Supplemental Appendix

From Access to Achievement: The Primary School-Age Impacts of an At-Scale Preschool Construction Program in Highly Deprived Communities

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A Previous preschool interventions

Table A1 organizes the related literature on preschool interventions using existing preschool infrastructure. The first two columns identify the paper. The *Intervention* column shows main component of the program being evaluated. The *Design of the study* column shows the main empirical strategy used in the evaluation. *Outcome period* refers to the life stage or age of the children in the sample when the study measured its outcomes. *Main results* displays the detected impacts by outcome. Finally, *Vulnerability measures* summarizes some information from the study's sample that characterizes the context in which the study is conducted in terms of key development measures.

Table A1: Other Preschool Education Interventions in the Literature

Country	Source	Intervention	Design of the study	Outcome period	Main results	Vulnerability measures
Gambia	Blimpo et al. (2022)	Curriculum Teacher training	RCT 53 villages	Preprimary (age 5.5)	No statistically significant effects on cognitive and non-cognitive outcomes	ECD enrollment (baseline) 90% Caregivers' education level: 1.9 years Heigh-for-age score: -1.32 SD
Colombia	Andrew et al. (2024)	Teacher Training Provision of staff	RCT 40 centers 1,987 children	Preprimary (age 5.5)	Fluid reasoning (+) 0.17 SD Expressive language (+) 0.15 SD School readiness (+) 0.19 SD	Mothers' education: 12.6 years
Ghana	Wolf (2019)	*Teacher Training* Parental engagement (PA)	RCT 240 schools 3,435 children	Primary (age 8)	Teacher training only: Literacy (+) 0.11 SD Social competence (+) 0.11 SD Cognitive flexibility (+) 0.12 SD Inhibitory control (+) 0.082 SD Behavior regulation (+) 0.15 SD. *Teacher training and PA:* Numeracy (-) -0.10 SD Behavior regulation (+) 0.14 SD	Male head of the household can read: 80%
Ghana	Wolf et al. (2019)	Teacher training Parental engagement (PA)	RCT 240 schools 3,435 children	Preprimary (age 5.5)	*Teacher training only:* School readiness (+) 0.13 SD Social-emotional skills (+) 0.13 SD Executive function (+) 0.11 SD *Teacher training and PA:* No effects on children's outcomes	Male head of the household can read: 80%
India	Dillon et al. (2017)	Curriculum Provision of materials	RCT 212 preschools 1,540 children	Primary (1st grade)	*Math-curriculum:* Math composite score (+) 0.138 SD. Nonsymbolic math score (+) 0.32 SD *Social curriculum:* No statistically significant effects	*No information*
India	Ganimian et al. (2024)	Provision of staff	RCT 320 preschool centers 4,675 children	Preprimary (age 5.5)	Math scores (+) 0.28 SD Language scores (+) 0.46 SD Executive function (+) 0.18 SD	Height-for-age: -1.52 SD Stunted: 34%
India	Meghir et al. (2023)	Curriculum Teacher Training Provision of Materials Parental engagement	RCT. 192 villages, 1,449 children.	Preprimary (age 4)	*Both interventions*: Congitive index (+) 0.24 SD School Readiness (+) 0.21 SD. *ES only:* Congitive index (+) 0.18 SD School Readiness (+) 0.13 SD. *EP only:* Congitive index (+) 0.17 SD School Readiness (+) 0.24 SD.	Mothers' education: 7.2 years
Indonesia	Hasan et al. (2019)	Community awareness Teacher training Subsidized or free access	RCT 310 villages 3,089 students	Preprimary (age 5) & Primary (age 8)	*Preprimary:* Physical health (+) 0.21 SD Emotional maturity (+) 0.12 SD *Primary*: Language - match picture (+) 0.13 SD Math - order numbers (+) 0.13 SD Communication skills (-) 0.14 SD	Mother's education (primary or less): 50%
Kenya	Gray-Lobe et al. (2022)	Curriculum Teacher training	RCT 4,844 children	Preprimary (ages 5-6)	Subject knowledge index (+) 0.51 SD Higher-order skills index (+) 0.28 SD Language knowledge index (+) 0.66 SD Timely grade progression (+) 6 pp Receptive vocabulary (+) 0.42 SD	Caregiver can read: 11%

Malawi	Özler et al. (2018)	Teacher training Teacher Payments Parental engagement	RCT 199 centers 2,120 children	Preprimary (age 5.5) & Primary (ages 8-9)	*Teacher training (TT) only*: Enrolled in Primary (-) 10.9 pp Fine motor skills (-) 0.107 SD Child difficulties in primary (-) 0.10 SD *TT + teacher incentives*: Enrolled in Primary (-) 9.7 pp Fine motor skills (-) 0.115 SD *TT + parenting training:* Enrolled in Primary (-) 7.5 pp Language skills (+) 0.19 SD Prosocial index (+) 0.25 SD	Height-for-age: -1.67 SD Stunted: 34%
Paraguay, Peru	Bando et al. (2019)	Teacher training Pedagogy change Provision of materials	RCT 631 schools 8,807 students	Preprimary (ages 4-5) & Primary (age 9)	*Preprimary, 1 year after (Both countries):* Math test scores (+) 0.17-0.20 SD Science test scores (+) 0.12-0.17 SD *Primary, 4 years after (Peru)*: Math test scores (+) 0.14 SD Science test scores (+) 0.23 SD	No information
Peru	Gallego et al. (2019)	Teacher training Pedagogy change Provision of materials	RCT 107 schools 2,926 children .	Preprimary (ages 4-5)	Math test scores (short-term) (+) 0.21 SD	Mother's education (high school graduate): 21% Preschool attendance at age 3 and 4: 90%

B Process evaluation

This appendix describes the methods and instruments used to conduct a process evaluation of the intervention and the main results from this process. Further details are presented in Heinzel et al. (2024).

B.1 Objective and approach

The process evaluation was designed with the objective of using qualitative results to assess the quality of the different components of the DICIPE program to use this as suggestive evidence for potential intervention mechanisms.

To carry out this qualitative work, we used the Measure of Early Learning Environments (MELE) instrument. The MELE is designed to assess the quality of group-based care in community centers, schools, and kindergartens, for children from age 3 to primary school entry. In this sense, the MELE module includes domains related to pedagogy, interactions, physical environment, parent and community engagement, personnel, play, and inclusion. The MELE module uses two approaches to measure the quality of early learning environments: classroom observation tool and oral interviews with caregivers, teachers (facilitators), and school administrators. Therefore, the MELE module is designed to take into account the classroom environment, as well as the level of support and engagement from parents, teachers, and communities (MELQO Report, 2017).

The MELE Classroom Observation Tool is designed to capture key activities throughout the day and organized to provide information about the activities and interactions that occur during a typical class session. The tool collects data on learning activities; classroom interactions and approaches to learning; classroom arrangement, space, and materials; and facilities and safety. Most items are based on an actual classroom observation and are scored on a 1-to-4 scale, with higher scores reflecting higher levels of quality. The MELE interviews collected information on pre- and in-service training of teachers; teacher qualifications; supports and training offered to caregivers; and feedback of the program among teachers, school coordinators, and caregivers; and parental engagement in the escolinha.

A team of international and national experts familiar with the DICIPE and Mozambique context reviewed and adapted both the MELE Classroom Observation tool and the three sets of interviews. This process involved reviewing the quality domains, discussing relevant items, and deciding upon a set of items that were viewed as accurately representing the goals of early learning settings in Mozambique specifically.

B.2 Selection of participants

We collected data from a sample of 40 escolinhas in all provinces participating in the study. In each of the 40 communities, we collected the following information: one classroom observation, eight parent or caregiver interviews, up to four facilitator interviews, and an interview from a school coordinator, which in this context is a member of the community coordination committee (CCC). In total, 320 caregivers were interviewed, along with 139 facilitators and 40 CCC members.

This qualitative data collection took place in 2019. We worked with five field teams. Each team was made up of the following five members: Supervisor, MELE classroom observer, and three enumerators to lead the interviews with caregivers and CCC. The MELE data collection team training was conducted in Maputo City between June 11 and June 18. The training lasted nine days of in-class training and one day in the field for a pilot exercise in the Boane District, Maputo Province. Twenty-five enumerators and supervisors attended the training. On June 20, a one-day pilot exercise was held at the Chinonanquila Escolinha, located in Boane District, Maputo Province.

The fieldwork for the qualitative study started on June 26 and lasted a total of 11 days. The data collection protocol was approved by the National Mozambique Review Board (*Comité Nacional de Bioética para a Saúde*), with an approval reference number 225/CNBS/18 and informed written consent was obtained from the respondents for the video recording.

B.3 Main Results Across Domains

This subsection summarizes the main results presented in Heinzel et al. (2024).

1. Physical environment

A key feature of the DICIPE program design is that escolinhas are considered community-based and should be located within a central area of the community, close to the primary school. The results show that almost 70% of the parents reported walking between 0 to 15 minutes from the family homes to the escolinha. In terms of space, results suggest that 98% of escolinhas have spaces with an adequate size so that all attending children can comfortably participate in all indoor activities and 93% of schools have schoolyard with adequate space for play and equipment for gross motor activities (for example, swings and slides). In general, escolinhas were found to have satisfactory access to toilet facilities. 95% of all the escolinhas visited had composting toilets and 78% of all toilets were ranked highly satisfactory having met basic conditions in terms of cleanliness, separation of gender, and being appropriately child-sized.

2. Materials in the classroom.

The DICIPE program aimed to promote the use or readily available, often recycled materials. Results from interviews to facilitators show that 92% of them reported using locally produced materials or a combination of locally and commercially produced materials. 63% of schools visited had writing utensils and close to half of the escolinhas had books. The maximum number of books per escolinha was three.

3. Facilitators qualification and training

The DICIPE program required that the instructors had a minimum level of education (7th grade) and they should participate in upfront and ongoing training. Results from the facilitators interviews show that 96% of them completed at least 7th grade. Moreover, results also show that the majority of facilitators received both types of training. In fact, 80% of facilitators had received pre-service training and 70% received in-service training. However, the number of training days received was lower than originally planned. We also explored facilitators' satisfaction with the level of support and resources they receive. In the survey, we asked facilitators to rate on a 1-5 scale how much they agreed with statements such as "I am satisfied with my job" and "I have adequate resources to carry out my duties," and we find that teachers felt fairly well supported and resourced, with a mean rating of 3.2.

4. Parenting education sessions and parental engagement

The DICIPE project design stipulated that parenting educational meetings should be held once a month. However, the number of parenting educational sessions per community held was, on average, only one every three months. In addition, almost 50% of caregivers reported that they had never attended a parental education class at the escolinha. Despite this low participation of caregivers in the parenting education activities, families strongly engaged in other activities in the escolinha, including participating in the functioning of the escolinha. For example, 81% of all interviewed caregivers reported attending meetings to learn about their children's academic performance at the escolinha. Moreover, more than 60% of caregivers support the escolinha with services such as overall maintenance and cleaning of the escolinha and 23% provide in-kind contributions (i.e., providing food) on a regular basis. Lastly, we also document high satisfaction of caregivers with the services provided at the escolinha. We asked caregivers to rate on a 1-5 scale how much they agreed with statements such as, "I am satisfied with the quality of education my child receives", "As a parent I feel involved in the school," and "As a parent I feel my opinion matter". The mean rating for these items was 4.04, indicating that caregivers felt well supported and thought positively about school.

5. Classroom practices

The MELE Classroom Observations collected key information on instruction practices employed by teachers to teach specific subject areas (i.e. numeracy, literacy, language skills, fine motor skills, etc.). Scoring took into consideration the type of lessons, activities, and or experiences geared towards introducing, practicing, and mastering skills in each particular area. Each item was rated on a 1 to 4-points scale, indicating 1 = learning activity did not occur; 2 = basic level (lesson taught using rote learning); 3 = medium level (some play-based cleaning, connections to concrete objects, etc.); 4 = high level (play-based, open ended questions, real-life connections). The majority of escolinhas scored a basic level for most of the subject areas, except in gross motor skills, under which 70% of all escolinhas scored a high level. Lastly, we find that 43% of all learning activities were done in a whole group/entire class, instead of varying the grouping structure.

6. Classroom interactions

Interactions refer to the type and quality of interactions between teachers and children, and between children and their peers. We also collected data on classroom interactions and approaches to learning using the classroom observation tool. We gathered data on how the facilitator engaged with students, disciplinary methods, children engagement, and other key concepts. The observation items were scored on a 1-to-4-points scale, with higher scores indicating high levels of quality (i.e. 1 = lowest level of quality, 2 = basic level of quality, 3 = medium level of quality, 4 = highest level of quality). Results show that the majority of facilitators (85%) had a medium or high engagement with the children, indicating that they genuinely appeared to enjoy teaching, showed affection towards students, and were welcoming and encouraging of student ideas and participation. Moreover, approximately 80% of classrooms scored medium or high level of children engagement, indicating that most of children observed were engaged throughout the observation. Moreover, 75% of all classrooms reported children never waiting more than 10 minutes with no specific activity. Lastly, 93% of facilitators scored a 3 or 4 on use of disciplinary methods which means that the vast majority of teachers used positive techniques for redirecting or guiding children's behavior. In addition, 73% of all teachers were observed as rarely or never engaging in negative physical or verbal interactions with children (i.e. yelling, pinching, striking, etc.)

7. Other results

To complement the impacts of the intervention on preschool enrollment, we asked caregivers to report their children's school attendance and satisfaction with the services provided. Overall, we find that 91% of caregivers interviewed reported that their children always attend escolinha (i.e. throughout the entire school year) and 89% reported that their children attend the escolinha 5 days a week. Moreover, we also find high levels of satisfaction with attending school. Specifically, 95% of caregivers reported that their child was happy to attend the escolinha.

C Supporting Figures

Figure C1: Timeline of Intervention and Data Collection

Figure C2: Distribution of Ages for Target Children at Baseline

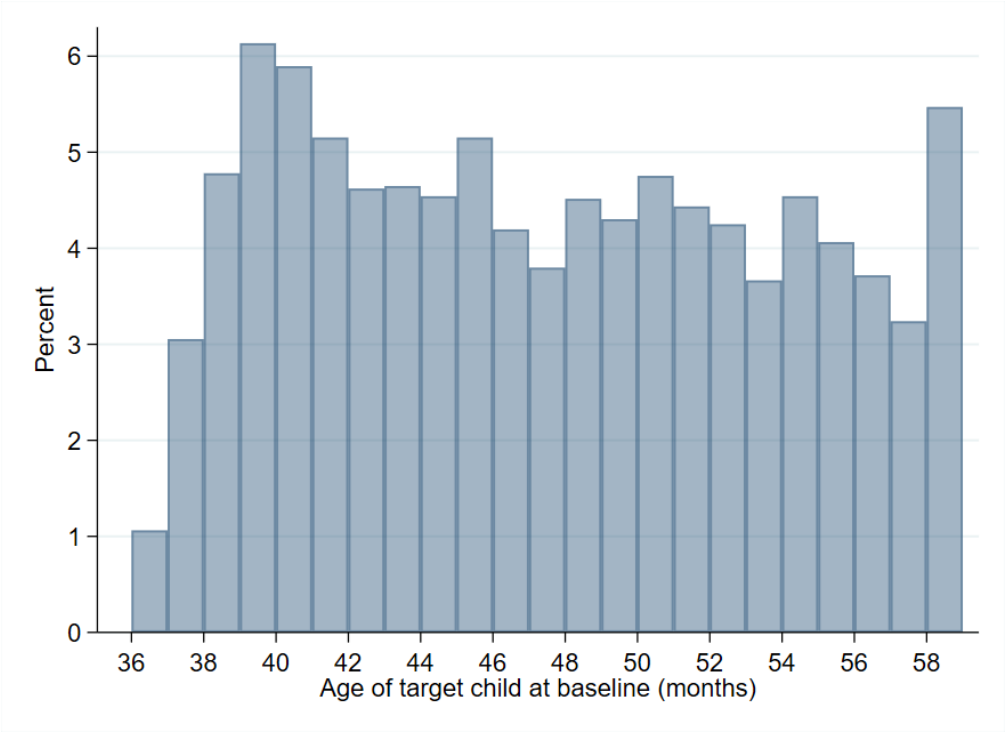
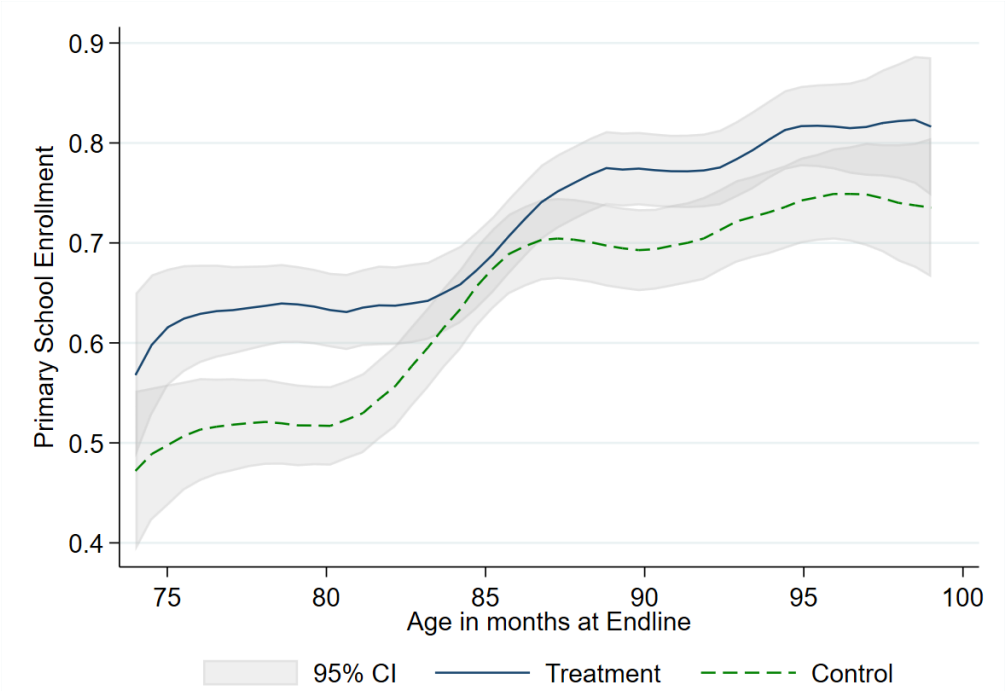


Figure C3: Primary School Enrollment at Each Age by Treatment Status



Notes: The plots show the Kernel weighted local polynomial smooth of primary school enrollment conditional on age (in months) with confidence intervals.

D Supporting Tables

Table D2: Data Collection Instruments

	Round of data collection	
Measure/Instrument	Baseline	Endline
Anthropometric measures: Height and weight	X	
Ages-and-stages Questionnaire (ASQ)	X	
Measure of Development and Early Learning (MODEL)		X
Parenting and Learning environment module (MICS)	X	X
Quality of program components module (MELE)		X

Table D3: Preschool and Facilitator Summary Statistics (Endline - Treatment Only)

Variable	(1) Mean	(2) SD	(3) N
Panel A. Preschool characteristics			
Number of instructors	3.661	0.812	112
Enrollment in 2019 (Number of children)	74.723	16.134	112
Enrollment in 2018 (Number of children)	79.375	23.147	112
Daily attendance (Number of children)	46.795	15.735	112
Panel B. School equipment and infrastructure			
Presence of:			
Blackboard	0.429	0.497	112
Chalks	0.411	0.494	112
Notebooks or writing paper	0.562	0.498	112
Pens/Pencils	0.554	0.499	112
Drawing Books/Cards	0.536	0.501	112
Card Games	0.286	0.454	112
Building blocks	0.339	0.476	112
Leisure Games (Dolls, stuffed animals, dress-up clothes, etc.)	0.562	0.498	112
Educational Games or Mathematics Materials	0.759	0.430	112
Storybooks (Books with pictures and text)	0.571	0.497	112
Musical instruments	0.295	0.458	112
Playground with swing, ladder, or ramp/slide	0.938	0.243	112
Potable water	0.491	0.502	112
Panel C. Instructor characteristics			
Years of schooling	8.572	1.740	402
Teaches at preschool and has another job	0.266	0.442	410

Notes: This table displays summary statistics for key characteristics of the preschool (including equipment and infrastructure) and facilitators as measured at endline for the treatment group only.

Table D4: Balance in Attrition Rates across Treated and Control Individuals

	(1) Child test score attrition	(2) Household interview attrition
Treatment	-0.002	0.004
	(0.022)	(0.021)
Observations	4687	4687
Control mean	0.213	0.192

Notes: "Child test score attrition" is a dummy variable equal to 1 if we could not conduct the child test with the target child at endline. "Household interview attrition" is a dummy variable equal to 1 if we could not conduct the household interview at endline. All regressions include district fixed effects. Standard errors clustered at the community level are shown in parentheses.

Table D5: Preschool Enrollment & ITT Impacts on Primary School Enrollment (Controls)

	Preschool	Primary School			
	(1) Ever enrolled in preschool	(2) Currently enrolled in school	(3) Repeated grade	(4) Appropriate grade for age	(5) Primary school enrollment index
Treatment	0.736	0.061	-0.031	0.059	0.164
	(0.019)	(0.025)	(0.015)	(0.025)	(0.052)
	[0.000]	[0.033]	[0.043]	[0.043]	[0.005]
Observations	3764	3760	3742	3760	3680
Control mean	0.019	0.633	0.145	0.631	-0.000

Notes: All outcomes are measured at endline. The primary school enrollment index is constructed based on the factors shown in columns (2) to (4) following Kling et al. (2007). All regressions include district fixed effects and a vector of control variables selected by LASSO. When the control variables have missing values, continuous variables were imputed with the mean of the interest group (i.e. caregiver, target child or household), and the median for the dummy variables. In this case, the 13 baseline variables selected were: household size, a dummy if the household receives remittances, age (years), years of schooling of the caregiver, a dummy if the caregiver is illiterate, ASQ communication score, ASQ fine motor coordination score, ASQ problem solving score, ASQ socio-personal score, a dummy if the caregiver speaks Portuguese, parental stimulation index, wealth index, and height-for-age z-score of the target child. Standard errors clustered at the community level are shown in parentheses. Westfall and Young (1993) p-values are shown in square brackets.

Table D6: ITT Impacts on Child Cognitive and Social-Emotional Skills (Controls)

	(1) Early Literacy Skills (index)	(2) Early Math Skills (index)	(3) Executive Function (index)	(4) Social-Emotional Development (index)	(5) Fine Motor Skill for Writing (index)	(6) Literacy interest (index)	(7) Skills index
Treatment	0.175	0.123	0.065	0.068	0.141	0.100	0.167
	(0.072)	(0.060)	(0.055)	(0.060)	(0.054)	(0.056)	(0.066)
	[0.058]	[0.114]	[0.404]	[0.404]	[0.047]	[0.081]	[0.012]
Observations	3682	3682	3682	3682	3682	3682	3682
Control mean	-0.000	0.000	-0.000	-0.000	0.000	-0.000	-0.000

Notes: The skills index is constructed over columns (1) to (6) following Kling et al. (2007). All regressions include district fixed effects and a vector of control variables selected by LASSO. When the control variables have missing values, continuous variables were imputed with the mean of the interest group (i.e. caregiver, target child or household), and the median for the dummy variables. In this case, the 13 baseline variables selected were: household size, a dummy if the household receives remittances, age (years), years of schooling of the caregiver, a dummy if the caregiver is illiterate, ASQ communication score, ASQ fine motor coordination score, ASQ problem solving score, ASQ socio-personal score, a dummy if the caregiver speaks Portuguese, parental stimulation index, wealth index, and height-for-age z-score of the target child. Standard errors clustered at the community level are shown in parentheses. Westfall and Young (1993) p-values are shown in square brackets.

Table D7: Local Average Treatment Effect (LATE) Impacts on Primary School Enrollment

	(1) Currently enrolled in school	(2) Repeated grade	(3) Appropriate grade for age	(4) Primary school enrollment index
Ever enrolled in preschool	0.081	-0.041	0.078	0.215
	(0.035)	(0.020)	(0.035)	(0.070)
	[0.051]	[0.062]	[0.062]	[0.010]
Observations	3760	3742	3760	3680
Control mean	0.633	0.145	0.631	0.000

Notes: All regressions include district fixed effects. The primary school enrollment index is constructed based on the factors shown in columns (1) to (3) following Kling et al. (2007). We instrument for "Ever enrolled in preschool" using the treatment assignment. Standard errors clustered at the community level are shown in parentheses. Westfall and Young (1993) p-values are shown in square brackets.

Table D8: LATE Impacts on Child Cognitive and Social-Emotional Skills

	(1) Early Literacy Skills (index)	(2) Early Math Skills (index)	(3) Executive Function (index)	(4) Social-Emotional Develop-ment (index)	(5) Fine Motor Skill for Writting (index)	(6) Literacy interest (index)	(7) Skills index
Ever enrolled in preschool	0.229	0.156	0.081	0.084	0.183	0.132	0.214
	(0.098)	(0.085)	(0.075)	(0.084)	(0.074)	(0.077)	(0.092)
	[0.081]	[0.181]	[0.483]	[0.483]	[0.075]	[0.105]	[0.026]
Observations	3682	3682	3682	3682	3682	3682	3682
Control mean	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Notes: The skills index is constructed over columns (1) to (6) following Kling et al. (2007). All regressions include district fixed effects. We instrument for "Ever enrolled in preschool" using the treatment assignment. Standard errors clustered at the community level are shown in parentheses. Westfall and Young (1993) p-values are shown in square brackets.

Table D9: Caregiver Time Investments (Controls)

	Parental practices		Engagement with Primary School Staff				
	(1) Parental Stimulation (index)	(2) Home Play (index)	(3) Met with the principal	(4) # of meetings with the principal	(5) Met with the teacher child	(6) # of meetings with the teacher	(7) Is part of the school committee
Treatment	0.172	0.070	0.070	0.248	0.012	0.160	0.009
	(0.054)	(0.046)	(0.020)	(0.058)	(0.028)	(0.104)	(0.016)
	[0.006]	[0.142]	[0.007]	[0.001]	[0.834]	[0.346]	[0.834]
Observations	3384	3386	3388	3383	1968	1973	3388
Control mean	0.000	-0.000	0.212	0.398	0.321	0.624	0.138

Notes: The parental stimulation index in column (1) was constructed using 12 questions that asked parents about activities they did with the target child, including reading books, singing songs, telling stories, and playing games. The home play index in column (2) was constructed using 7 questions about items that the target child plays with at home, including homemade or store-bought toys and musical instruments. These indices were constructed following Kling et al. (2007). All regressions include district fixed effects and a vector of control variables selected by LASSO. When the control variables have missing values, continuous variables were imputed with the mean of the interest group (i.e. caregiver, target child or household), and the median for the dummy variables. In this case, the 13 baseline variables selected were: household size, a dummy if the household receives remittances, years of schooling of the caregiver, a dummy if the caregiver is illiterate, ASQ communication score, ASQ fine motor coordination score, ASQ problem solving score, ASQ socio-personal score, a dummy if the caregiver speaks Portuguese, parental stimulation index, wealth index, height-for-age z-score of the target child, and a dummy if female. Standard errors clustered at the community level are shown in parentheses. Westfall and Young (1993) p-values are shown in square brackets.

Table D10: Preschool & Primary School Enrollment Impacts on Siblings

	Ever enrolled in preschool (siblings aged 3 to 6)	Currently enrolled in school (sisters aged 6 to 12)	Currently enrolled in school (brothers aged 6 to 12)
Treatment	0.620	0.031	-0.013
	(0.025)	(0.023)	(0.021)
	[0.000]	[0.180]	[0.525]
Observations	1788	1345	1487
Control mean	0.007	0.823	0.826

Notes: OLS estimates at the sibling-level are presented using outcomes reported by the caregiver at endline. All regressions include district fixed effects. Standard errors clustered at the community level are shown in parentheses. Westfall and Young (1993) p-values are shown in square brackets.

Table D11: Preschool & Primary School Enrollment Impacts on Siblings (Controls)

	(1) Ever enrolled in preschool (siblings aged 3 to 6)	(2) Currently enrolled in school (sisters aged 6 to 12)	(3) Currently enrolled in school (brothers aged 6 to 12)
Treatment	0.484	0.036	-0.013
	(0.020)	(0.022)	(0.021)
	[0.000]	[0.324]	[0.525]
Observations	2902	1345	1487
Control mean	0.007	0.823	0.826

Notes: OLS estimates at the sibling-level are presented using outcomes reported by the caregiver at endline. All regressions include district fixed effects. All regressions include a vector of control variables selected by LASSO. When the control variables have missing values, continuous variables were imputed with the mean of the interest group (i.e. caregiver, target child or household), and the median for the dummy variables. In this case, 10 variables were selected including: education level in years of caregiver, a dummy if caregiver is illiterate, number of children aged 0-18 living in the household, a dummy if caregiver speaks Portuguese, stimulation index, wealth index, household size, a dummy if household receives remittances, height-for-age z-score of target 3-5 and age (years). Standard errors clustered at the community level are shown in parentheses. Westfall and Young (1993) p-values are shown in square brackets.

Table D12: Heterogeneous Impacts on Primary School Enrollment

	(1) Currently enrolled in school	(2) Repeated grade	(3) Appropriate grade for age	(4) Primary School Enrollment Index
Panel A: Target child's gender				
Treatment	0.068	-0.014	0.065	0.152
	(0.031)	(0.018)	(0.031)	(0.064)
Female	0.020	0.029	0.020	-0.008
	(0.023)	(0.017)	(0.023)	(0.050)
Treatment × Female	-0.017	-0.032	-0.016	0.013
	(0.032)	(0.023)	(0.032)	(0.070)
Observations	3760	3742	3760	3680
Outcome mean (Control Group)	0.633	0.145	0.631	-0.000
Treatment + Treatment × Female	0.051	-0.046	0.049	0.165
Panel B: Childhood Stunting				
Treatment	0.064	-0.005	0.060	0.125
	(0.029)	(0.020)	(0.029)	(0.062)
Target child is stunted	-0.054	-0.004	-0.056	-0.118
	(0.020)	(0.019)	(0.020)	(0.049)
Treatment × Target child is stunted	-0.011	-0.048	-0.010	0.057
	(0.032)	(0.023)	(0.032)	(0.076)
Observations	3697	3680	3697	3621
Mean control	0.633	0.145	0.631	-0.000
Treatment + Treatment × Target child is stunted	0.052	-0.053	0.051	0.182
Panel C: Caregiver's education				
Treatment	0.002	-0.049	0.002	0.064
	(0.038)	(0.030)	(0.038)	(0.079)
Caregiver is illiterate	-0.091	-0.047	-0.088	-0.117
	(0.029)	(0.023)	(0.028)	(0.059)
Treatment × Caregiver is illiterate	0.072	0.024	0.069	0.118
	(0.042)	(0.032)	(0.042)	(0.085)
Observations	3722	3706	3722	3644
Outcome mean (Control Group)	0.633	0.145	0.631	-0.000
Treatment + Treatment × Caregiver is illiterate	0.074	-0.025	0.071	0.182
Panel D: Household wealth				
Treatment	0.051	-0.035	0.047	0.153
	(0.032)	(0.019)	(0.032)	(0.067)
Wealth index above median	0.041	0.006	0.036	0.072
	(0.021)	(0.016)	(0.022)	(0.047)
Treatment × Wealth index above the median	0.014	0.009	0.018	0.008
	(0.032)	(0.021)	(0.032)	(0.070)
Observations	3760	3742	3760	3680
Outcome mean (Control Group)	0.633	0.145	0.631	-0.000
Treatment + Treatment × Wealth index above the median	0.066	-0.026	0.065	0.161
Panel E: Household distance to a pre-school				
Treatment	0.068	-0.082	0.064	0.265
	(0.072)	(0.069)	(0.072)	(0.176)
Distance above the median	0.002	-0.057	-0.000	0.100
	(0.072)	(0.069)	(0.071)	(0.177)
Treatment × Distance above the median	-0.086	0.032	-0.088	-0.247
	(0.088)	(0.072)	(0.087)	(0.203)
Observations	3760	3742	3760	3680
Outcome mean (Control Group)	0.633	0.145	0.631	-0.000
Treatment + Treatment × Distance above the median	-0.018	-0.050	-0.024	0.018
Panel F: Children aged 3 to 5 living in the household				
Treatment	0.058	-0.030	0.056	0.155
	(0.025)	(0.016)	(0.025)	(0.052)
Number of children aged 3 to 5 above median	-0.079	-0.018	-0.077	-0.148
	(0.039)	(0.027)	(0.039)	(0.077)
Treatment × Number of children aged 3 to 5 above median	0.004	-0.003	-0.001	0.025
	(0.064)	(0.038)	(0.064)	(0.126)
Observations	3760	3742	3760	3680
Outcome mean (Control Group)	0.633	0.145	0.631	-0.000
Treatment + Treatment × Number of children aged 3 to 5 above median	0.062	-0.033	0.055	0.180

Notes: This table presents the estimated heterogeneous effects of the DICIPE program on target child's primary school enrollment outcomes. These coefficients are estimated using specification (2) and following the approach we describe in Section A. All regressions include district fixed effects. The primary school enrollment index is constructed over columns (2) to (4) following Kling et al. (2007). Standard errors clustered at the community level are shown in parentheses.

Table D13: Heterogeneous Impacts on Child Cognitive and Social-Emotional Skills

	(1) Early Literacy Skills (index)	(2) Early Math Skills (index)	(3) Executive Function (index)	(4) Social-Emotional Develop-ment (index)	(5) Fine Motor Skill for Writting (index)	(6) Literacy interest (index)	(7) Skills index
Panel A: Target child's gender							
Treatment	0.230	0.141	0.084	0.023	0.074	0.124	0.168
	(0.075)	(0.069)	(0.068)	(0.067)	(0.064)	(0.065)	(0.072)
Female	0.041	-0.047	-0.113	-0.107	-0.093	-0.012	-0.082
	(0.057)	(0.053)	(0.052)	(0.052)	(0.049)	(0.051)	(0.053)
Treatment × Female	-0.123	-0.051	-0.046	0.080	0.123	-0.054	-0.017
	(0.079)	(0.076)	(0.074)	(0.067)	(0.070)	(0.072)	(0.075)
Observations	3682	3682	3682	3682	3682	3682	3682
Mean control	-0.000	0.000	-0.000	-0.000	0.000	-0.000	-0.000
Treatment + Treatment × Female	0.107	0.090	0.038	0.102	0.198	0.071	0.150
Panel B: Childhood stunting							
Treatment	0.179	0.139	0.061	0.094	0.147	0.024	0.160
	(0.070)	(0.070)	(0.069)	(0.066)	(0.064)	(0.070)	(0.072)
Target child is stunted	-0.076	-0.048	-0.061	-0.014	-0.067	-0.098	-0.090
	(0.049)	(0.052)	(0.047)	(0.052)	(0.049)	(0.053)	(0.050)
Treatment × Target child is stunted	-0.016	-0.048	-0.004	-0.060	-0.034	0.121	-0.010
	(0.075)	(0.072)	(0.066)	(0.069)	(0.066)	(0.072)	(0.071)
Observations	3623	3623	3623	3623	3623	3623	3623
Mean control	-0.000	0.000	-0.000	-0.000	0.000	-0.000	-0.000
Treatment + Treatment × Target child is stunted	0.163	0.091	0.057	0.034	0.114	0.145	0.150
Panel C: Caregiver's education							
Treatment	0.149	-0.012	0.008	-0.145	-0.041	0.067	0.006
	(0.114)	(0.099)	(0.097)	(0.089)	(0.086)	(0.092)	(0.100)
Caregiver is illiterate	-0.170	-0.276	-0.148	-0.195	-0.225	-0.118	-0.281
	(0.068)	(0.073)	(0.065)	(0.060)	(0.072)	(0.065)	(0.070)
Treatment × Caregiver is illiterate	0.027	0.156	0.066	0.257	0.220	0.041	0.190
	(0.101)	(0.097)	(0.092)	(0.089)	(0.096)	(0.094)	(0.097)
Observations	3646	3646	3646	3646	3646	3646	3646
Mean control	-0.000	0.000	-0.000	-0.000	0.000	-0.000	-0.000
Treatment + Treatment × Caregiver is illiterate	0.176	0.144	0.074	0.111	0.179	0.108	0.196
Panel D: Household wealth							
Treatment	0.080	0.031	0.042	0.063	0.086	0.059	0.089
	(0.076)	(0.067)	(0.063)	(0.072)	(0.065)	(0.066)	(0.072)
Wealth index above median	0.004	0.102	0.120	0.139	0.119	0.072	0.138
	(0.054)	(0.055)	(0.051)	(0.056)	(0.054)	(0.053)	(0.054)
Treatment × Wealth index above median	0.169	0.156	0.028	-0.008	0.089	0.070	0.125
	(0.075)	(0.073)	(0.067)	(0.078)	(0.075)	(0.071)	(0.074)
Observations	3682	3682	3682	3682	3682	3682	3682
Mean control	-0.000	0.000	-0.000	-0.000	0.000	-0.000	-0.000
Treatment + Treatment × Wealth index above median	0.249	0.187	0.070	0.054	0.175	0.129	0.214
Panel E: Household distance to a pre-school							
Treatment	0.417	0.331	0.288	0.195	0.084	-0.070	0.309
	(0.222)	(0.146)	(0.115)	(0.287)	(0.113)	(0.245)	(0.217)
Distance above the median	0.254	0.230	0.245	0.133	-0.064	-0.178	0.154
	(0.211)	(0.138)	(0.111)	(0.282)	(0.112)	(0.242)	(0.209)
Treatment × Distance above the median	-0.330	-0.189	-0.162	-0.234	-0.081	0.137	-0.213
	(0.239)	(0.174)	(0.134)	(0.300)	(0.144)	(0.250)	(0.224)
Observations	3682	3682	3682	3682	3682	3682	3682
Mean control	-0.000	0.000	-0.000	-0.000	0.000	-0.000	-0.000
Treatment + Treatment × Distance above the median	0.087	0.142	0.126	-0.038	0.003	0.067	0.096
Panel F: Children aged 3 to 5 living in the household							
Treatment	0.169	0.118	0.055	0.063	0.125	0.101	0.156
	(0.074)	(0.063)	(0.056)	(0.064)	(0.055)	(0.059)	(0.069)
Number of children aged 3 to 5 above median	-0.080	-0.146	-0.162	-0.117	-0.172	-0.052	-0.181
	(0.058)	(0.080)	(0.071)	(0.080)	(0.083)	(0.090)	(0.075)
Treatment × Number of children aged 3 to 5 above median	-0.029	-0.077	0.037	-0.044	0.111	-0.066	-0.017
	(0.112)	(0.111)	(0.108)	(0.121)	(0.118)	(0.129)	(0.112)
Observations	3682	3682	3682	3682	3682	3682	3682
Mean control	-0.000	0.000	-0.000	-0.000	0.000	-0.000	-0.000
Treatment + Treatment × Number of children aged 3 to 5 above median	0.140	0.040	0.092	0.019	0.236	0.035	0.139

Notes: This table presents the estimated heterogeneous effects of the DICIPE program on target child's cognitive and social-emotional skills. These coefficients are estimated using specification (2) and following the approach we describe in Section A. Estimated Standard errors clustered at the community level are shown in parentheses. All regressions include district fixed effects. The skills index is constructed over columns (1) to (6) following Kling et al. (2007). Standard errors clustered at the community level are shown in parentheses.

Table D14: First stage for mediation analysis

	(1) PE	(2) PS
Treatment	1.229	-0.072
	(0.163)	(0.472)
Treatment ×		
Household Size	-0.005	-0.050
	(0.022)	(0.022)
Age (years)	-0.105	0.071
	(0.022)	(0.058)
Distance to nearest preschool	-0.014	-0.029
	(0.011)	(0.015)
Years of schooling of caregiver	0.001	-0.003
	(0.009)	(0.025)
Female	0.006	0.048
	(0.020)	(0.067)
Caregiver is illiterate	0.065	0.129
	(0.035)	(0.122)
# children aged 3-5 living in the HH	-0.019	-0.047
	(0.041)	(0.126)
# children aged 0-18 living in the HH	0.027	
	(0.024)	
Caregiver has no schooling	-0.049	-0.027
	(0.037)	(0.108)
Stimulation (index) [zi]	0.005	-0.001
	(0.003)	(0.010)
Wealth index	0.001	0.040
	(0.007)	(0.018)
Height-for-age z-score of Target 3-5	-0.039	-0.020
	(0.009)	(0.030)
Household receives remittances		-0.180
		(0.105)
Observations	3764	3760
F-Stat.	111.483	4.794

Notes: PE stands for Preschool Enrollment and PS for Parental Stimulation. All regressions include district fixed effects and the baseline characteristics which interactions are shown. Standard errors clustered at the community level are shown in parentheses.

Table D15: Mediators for Skills Index

	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	0.236	0.085	0.227			
	(0.279)	(0.081)	(0.285)			
Predicted PE	-0.147		-0.206	0.174		0.105
	(0.416)		(0.420)	(0.120)		(0.116)
Predicted PS		0.303	0.343		0.495	0.330
		(0.223)	(0.224)		(0.287)	(0.226)
Observations	3682	3679	3679	3682	3679	3679
Overidentification test p-value				0.330	0.582	0.427

Notes: PE stands for Preschool Enrollment and PS for Parental Stimulation. *Predicted PE* and *Predicted PS* are the fitted value from the first stage regressions (3) and (4), respectively, shown in Table D14. All regressions include district fixed effects and the baseline characteristics included in the corresponding first stage models. Standard errors clustered at the community level are shown in parentheses.

Table D16: Parameter Values and Data Sources for the Cost-Benefit Analysis

	Value	Source
	(1)	(2)
Labor force participation rate (2017)	78.9	World Bank Indicators
Average nominal monthly wage (in MZN)	$ 11,800	2019 Inquérito Sobre Orçamento Familiar (IOF)
Annual real wage growth (%, 2019)	5.1	2019 Inquérito Sobre Orçamento Familiar (IOF)
Exchange rate (MZN/USD)	60.33	IMF International Financial Statistics.
Lowest treatment effect on cognitive skills (SD)	0.097	Estimated effects shown in Table 4
Largest treatment effect on cognitive skills (SD)	0.169	Estimated effects shown in Table 4
Annual Cost per Child	$76.83	Financial records of the project implementation