Ready 4 School

Impact of Early Childhood Development (ECD) services on the educational outcomes of children in the Bugesera District of Rwanda.

COLLABORATION BETWEEN **READY 4 SCHOOL RWANDA** AND **HELP A CHILD RWANDA**

READY 4 School

Help a CHILD RWANDA

Contents

List of Abbreviations

ECD	Early Childhood Development
ECE	Early Childhood Education
ESSP	Education Sector Strategic Plan
NCDA	National Child Development Agency
NGO	non-governmental organization

Summary

The purpose of this report is to show the impact of Early Childhood Development (ECD) services provided by Help a Child in collaboration with Ready 4 School Rwanda on the educational outcomes of children in the Bugesera District of Rwanda. Specifically, the evaluation focused on understanding the impact of ECD participation on children's academic performance, school attendance, and dropout rates as they transition from ECD centers to primary school.

The evaluation spans three primary schools in Bugesera District: Groupe Scolaire Kanzenze, Kabuye Primary School, and Kigarama Primary School, which receive children from three HAC-supported ECD centers in Nyamata, Nyarugenge, and Gashora. The research monitors two groups of children to compare their performance over time: those who participated in ECD programs and those who did not. This study aims to answer key questions regarding the benefits of ECD on children's ability to successfully transition to and excel in primary education.

Key objectives of the evaluation include:

1. **Assessing the impact of ECD services on academic performance in primary school.**
2. **Measuring the influence of ECD services on school attendance and dropout rates.**
3. **Providing evidence-based insights for improving ECD programming and scaling up interventions.**

The main findings of the assessment are that there is a strong positive effect of ECD enrolment on academic performance and attendance. Especially in year 1 this effect is very clear, where children who were enrolled in ECD centers have better scores, a higher promotion rate, and higher attendance than children who did not go to an ECD center. The positive effect on promotion rates and attendance remains also after the first year, though the positive effect on scores reduces over the years.

1. Introduction

Early Childhood Development (ECD) is recognized as a crucial foundation for future learning, particularly for children from disadvantaged backgrounds. Brain research has shown that what happens in the first years of a child's life is crucial for their future health, education, and economic outcomes. It states that 80% of a person's brain is formed before the age of three years. Next to the first 1000 days, the biggest part of the further brain development happens before the age of 7. Interventions that focus on responsive caregiving and the promotion of learning opportunities can buffer against individual, family, and community threats and promote child development (Trude et al., 2020; Jeong et al., 2021; WHO, 2020). Therefore, to ensure children receive the stimulation and care they need to reach their full potential, it is important to intervene in these early years. This is what we call 'the good start'.

WHAT THREATENS EARLY CHILDHOOD DEVELOPMENT

There is growing evidence that poverty and early childhood adversities can disrupt brain development and undermine children's cognitive, psychosocial, and physical development (World Bank, 2018; Black et al., 2017). From pregnancy through the newborn period, infancy and toddlerhood, extreme poverty, insecurity, violence, environmental toxins, and parental ignorance or poor mental health detract from the capacity of families and caregivers to protect, support, and promote the development of young children.

When asking people if the first few years of a child are important, everybody will say: Yes, of course! Yet only very small parts of government budgets are used for ECD. This results in a development delay of a global scale:

- In low- and middle-income countries across the world, 250 million children under the age of five are at risk of not reaching their developmental potential because of poverty and stunting (or low height for age).
- Worldwide, only 60% of all three to six-year-olds have access to pre-primary education. In low-income countries, just one-in-five children has access to preschool.
- Around the world, over 40% of children below primary-school-entry age – or nearly 350 million children – need childcare, but do not have access to it.
- Only 55% of children aged 36 to 59 months growing up in the poorest households are developmentally on track, compared to 78% of children in the richest households.
- Children living in the richest households are much more likely to receive early stimulation and responsive care (71%) than children in the poorest households (43%).
- Nearly 400 million children under 5 — or 6 in 10 children within that age group globally — regularly endure psychological aggression or physical punishment at home, according to new UNICEF estimates. Of them, around 330 million are punished by physical means.
- Around 1 in 5 children aged 2-4 years do not play with their caregivers at home, while roughly 1 in 8 under age 5 do not have toys or playthings at home.

RWANDA CONTEXT

The government of Rwanda, in collaboration with various partners, has implemented several ECD initiatives to improve access, quality, and equity in early learning. In Bugesera District, one of the target regions for ECD interventions, these initiatives aim to prepare young children for primary education through structured and informal learning opportunities.

Ready 4 School Rwanda entered into discussions with UNICEF Rwanda in 2017 to design and build three new ECD centers in Bugesera District. The project was designed to help improve remote accessibility to ECD in rural Rwanda and thereby start to address the high drop-out and repeat rates Ready 4 School Rwanda had observed at its first primary school project. Funding for the construction of the centers was to be provided by Ready 4 School Rwanda. In 2018 Help a Child Rwanda was subsequently appointed the local implementation partner for building the centers. All three centers were to be strategically located close to primary schools to aid with transition, including the primary school originally founded by Ready 4 School Rwanda. The program aimed to establish accessible, quality ECD services for children aged 0-6 and their families, focusing on nurturing care and school readiness. The program created two cost-effective ECD centers and one model center and reached approximately 1,345 children and their families through a combination of center-based, home-based, and home visitation services. However, as the first cohort of children from this program began transitioning to primary school in 2019, the COVID-19 pandemic disrupted services, necessitating innovative adaptation strategies like home visits and parenting education sessions.

When support from UNICEF ceased in December 2020, Help a Child Rwanda partnered with Ready 4 School Rwanda to continue the project, with an emphasis on community involvement and sustainability. The second phase of the program focused on three key actions: providing income-generating activities (IGA) for parents to maintain ECD centers, continuing home visitations with trained community volunteers, and ensuring the provision of COVID-19 protection measures. By 2021, the program operated three ECD centers, reaching 394 children and sustaining home-based and visitation services for an additional 736 children across Bugesera District.

OVERVIEW OF RWANDA'S EDUCATION SECTOR STRATEGIC PLAN AND ECD INITIATIVES

The Government of Rwanda, through its Education Sector Strategic Plan (ESSP) 2018/2019 - 2023/2024, emphasizes the critical role of education in the country's socio-economic development. The ESSP outlines nine priority areas, with one focused explicitly on enhancing the quality of learning outcomes to ensure relevance to Rwanda's growth. It highlights the importance of early childhood education (ECE) as a pivotal stage that lays the groundwork for children's success in primary education and beyond.

According to the ESSP, the government aims to achieve significant milestones, including ensuring that all learners achieve basic literacy and numeracy skills in the early grades and maintaining high school enrollment

and completion rates. The expansion of ECD services has been a priority due to low pre-primary enrollment rates, which stood at 23.7% gross and 17.5% net in 2016 (MINEDUC, 2016). To address these gaps, the government established the National Early Childhood Development Program, later renamed the National Child Development Agency (NCDA), to coordinate ECD efforts nationwide.

The government has also expanded access to ECD services, targeting an increase in enrollment from 15% to 45% by 2023/2024. A play-based, competency-based curriculum was developed and approved in 2015, along with a teacher's guide and a scheme of work to enhance the delivery of quality pre-primary education. The collaboration between government entities, development partners like UNICEF, and non-governmental organizations (NGOs) such as Help a Child Rwanda plays a vital role in achieving these ambitious targets.

***Photo:** Sharing of ECD impact evaluation findings.*

2. The research

INTRODUCTION – COLLABORATION WITH READY 4 SCHOOL RWANDA

Often, to influence systems, including education systems, governments need to know what is effective in improving the ECD system, what works and what does not. Ready 4 School Rwanda is really committed to improving the ECD sector in Rwanda at a systems level. Tapping into what is most effective and efficient. They collaborate with NGOs and UNICEF and have good contacts with the government of Rwanda to ensure that important barriers to quality ECE are being tackled. One of the issues observed by them was the lack of data available, and therefore they initiated and funded this study.

Because of Help a Child Rwanda's holistic quality approach towards ECE, Ready 4 School Rwanda and Help a Child Rwanda forged a partnership to do – albeit at a very small scale – the first longitudinal study into learning and development outcomes with children who attended Help a Child supported ECD centers and children who did not. The research is really meant to fill a knowledge gap with service providers, NGOs, investors and the government on the factors of success as well as the barriers for children in pre-primary age to perform well in primary school.

Thanks to the partnership and the donations of Ready 4 School Rwanda, this research – that ran between 2021 and 2024 – is finally concluded in this synthesis report. The report shows valuable insights into the improvement of the ECE sector in Rwanda.

PROBLEM STATEMENT

Despite significant efforts to expand ECD access in Bugesera District, there remain substantial challenges that impact the transition of children from ECD programs to primary education. The high dropout and repetition rates in primary schools indicate a need for targeted interventions that support school readiness and successful transition from early learning to formal education. Evidence suggests that children who attend ECD centers are better prepared and perform better in primary school compared to those who do not have access to early learning services. However, gaps in data and understanding of the long-term impact of ECD services on primary education outcomes in Bugesera District persist.

This evaluation aims to address these gaps by assessing the impact of the ECD program on the primary education of children who transitioned from ECD centers to primary schools in Bugesera District. Specifically, the evaluation will explore the effects of ECD services on children's academic performance, school attendance, and dropout rates. By comparing outcomes between children who attended ECD centers and those who did not, this study seeks to provide evidence-based insights to inform future program design and policy decisions.

The findings of this evaluation are expected to be critical for stakeholders, including the Government of Rwanda, development partners, and community organizations, as they work to scale and sustain effective

ECD interventions. The evaluation will contribute to understanding the broader impact of ECD programs on education systems and highlight the importance of early investment in childhood education as a strategy for achieving national educational and economic development goals.

EVALUATION OBJECTIVES

This evaluation of the ECD program's impact on primary education in Bugesera District, Rwanda, aims to provide a comprehensive analysis of the program's outcomes. The following detailed objectives guide the evaluation process:

1. **Assessing the impact of ECD on children's academic performance in primary school.** The primary objective is to evaluate the influence of the ECD program on the academic performance of children transitioning into primary education. This assessment will focus on measuring academic outcomes such as literacy, numeracy skills, and overall performance in core subjects. The evaluation will track children's test scores and grades over time, comparing those who participated in the ECD program against a control group of children who did not. The analysis will include monitoring children's progression rates, evaluating if children from ECD centers show higher retention and progression in subsequent grades. Data collection will be carried out using school reports, nominal registers, and other school performance records. Additionally, interviews with teachers will provide qualitative insights into the children's performance and participation in classroom activities.
2. **Evaluating the effects of ECD on school attendance, dropout rates, and retention.** Another core objective is to determine the effect of ECD participation on school attendance patterns, dropout rates, and retention levels among primary school children. This component of the evaluation will analyze whether children who attended ECD centers exhibit higher attendance rates and are more consistent in attending classes compared to those who did not attend ECD programs. It will also assess whether these children are less likely to drop out of school during their primary education journey, especially during the critical early years. The evaluation will use tools such as call registers and the School Data Management System to track attendance and monitor enrollment status each term. This quantitative data will be supplemented with information from headteachers and classroom teachers to document any significant changes that impact attendance (e.g., family migration, socio-economic challenges). Retention rates will be examined by following the same cohorts throughout the academic year and subsequent years to see if ECD attendance has a lasting impact on children's educational stability.
3. **Understanding differences in outcomes between children who attended ECD and those who did not.** This objective focuses on understanding the disparities in educational outcomes between children who attended ECD centers and those who

did not, ensuring that a comprehensive and comparative analysis is conducted. Children will be grouped into two categories: those who attended the ECD program and those who did not, with an equal number of boys and girls in each group for an equitable comparison. This objective will provide a clear picture of the ECD program's impact, highlighting any specific benefits linked to ECD attendance, and will help identify gaps or challenges faced by children who did not have access to such services.

The evaluation has looked at several dimensions, including:

- Academic achievement: tracking their performance in core subjects over time.
- Behavioral and social outcomes: observing their participation levels, behavior in class, and social interactions, as reported by teachers.
- Attendance and retention differences: examining dropout trends and identifying factors influencing these outcomes.

3. Data

Between 2021 and 2024, Help a Child Rwanda gathered school performance data of 518 children from three primary schools in Bugesera District. 162 of these children were monitored since 2021 (cohort 1), 194 since 2022 (cohort 2), and 162 since 2023 (cohort 3). Monitoring of these three cohorts began when children started their primary school journey in P1[1]. Each cohort consists of two groups, that is a control and a treatment group. For children in the control group primary school is their first formal form of education, while children from the treatment group transitioned from a Help a Child Rwanda supported ECD center to primary school.

As explained in the previous chapter, this analysis focuses on academic performance, attendance, and dropouts in the first primary school years. Academic performance is analyzed by assessing the points scored for the three main subjects (Kinyarwanda, Math, and English)[2], the total number of points scored in one term, and promotion rates. For points scored and attendance, for each year data from term 3 (the last term of the year) is used. This is because for term 3 this data is mainly complete in the three assessed academic years. Attendance data of 2023-2024 is an exception, since the quality of this data is not high enough to analyze.

Because there are more initial differences between children from the treatment and control group than ECD enrolment only, it is not possible to do a simple comparison of averages between those two groups. Table 1 (see next page) provides data at group level within each cohort that shows these initial differences. The first five variables are specifically about the children themselves, while the last eight variables are more related to their home situation. The only variables for which the percentages seem balanced within cohorts are gender (exactly balanced), malnourishment, parents being alive, and one of the parents being a child's main caregiver. Table 1 shows that on average children from the treatment group are younger when they start with primary school, they suffer less from chronic diseases, are less emotionally instable, and do less often struggle with their communication skills. Also, households of children from the treatment group have a health insurance more often, their parents are a married couple more often, and a higher percentage of main caregivers of children from the treatment group is categorized in Ubudehe category 3[3]. The only variables for which it is ambiguous which of the groups is better of are related to domestic violence and fear of the parents. For cohort 1 it is clear that also here children from the treatment group grow up in a safer household environment more often. On the other hand, for cohort 2 the output provides mixed signals, while for cohort 3 children from the control group come from safer households more frequently.

1. To be more clear, children from cohort 1 were monitored from P1 to P3, children from cohort 2 in P1 and P2, while children from cohort 3 were only monitored in P1. For cohort 1, in the third year of data collection only children from the original sample who were in P3 were monitored. For cohort 2, in the second year of data collection only children from the original sample who were in P2 were monitored.

2. With a maximum score of eighty per subject per term, these three courses are the largest of the curriculum, and together they account for almost 60% of the total year score.

3. "Ubudehe is a Rwandan practice and cultural value of mutual assistance among people living in the same area in order to overcome or solve their socio-economic problems." (LODA, 2025). In this research, the higher the Ubudehe category, the wealthier a household is. 'None' implies no categorization, which mainly occurs in the case of unstable families who do not have an official recognition in the area.

Table 1: Descriptive statistics at cohort-group level.

VARIABLES		COHORT 1		COHORT 2		COHORT 3	
		CONTROL	TREATMENT	CONTROL	TREATMENT	CONTROL	TREATMENT
GENDER	Male	56,79%	56,79%	42,27%	42,27%	51,85%	51,85%
	Female	43,21%	43,21%	57,73%	57,73%	48,15%	48,15%
AVERAGE YEAR OF BIRTH		2014	2015	2015	2016	2016	2017
CHILDREN WITH SEVERE CHRONIC DISEASES		7,41%	3,70%	8,25%	9,28%	9,88%	3,70%
EMOTIONALLY INSTABLE CHILDREN		34,57%	23,46%	29,90%	26,80%	23,46%	19,75%
CHILDREN WITH LIMITED COMMUNICATION SKILLS		17,28%	7,41%	16,49%	10,31%	17,28%	9,88%
MALNOURISHED CHILDREN		20,99%	22,22%	13,40%	13,40%	2,47%	3,70%
CHILDREN WHO WITNESS DOMESTIC VIOLENCE		20,99%	2,47%	11,34%	9,28%	2,47%	11,11%
CHILDREN WHO ARE FEARFUL OF THEIR PARENTS		16,05%	8,64%	8,25%	14,43%	2,47%	12,35%
HOUSEHOLD HAS A HEALTH INSURANCE		67,90%	83,95%	79,38%	88,66%	77,78%	77,78%
BOTH PARENTS ALIVE		93,83%	95,06%	96,91%	98,97%	96,30%	98,77%
PARENTS ARE A MARRIED COUPLE		22,22%	43,21%	29,90%	39,18%	32,10%	29,63%
PARENT IS MAIN CAREGIVER		80,25%	86,42%	89,69%	91,75%	88,89%	92,59%
UBUDEHE CATEGORY MAIN CAREGIVER	None	4,94%	1,23%	0,00%	0,00%	0,00%	0,00%
	1	17,28%	9,88%	18,56%	7,22%	14,81%	7,41%
	2	34,57%	35,80%	40,21%	44,33%	48,15%	54,32%
	3	43,21%	53,09%	39,18%	48,45%	37,04%	35,80%

To summarize the findings from *Table 1*: treatment and control groups are unbalanced and in general children from the treatment groups are better off in their personal lives than children from control groups. So, even without ECD enrolment, these numbers would already predict that children from the treatment group would participate better at primary school than children from the control group[4]. Therefore, in the assessment of the link between ECD enrolment and primary school performance it is important to include the variables that are unbalanced between the treatment and control group. In the next chapter results will be presented for primary school year 1, 2, and 3 separately.

4. There is a broad literature on the impact of personal indicators or household environment on school performance. This footnote provides a small list of some relevant studies:

- *For the effect of chronic diseases on school performance see Lum, et al. (2017).*
- *For the effect of witnessing domestic violence on school performance see Huth-Bocks, Levendosky, and Semel (2001).*
- *For the effect of parents' marital status on school performance see Abudu and Fuseini (2013).*
- *For the effect of household socioeconomic status on school performance see Kim, Cho, and Kim (2019).*

4. Results

YEAR 1 – COHORT 1, 2, AND 3

Academic performance

For the courses Kinyarwanda, Math, and English the average score for children from the treatment group is about six points higher than for children from the control group. *Figure 1* shows these average scores for P1 term 3[5]. At first sight this could be interpreted as the impact of primary school preparation through Help a Child Rwanda's ECD centers, but as explained in the previous chapter this effect could also be due to other factors like differences in situations at home. *Table 2 in Appendix A* provides the results of an extensive analysis in which the personal and household situation variables that differ between the treatment and control group are included[6]. The results of this extensive analysis confirm the results of *Figure 1*. Even more so, they are slightly more positive, as they suggest that ECD enrolment is related to an average increase of almost 10% for scores for Kinyarwanda, Math, and English in P1.

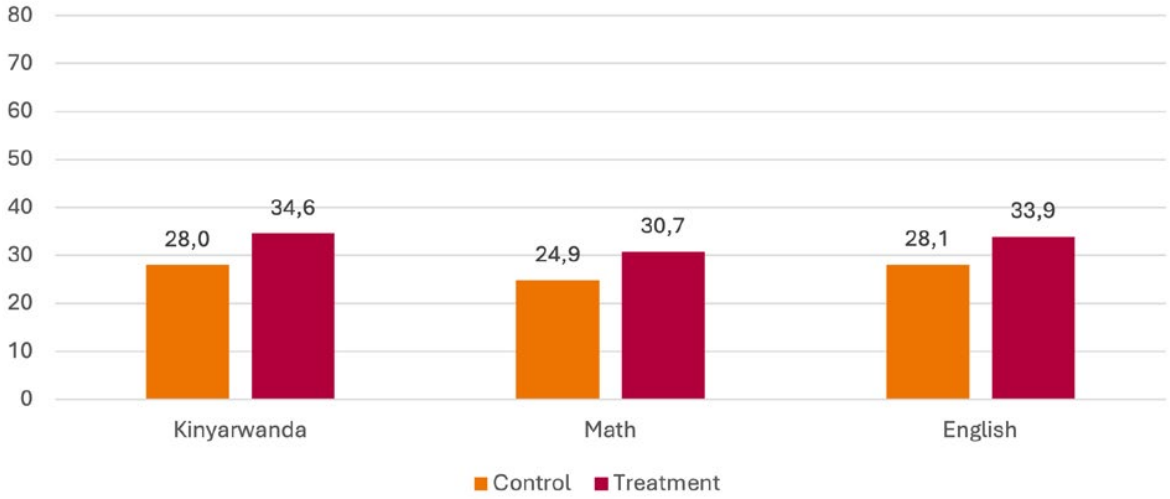

Figure 1: *Average points scored out of 80 for main courses in term 3 at group level.*

Figure 2 shows that also for the total number of points in P1 term 3 the treatment group scores better that the control group. This figure shows that on average ECD enrolment is related to an increase of the total score of seven percentage points. Compared to the average of the control group this means an increase of 17%. Again, the extensive analysis in *Table 2* in *Appendix A* that includes initial differences between the treatment and control group confirms the results.

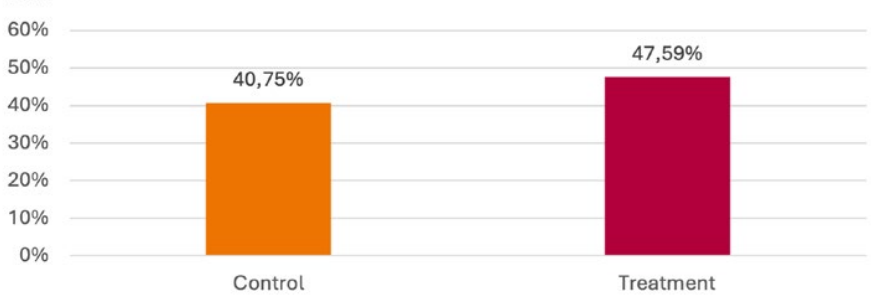

Figure 2: *Average percentage of the total score in term 3 by group.*

5. *Data of the different cohorts is aggregated every time in this chapter.*
6. *As described in the previous chapter, these are average year of birth, suffering from chronic diseases, emotional instability, limited communication skills, household having health insurance, married parents, and Ubudehe category. The extensive analysis also takes differences between the three cohorts into account.*

Children who were enrolled in an ECD center have 41% more chance to promote from P1 to P2 in the first primary school year, since *Figure 3* shows that more than half of all children from the treatment group was promoted from P1 to P2, while for the control group this was only a third of the total sample. The extensive analysis as presented in *Appendix A Table 3* confirms the results and is even more positive with an increase of eighteen percentage points, that is 51.6% more chance of promotion.

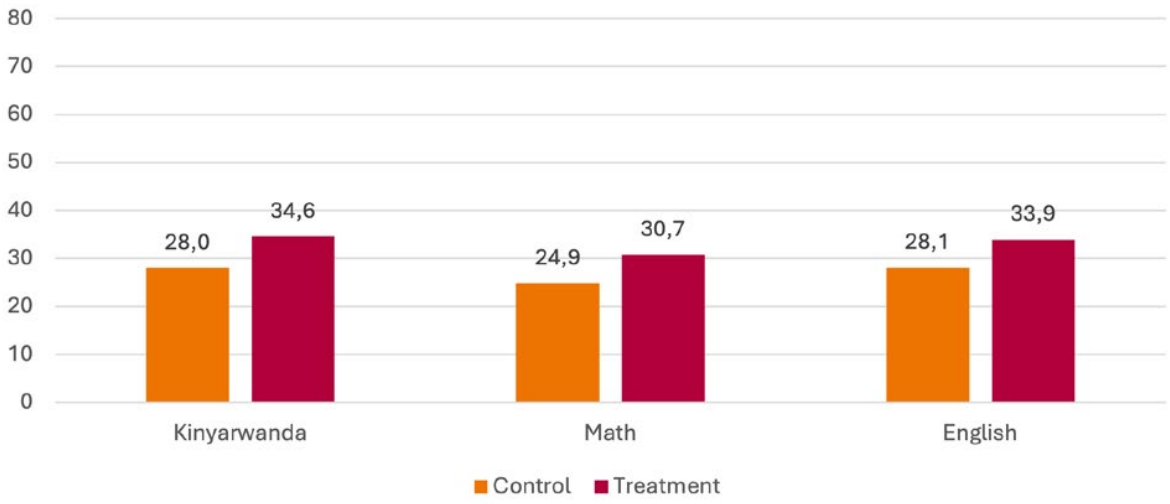

Figure 3: *Percentage of children who promoted to P2 at group level.*

Attendance

School attendance is a potential factor through which ECD enrolment could have had a positive effect on scores and promotion. *Figure 4* substantiates this presumption, as the average percentage of school days present is almost ten percentage points higher for children from the treatment group than for children from the control group. *Table 4* in *Appendix A* shows the results of the extensive analysis, which confirm the findings of *Figure 4* that ECD enrolment has a positive effect on attendance in P1. Though still a large effect, with a positive effect of seven percentage points the actual effect of ECD enrolment is slightly lower than presented in *Figure 4*.

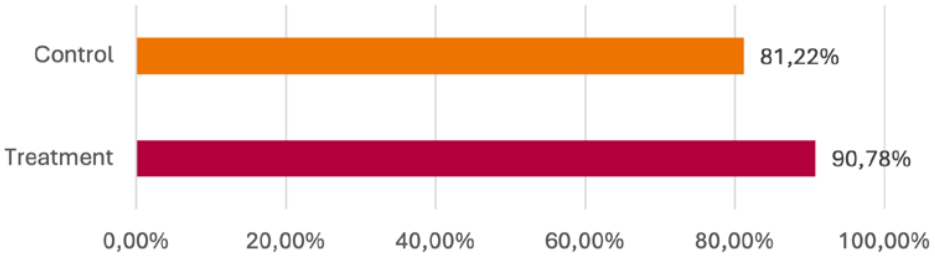

Figure 4: *Average percentage of schooldays attended in term 3.*

Dropouts

The risk to dropout is another potential factor through which treatment could have a positive effect on academic performance in P1. *Figure 5* shows the average percentage of children who dropped out of P1 for the treatment and control group. These numbers indicate that children from the control group have a fifty percent higher likelihood to dropout than children from the treatment group. But,

because in absolute terms this is only a difference of about 1.50%, this difference is very small. This is confirmed by the extensive analysis as presented in *Appendix A Table 5*. The difference in dropout rates between the treatment and control group is too small to claim that ECD enrolment has an actual effect on it. In general, the lower promotion numbers of the control group result much more in retention than that they are due to higher dropouts.

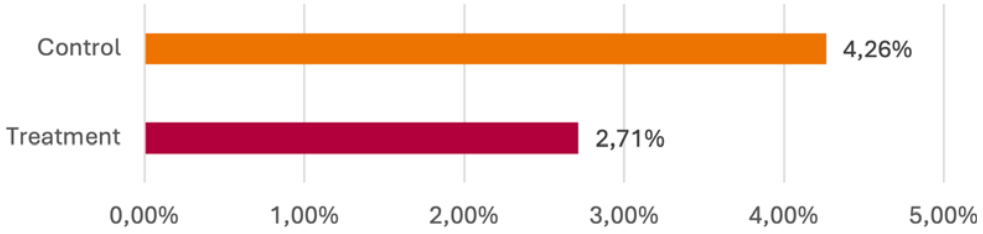

Figure 5: *Percentage of children dropping out from primary school by group.*

Photo: *Lower primary teachers&education officials recflecting on monitoring results.*

YEAR 2 – COHORT 1 AND 2

Next to the more short-term effects of ECD enrolment in P1, it is also relevant to look into effects that are more about the longer term. Do the children from the treatment group continue to perform better than the children from the control group after promotion to P2 or were the promoted children from the control group able to catch-up? And what about the students who remained in P1, is there still a difference there? These questions will be assessed with data from cohort 1 and 2, as for cohort 3 data is only available for P1. For cohort 1 there is data available for 61 children from P2 (25 control, 36 treatment) and for cohort 2 for 72 children (29 control, 43 treatment), so in total there is data available from P2 for 54 children from the control group and for 79 children from the treatment group. For cohort 1 there is also data available for 84 children who remained in P1 (45 control, 39 treatment).

Academic performance

Although children from the control group catch-up a bit with the children from the treatment group in scores, ECD enrolment still has a strong effect on promotion in the second year. On average, children who were enrolled in ECD have eighteen percentage points more chance to get promoted. In absolute terms this implies that ECD enrolment relates to a 50% increase in the chance of promotion in the second year.

Figure 6 displays again the average scores for the three main subjects Kinyarwanda, Math, and English at group level. The left part of *Figure 6* shows the averages for children who repeated P1, while the right part shows the average for children in P2. In general, it can be stated that, compared to the results of year 1 in *Figure 1*, the averages are higher and the differences smaller. Where the differences in year 1 were about six points for all three subjects in favor of the treatment group, from *Figure 6* it stands out that for the courses Math and English these differences halved for the children from P2. On the other hand, the difference for Kinyarwanda remained. For the children who retained in P1 the average score for Kinyarwanda and English is much better for children from the treatment group, but also here the score of Math is quite equal.

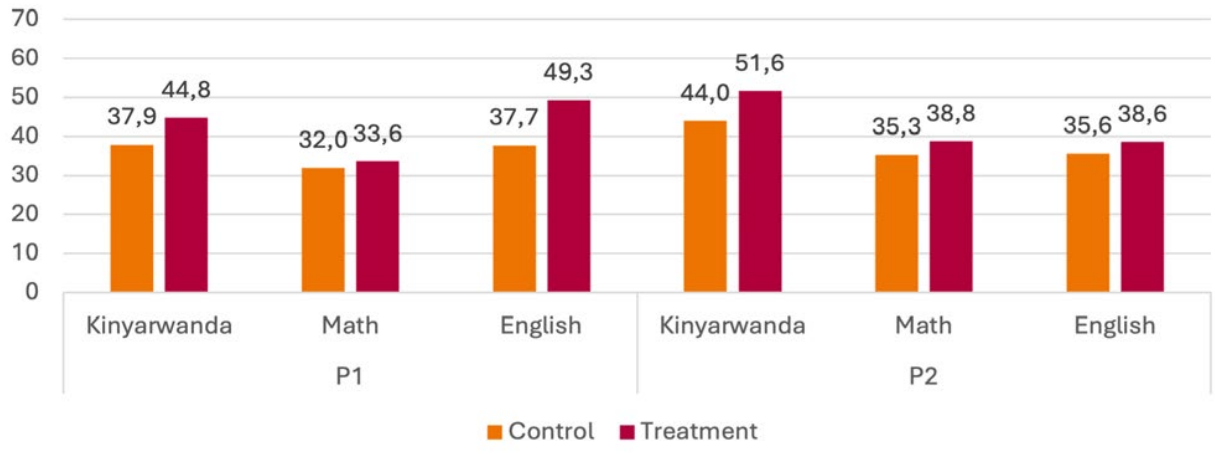

Figure 6: *Average points scored out of 80 for main courses by group and level.*

Table 6 in *Appendix B* displays the results of the extensive analysis that also includes the initial differences between the treatment and control group. Since the sample is too small to provide evidence for an actual effect for P1 and P2 separately, the results for P1 and P2 are aggregated. The extensive analysis provides evidence for the claim that for Kinyarwanda and English there still is a positive effect of ECD enrolment on scores.

Figure 7 shows for year 2 the total score for term 3 for P1 and P2 separately for treatment and control groups. Also, from this figure it stands out that children from the control group catch-up a bit with the children from the treatment group. For P1 the difference is close to four percentage points, while for P2 this is close to six percentage points. The extensive analysis in *Table 6* in *Appendix B* does show a positive effect, though because of the small sample the extensive analysis could not provide decisive evidence that there is still is an actual effect of ECD enrolment on total scores in year 2.

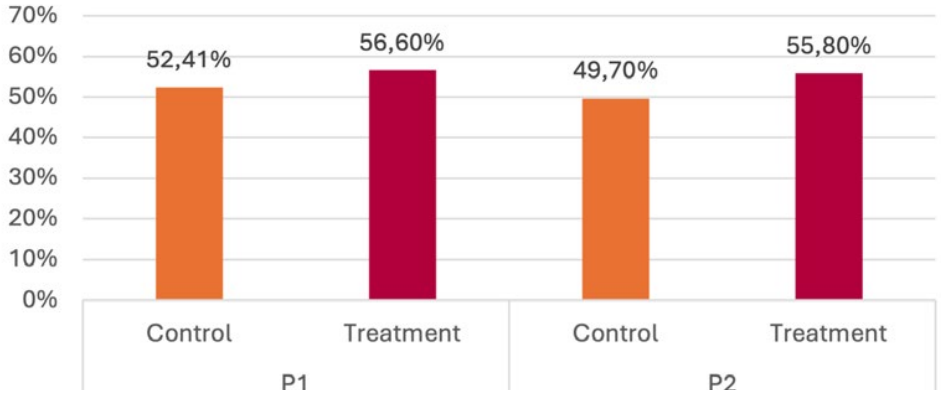

Figure 7: *Average percentage of the total score in term 3 by group and level.*

Solely looking at the promotion percentages of children in P2 in *Figure 8*, these numbers are higher than the promotion percentages in year 1. At the same time, *Figure 8* shows that for the children who remained in P1, the promotion numbers in year 2 are lower compared to year 1. Still, the absolute difference in promotion numbers between treatment and control group is about 20% for both P1 and P2. In the extensive analysis this result is confirmed. After aggregation of the data for P1 and P2, the extensive analysis in *Appendix B Table 7* shows that ECD enrolment still has a strong effect on promotion in the second year. On average, children who were enrolled in ECD have eighteen percentage points more chance to get promoted, which is an increase of 50% compared to children without ECD enrolment.

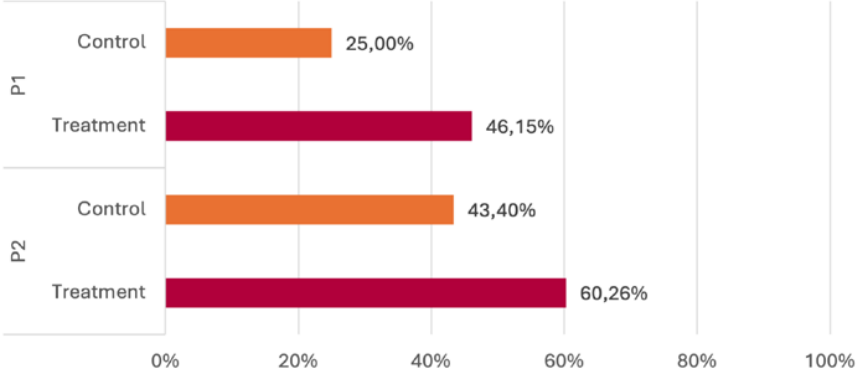

Figure 8: *Percentage of children promoted at group level.*

Attendance

On average, for children who were enrolled in an ECD center primary school attendance in year 2 increases by 25% compared to children who were not. Figure 9 shows that in general the average attendance in year 2 is lower than in year 1 (*Figure 4*). At the same time, for P1 as well as for P2, the average attendance of children from the treatment group is more than 10 percentage points higher than that of children from the control group. Also, here the extensive analysis of the aggregated data of P1 and P2, as presented in *Table 8 Appendix B*, provides evidence for the claim that ECD enrolment leads to improved attendance. On average, the attendance of children who were enrolled in ECD centers is sixteen percentage points higher than that of children who were not. This is an absolute increase of 25%.

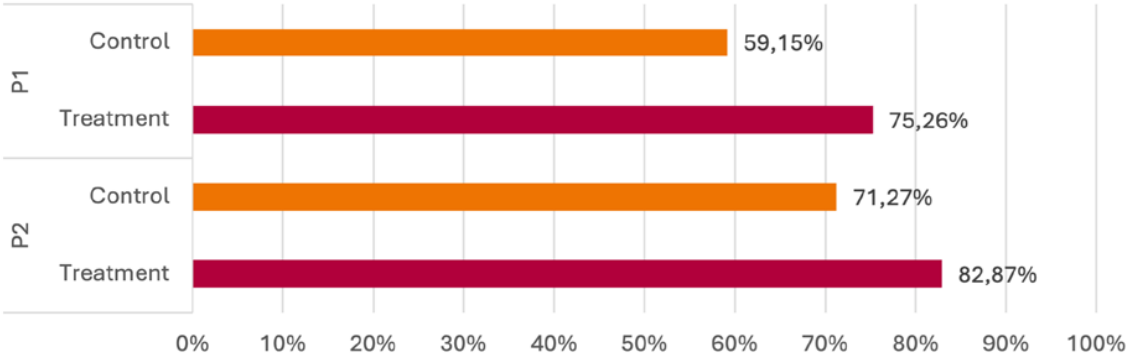

Figure 9: *Average percentage of schooldays attended in term 3.*

Dropouts

Figure 8 shows that in year 2 no one from the treatment group dropped out, while for the control group there is a small number of children who dropped out of primary school. Unfortunately, the dataset does not enable the extensive analysis with this data, so it is not possible to assess whether these differences are due to initial differences or to ECD enrolment. Though, because the dropout numbers for the control group are also small (3 children in P1 and 2 in P2), it is not expected that these differences are significant. So, it is not expected that children who were enrolled in ECD centers have a smaller risk to dropout.

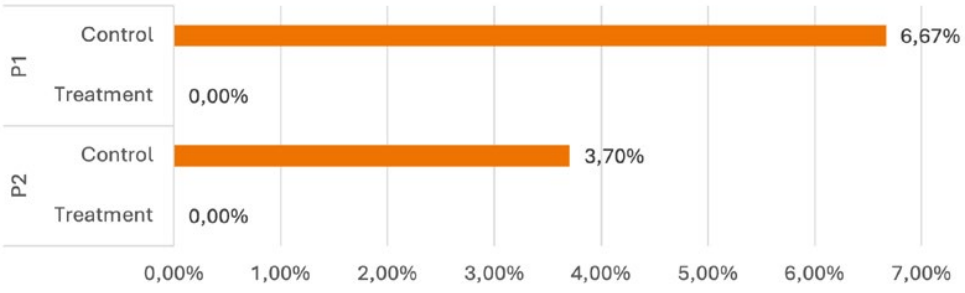

Figure 10: *Percentage of children dropping out from primary school by level and group.*

YEAR 3 – COHORT 1

In this last subchapter, data will be presented for children from cohort 1 who were in P3 in year 3. These are 25 students (7 control, 18 treatment) from the original sample of 162 children. Because of this small sample it is not relevant to perform an extensive analysis of the results, as the previous subchapter already showed that a larger sample is needed for that. Besides, in this subchapter only academic performance data will be presented. Year 3 for cohort 1 is 2023-2024, and as mentioned earlier, the quality of attendance data for that year is not sufficient enough for analysis. Next to that, none of the 25 students from this sample dropped out of primary school.

Academic performance

The effect of ECD enrolment on scores reduces further in the third year, and in general the average scores are better than in year 1 and 2. Nevertheless, the gap in promotion percentages remains. The promotion rate for children who were enrolled in an ECD center is still seventeen percentage points higher.

Compared to the previous figures on scores, *Figure 11* shows that in year 3 the children from the control group were able to catch-up with the children from the treatment group in the subjects Math and English. For the subject Kinyarwanda, on average children from the treatment still score seven points higher (almost 10% of the total score for the subject). What stands out from *Figure 11* as well is that for the first time an average score of students from the control group is higher than the one of students from the treatment group. Compared to *Figure 1* and *Figure 6* it appears that the gap between children from the treatment and control group decreases. This is confirmed by the average percentages of the total score by group as presented in *Figure 12*. Lastly, the average scores for all subjects increased again compared to year 2, which should be expected because the sample of year 3 only consists of students who were able to promote twice.

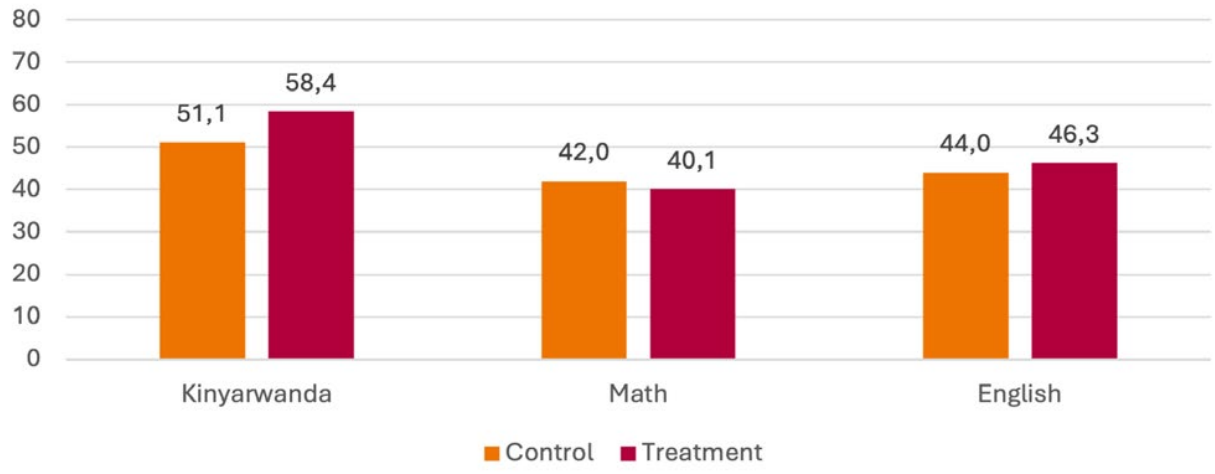

Figure 11: *Average points scored out of 80 for main courses at group level.*

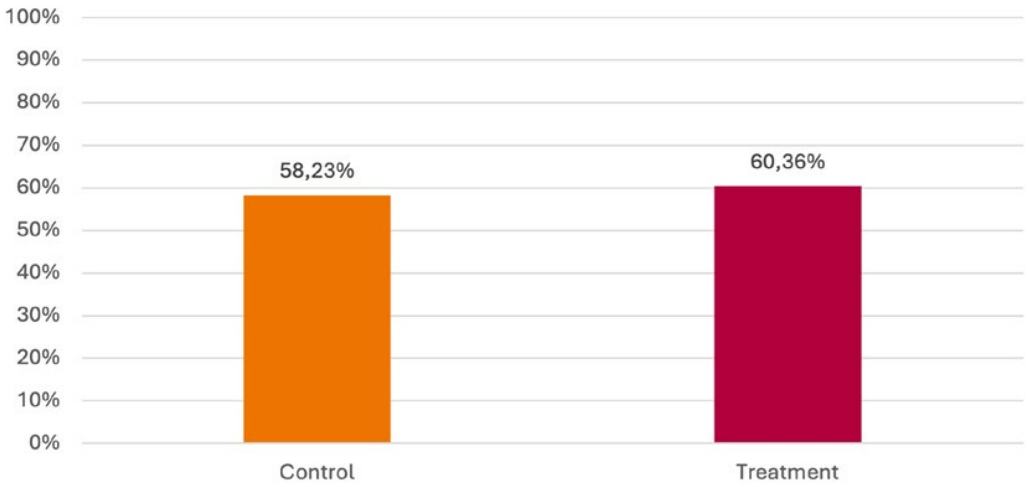

Figure 12: *Average percentage of the total score in term 3 by group.*

Consistent with *Figure 3* and *Figure 8*, the treatment group still outperforms the control group in promotion percentages, with a continued gap of between 15% and 20%. The promotion percentages of 88.89% and 71.43% imply in this sample that of both the treatment and the control group only two children had insufficient scores to be promoted. Thus, the large difference is also due to the small sample. Like with the scores, also the promotion percentages grew compared to the previous two years. Again, a likely explanation for this is that this is because the remainder of the sample only consists of children who were able to promote twice.

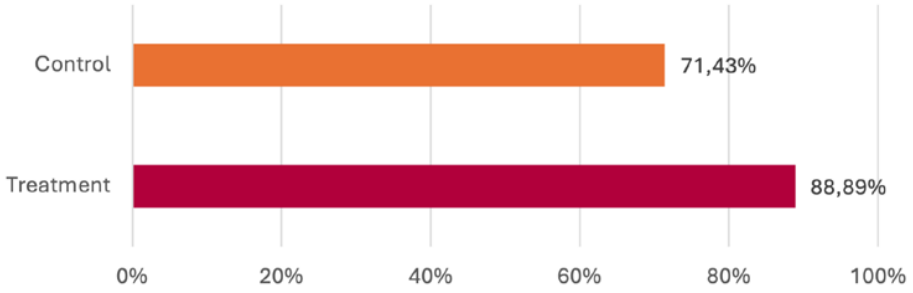

Figure 13: *Percentage of children promoted at group level.*

5. Discussion

The discussion on results is structured alongside the three main objectives of the research.

1. ASSESSING THE IMPACT OF ECD ON CHILDREN'S ACADEMIC PERFORMANCE IN PRIMARY SCHOOL.

Children who went to ECD centers before they went to primary school perform better in P1, P2, and P3 than children who received no formal education before primary school. This effect is present in their average scores, as well as in their chances to get promoted. For children in P1 in year 1 there is strong evidence that going to an ECD center increases scores, and even more important, it increases the chance to get promoted to P2 by 18 percentage points. With 35% of the children from the control group being promoted from P1 to P2 in year 1, this is an increase of more than 50%. For year 2 the effects on scores are still there, but less strong than in year 1. The effect of ECD participation in year 2 is still strong. Children who were enrolled in ECD centers still have 50% more chance of being promoted. This effect is there for children who remained in P1 after year 1 as well as for children who got promoted to P2. For P3 the gap between children from the treatment and control group in their scores strongly decreased. This makes sense, because only the children from the control group who were able to promote twice are left in this third year's sample. The biggest impact is already made in the first two years, as 72% of the children who were able to reach P3 after two years are part of the treatment group.

2. EVALUATING THE EFFECTS OF ECD ON SCHOOL ATTENDANCE, DROPOUT RATES, AND RETENTION.

Children who were enrolled in ECD centers have higher attendance in P1 and P2. There is no effect for dropouts. For children in P1 in year 1, previous ECD enrolment is linked to a 9% increase in attendance compared to children from the control group. For children in year 2 this effect is even higher, since in year 2 ECD enrolment increases attendance by 25%. Higher attendance is one of the potential explanations for the better academic performance of children from the treatment group. This is not the case for dropout rates, since this research found some, but not strong enough evidence to support the claim that ECD enrolment leads to a decrease in dropouts. The large positive effect of ECD enrolment on promotion relates more to a decrease in retention.

3. UNDERSTANDING DIFFERENCES IN OUTCOMES BETWEEN CHILDREN WHO ATTENDED ECD AND THOSE WHO DID NOT.

Next to the quantitative data collection, teachers were interviewed on their observations in class. The following output from these interviews help to understand the positive effect of ECD enrolment on academic performance and attendance in the first years of primary school:

- ECD enrolment improved children's adaptation to primary school routines, school rules, and hygiene practices. Teachers noted better classroom behavior among children who were enrolled in an ECD compared to peers who did not go to an ECD center before primary school. The children of this latter group struggled with attention and adapting to structured

learning. Furthermore, they faced greater challenges with traditional teaching methodologies, which emphasize listening and following directions.

- Children exposed to play-based and interactive learning in ECD centers were reported to adapt better to the school environment.
- Children from the treatment group in cohort 2 showed higher self-esteem and better peer relationships than children from the control group.
- Compared to the treatment group, children from the control group started later with primary school on average. A significant number of children in the control group started primary school when aged between 9 and 15, which impacted their performance negatively due to age-related challenges in learning.
- For children from the treatment group, parental involvement is higher. These parents were more actively involved in school activities, such as attending meetings and monitoring their children's education.
- That the language of instruction at primary school is English, is a challenge for children from both groups, especially for those from rural areas or homes with no prior English exposure. The transition from Kinyarwanda in ECD to English as the medium of instruction in primary school was challenging for children from the treatment group.

Aside from what is mentioned in the quantitative assessment above, there are also other elements that seem to influence school performance. First, there seem to be gender-based differences. Within the treatment group, there is quite a gap between girls and boys in promotion rates in Year 2 and 3. When looking at subject scores, this gender difference in favor girls is also observed in Year 2. Second, the number of children moving schools decreased significantly in P2, suggesting greater stability or fewer external disruptions. Third, teachers stated that children from lower socio-economic households (Ubudehe categories 1 and 2) performed less well due to limited resources, impacting their ability to participate fully in school activities. And, lastly, children in unstable family situations or from families with lower parental engagement were observed to struggle more academically, even within the target group.

In summary, the qualitative insights gathered from teacher interviews reinforce the positive influence of ECD on children's adaptation, classroom behavior, and overall school performance. Furthermore, the qualitative interviews with teachers suggest that ECD exposure, especially with play-based and interactive learning, fosters self-esteem and healthier peer relationships, better preparing children for the demands of primary education. Enhanced parental involvement within the target group further underscores ECD's broader impact on engagement and educational outcomes. Highlighting the need for holistic educational approach, not exclusively focusing on curriculum. However, persistent challenges remain for children from lower socio-economic backgrounds, those facing language transitions, and those in less stable family environments.

6. Recommendations

1. STRENGTHEN THE ECD CURRICULUM TO ENHANCE SCHOOL READINESS

The evaluation findings underscore the importance of a robust curriculum to prepare children effectively for primary school, as children who attended ECD centers performed better in subsequent levels than those who did not. Strengthening the ECD curriculum can involve further alignment with early primary requirements, with a strong emphasis on foundational skills in literacy, numeracy, and socio-emotional development. Integrating the requirements in experiential and play-based learning methods within the curriculum enhances cognitive and language development, which aligns well with Rwanda's competency-based education framework.

2. GENDER SENSITIVE APPROACHES TO ECD

The report identifies some gender disparities in outcomes. To address this, the curriculum and teaching methods should incorporate gender-sensitive approaches that recognize these differences and respond to them proactively. For instance, engaging boys through play and engaging activities and using instructional methods that capture diverse learning styles could help bridge this gap.

3. IMPROVE TEACHER SKILLS IN CURRICULUM TEACHING, GENDER-SENSITIVE TEACHING, CHILD-CENTERED APPROACHES AND PLAY-BASED PEDAGOGY

The positive impact of teacher engagement in ECD settings was evident in the study's findings. However, there is a clear need for comprehensive training in both the curriculum and in the use of gender-sensitive techniques. Investing in ongoing professional development, focused on play-based pedagogy, classroom management, and child-centered approaches, can empower teachers to handle diverse classroom needs. Teachers should also receive training to monitor student progress effectively, equipping them with the skills to identify and address learning difficulties early.

4. ENHANCE PARENTAL AND COMMUNITY ENGAGEMENT

Parents and communities play an essential role in supporting ECD. The evaluation highlighted the success of home visits and parental involvement in reinforcing learning and school readiness. Expanding parent education programs on topics like nutrition, early stimulation, and hygiene can strengthen children's physical and cognitive development. Community-driven initiatives, such as cooperatives for income generation, can further support ECD centers by providing funding while ensuring parents feel invested in their children's educational outcomes. Integrating parental feedback into ECD program designs also ensures that services remain culturally relevant and tailored to community needs.

5. EXPAND ACCESS TO ECD SERVICES IN UNDERSERVED AREAS

The findings show a clear advantage for children who have access to ECD services, and there remains a pressing need to extend these benefits to underserved communities. Expansion strategies should focus on constructing more cost-effective centers in

rural and low-income areas while supporting local educators and volunteers to facilitate home-based ECD models. Establishing mobile ECD units and community-based programs can address the logistical challenges of scaling services in remote areas.

6. ENHANCE THE IMPACT OF ECD SERVICES EVEN FURTHER BY INTEGRATING THEM INTO EXISTING HEALTH AND SOCIAL SYSTEMS

ECD centers can enhance their reach and impact by integrating with Rwanda's health and social support structures. For instance, linking ECD services with maternal and child health programs can provide a holistic approach to childhood development. Regular health check-ups at ECD centers, along with access to vaccinations and nutritional support, can address health barriers that affect learning. Social protection programs can also support families in crisis, reducing the risk of school dropout due to socio-economic challenges.

Photo: *ECD children at Nyamata model center.*

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Appendix A – Extensive analysis tables year 1

As described in the data chapter, it is not possible to do a simple comparison of means related to primary school performance as those results could be highly biased. Therefore, in the assessment of the link between ECD enrolment and primary school performance it is important to include the variables that are unbalanced between the treatment and control group. This will be done by adding these variables as controls in regressions. This way, the treatment effects can be calculated that take initial differences between the treatment and control group into account. That is, the output from those regressions will filter the part of the difference that is due to ECD enrolment. The control variables used are average year of birth, suffering from chronic diseases, emotional instability, limited communication skills, household having health insurance, married parents, and Ubudehe category. The extensive analysis also takes fixed differences between the three cohorts into account by adding a variable that identifies the three different cohorts. This is needed, since the data of the three cohorts is taken together in this analysis. R1 and R2 each time implies 'regression 1' (without control variables) and 'regression 2' (with control variables).

Table 2: *Regression results for scores*

VARIABLES	Kinyarwanda		Math		English		% points in term 3	
	R1	R2	R1	R2	R1	R2	R1	R2
Treatment	6,94*** [2,43]	7,44*** [2,65]	6,12*** [1,89]	6,91*** [2,04]	6,34*** [1,98]	7,16*** [2,15]	0,07*** [0,02]	0,08*** [0,02]
Fixed cohort effects	✓	✓	✓	✓	✓	✓	✓	✓
Controls	✗	✓	✗	✓	✗	✓	✗	✓
N	480	457	480	457	480	457	480	457

Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1. The treatment effects of the first six regressions are on average the extra number of points that children from the treatment group score compared to children from the control group. The treatment effects of the last two regressions are on average the extra percentage points of the total score that children from the treatment group score compared to children from the control group.

Appendix A – Extensive analysis tables year 1

Table 3: Regression results for the variable 'promotion'

VARIABLES	Promotion	
	R1	R2
Treatment	0,62*** [0,15]	0,80*** [0,18]
Fixed cohort effects	✓	✓
Controls	✗	✓
N	496	472

Marginal effects in parentheses. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1. The numbers between parentheses are on average the extra percentage points chance that children from the treatment group have to get promoted compared to children from the control group.

Table 4: Regression results for the variable 'attendance'

VARIABLES	Attendance	
	R1	R2
Treatment	0,09*** [0,02]	0,07*** [0,03]
Fixed cohort effects	✓	✓
Controls	✗	✓
N	339	332

Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1. The treatment effects are on average the extra percentage points in attendance of children from the treatment group compared to children from the control group.

Table 5: Regression results for the variable 'dropout'

VARIABLES	Dropouts	
	R1	R2
Treatment	-0,47 [-0,02]	-0.51 [-0.02]
Fixed cohort effects	✓	✓
Controls	✗	✓
N	516	492

Marginal effects in parentheses. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1. The numbers between parentheses are on average the extra percentage points chance that children from the treatment group have to dropout compared to children from the control group.

Appendix B – Extensive analysis tables year 2

This extensive analysis is the same as for year one, with the one difference that this time the first regression only looks at data of children from P2, while the second regression each time looks at aggregated data of children from P1 and P2. As also mentioned in the main text, this aggregation is because the same of P1 and P2 separately is too small to detect statistical significance.

Table 6: Regression results for scores

VARIABLES	Kinyarwanda		Math		English		% points in term 3	
	P2	P1 & P2	P2	P1 % P2	P2	P1 & P2	P2	P1 & P2
Treatment	6,43 [5,69]	7,35* [4,36]	3,04 [4,95]	1,99 [3,52]	3,37 [4,55]	6,80* [3,64]	0,05 [0,05]	0,05 [0,04]
Fixed cohort effects	✓	✓	✓	✓	✓	✓	✓	✓
Controls	✓	✓	✓	✓	✓	✓	✓	✓
N	123	189	123	189	123	189	123	189

Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1. The treatment effects of the first six regressions are on average the extra number of points that children from the treatment group score compared to children from the control group. The treatment effects of the last two regressions are on average the extra percentage points of the total score that children from the treatment group score compared to children from the control group.

Table 7: Regression results for the variable 'promotion'

VARIABLES	Promotion	
	P2	P1 & P2
Treatment	0,74 [0,15]	0,79** [0,17]
Fixed cohort effects	✓	✓
Controls	✓	✓
Levels	P2	P1 & P2
N	125	206

Marginal effects in parentheses. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1. The numbers between parentheses are on average the extra percentage points chance that children from the treatment group have to get promoted compared to children from the control group.

Appendix B – Extensive analysis tables year 2

Table 8: Regression results for the variable 'attendance'

VARIABLES	Attendance	
	P2	P1 & P2
Treatment	0,12 [0,12]	0,16** [0,08]
Fixed cohort effects	✓	✓
Controls	✓	✓
Levels	P2	P1 & P2
N	58	157

Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, and * p<0.1. The treatment effects are on average the extra percentage points in attendance of children from the treatment group compared to children from the control group.

Help a Child Rwanda

Help a Child Rwanda has a leading position in delivering quality Early Childhood Development care and pre-primary education for young children aged 0–7 years. We are skilled in improving access to integrated, high-quality ECD services for both young children and their families. We excel in ECD, parenting education for parents and prospective parents, the Self-Help Group (SHG) approach, and the PIPPA. We offer a holistic program that targets children, their families, and the wider community. Our community-based approach focuses on young children, youth, and prospective parents to create lasting impact in vulnerable communities.

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