demonstrated that the ECCD program in all interventions have positively impacted all children who attended the ECCD classes. This is demonstrated in all results from graphics conceptions to listening comprehension.

There is a need to further investigate the results obtained in Tete province. The results in all sub tasks show that children in the intervention area had relatively low results compared to other regions, these results may have been influenced by other factors that are beyond program control. We recommend that future programs should apply a longitudinal impact study.

The results of each sub-task of emergent literacy for the intervention shows the skills that the program should focus on moving forward are the skills that children are already comfortable with. Letter identification was the sub-task on which children performed worst and oral comprehension the sub-task where they performed better.