Evaluation of the UNICEF Mozambique Accelerated School Readiness Pilot Programme: Final Report

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Juan Bonilla | Elizabeth Spier | Kaitlin Carson | Hannah Ring | Yulia Belyakova
Iliana Brodziak | Ethan Adelman-Sil

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The evaluation of the Accelerated School Readiness Programme commissioned by UNICEF Mozambique's country office is conducted by American Institutes for Research (AIR). The principal investigators for the overall evaluation are Juan Bonilla and Elizabeth Spier. Kaitlin Carson, Hannah Ring, Yulia Belyakova, and Paul Sirma made important contributions to the report.

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Contact information:

Juan Bonilla, PhD
jbonilla@air.org

Elizabeth Spier, PhD
espier@air.org

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Acronyms

ASR	accelerated school readiness
DD	difference-in-differences
ECD	early child development
FGD	focus group discussions
IDELA	International Development and Early Learning Assessment
ITT	intent-to-treat
IV	instrumental variable
KII	key informant interview
LATE	local average treatment effect
MINEHD	Ministry of Education and Human Development
RCM	resource cost model
RCT	randomized controlled trial
SD	standard deviation
STC	Save the Children
UNICEF	United Nations Fund for Children
UNU-WIDER	United Nations University - World Institute for Development Economics Research

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1. Executive Summary

Despite a twofold increase in primary school enrolment in Mozambique over the past 15 years, educational outcomes remain largely disappointing (Martinez, Naudeau, & Pereira, 2012). In 2014, the cumulative primary school dropout rate in Mozambique reached almost 68%, and only 6% of students achieved basic reading competency by the third grade (UNU-WIDER, 2018; UNICEF, 2016a). In Zambézia, there are insufficiencies in both the quantity and quality of educational institutions, especially for pre-primary students. To respond to these challenges, UNICEF Mozambique and Save the Children (STC), in partnership with the Mozambican MINEHD, implemented an accelerated school readiness (ASR) pilot programme from 2016 to 2019 (Preparando-se para a entrada na escola!) in two provinces of Mozambique beginning in Zambézia province for children aged 5 to 6. The programme aims to improve readiness in three ways; it seeks to (1) improve children's readiness for school by developing skills and competencies necessary to succeed in Grade 1, (2) improve school's readiness for children by building the capacity of school management and educators in school readiness methodology, and (3) improve families' readiness for school by building knowledge of and awareness about the importance of a positive home learning environment on children's school readiness, as well as the importance of parental engagement with the education system for schools' readiness and accountability. To achieve this, the programme has the following three primary activities: (a) Providing a 120-hour summer school readiness programme; (b) Strengthening school councils and locally-based education professionals; and (c) Providing 12 weeks of parent-to-parent education sessions.

AIR conducted a mixed-methods impact evaluation of the ASR programme with three primary objectives:

(a) determine the extent to which provision of the ASR pilot programme improved children's school readiness, on-time enrolment, and academic achievement in Grade 1 relative to comparable children in communities with no pre-primary education;

(b) calculate the community- and child-level costs of providing the ASR pilot programme; and

(c) identify which aspects of community context and implementation seemed to facilitate or inhibit the success of the ASR pilot programme.

To achieve these objectives, we developed the following evaluations questions agreed upon with UNICEF during the Inception Phase (see Annex I for the Inception Report):

1. To what extent does provision of the ASR pilot programme improve children's school readiness relative to that of comparable children in communities with no pre-primary education?
2. To what extent does provision of the ASR pilot programme improve children's on-time enrolment in Grade 1 relative to that of comparable children in communities with no pre-primary education?
3. To what extent does provision of the ASR pilot programme improve children's academic achievement and teachers' perceptions of their performance at the end of Grade 1 relative to comparable children's achievement and teachers' perceptions in communities with no pre-primary education?
4. What are the community- and child-level costs of providing the ASR pilot programme?
5. Which aspects of community context and implementation facilitate or inhibit the success of the ASR pilot programme?

a. To what extent are programme topics and implementation methods relevant and responsive to the implementation context?
b. To what extent was the programme implemented with fidelity?

Methods

To measure the impacts of the ASR pilot programme, we designed a longitudinal, cluster randomized, controlled evaluation with repeated outcome measurers for children and caregivers. We applied a difference-in-differences (DD) statistical technique to estimate programme effects from the experimental data. DD compares the average change over time for the group receiving the ASR programme to the average change over time for the comparison group that received no intervention.

To measure children's' school readiness outcomes, we used the International Development and Early Learning Assessment (IDELA) developed by STC. We collected the IDELA assessments at three points in time: baseline (November 2017), midline (March 2018), and endline (November 2018). To measure caregiver outcomes, we administered a questionnaire to measure caregivers' attitudes, educational aspirations for their children, and parenting practices administered at baseline and midline.[1] Finally, to measure impacts on schools' readiness, we reviewed school records for the selected students and recorded their first-grade enrolment. To complement quantitative impact findings, we conducted qualitative data collection in midline and endline. At midline, we interviewed volunteer leaders, school professionals, STC staff, and caregivers of participating children and their caregivers. At endline, we interviewed Grade 1 teachers and staff from STC and UNICEF.

Quantitative Findings

Child-Level Component. We found a highly significant impact on the overall school readiness of children, as measured by the IDELA assessment in all child domains (i.e., emergent numeracy, emergent literacy, executive function, motor skills, and approaches to learning) except for the socio-emotional domain. The ASR pilot programme increased the total IDELA score for children in treatment schools by 9 points (0.52 standard deviations [SD]) and increased for students in treatment schools who actually attended the programme by 17 points (0.93 SD). Overall scores were driven by the impacts on specific sub-constructs: emergent numeracy (intent-to-treat (ITT): 0.55 SD; local average treatment effect (LATE): 0.98 SD), emergent literacy (ITT: 0.39 SD; LATE: 0.70 SD), and motor skills (ITT: 0.44 SD; LATE: 0.78 SD). Even though we found statistically significant differences in favour of the control group for both emergent literacy and motor skills at baseline, our impact estimates reveal that children in the treatment group were able to catch up and in fact overtake their control group peers with regard to these skills as a result of the programme. This is a trend we first identified in midline, and we are able to confirm that these effects persist at the end of first grade, 9 months after the end of the programme. It is worth noting that the control group has also improved since baseline, but the gap in favour of the treatment group remains.

We also found the ITT effect to be a 12 percentage-point increase in primary school attendance over the control group, and the LATE to be 21% increase. These results support the hypothesis that ASR programmes can increase the likelihood that children will actually enrol in primary school. In terms of heterogeneity in programme results, although we did not find differences in achievement between girls

[1] Impacts of the parental and school readiness components can be found in the endline report.

and boys, we did find a positive differential impact on girls' primary school attendance as a result of the programme.

Cost Analysis. We conducted a cost analysis to capture the resources needed to implement the ASR intervention so that policy makers in Mozambique and other stakeholders have a complete understanding of the cost-effectiveness of this intervention. To that end, we have used the ingredients approach and produced estimates of the cost of the individual programme by ingredient type and activity, as well as comparing start-up and recurring costs on an overall and per-child basis. Our approach allows us to consider the time that different staff spent on the programme, the opportunity cost of the volunteers who supported the implementation of the programme, and all of the physical materials and facilities used throughout the entire process.

We found that the cost of scaling up the ASR programme under similar circumstances by the government of Mozambique will be approximately USD $60 per-child to implement the entire ASR intervention, which includes not just the instruction involved in the ASR component for children, but also the capacity building for teachers and the parental programme. The total value per child includes the opportunity cost of volunteers' work, but excludes most of indirect costs associated to implementing a programme by an international organization. The total cost per child could be reduced to if some ASR programme activities are implemented through other regular government programmes. In particular, if the activities associated to the school capacity building components are not included as part of the ASR programme and delivered through other regular interactions with primary schools and communities, then the total cost of implementing the programme would be USD$39 per child.

The estimated cost per child is much lower to similar programmes conducted in Sub-Saharan Africa. For example, a recent early childhood education study in Malawi (Ozler et al. 2018), similar to ASR, had an average cost per child of USD $93 with no long-term impacts on children achievement. We also conducted a cost-effectiveness analysis, defined as the ratio of the cost per child over estimated programme impacts. Our estimates showed that it would cost USD $6.5 to increase the average IDELA score by 0.1 SD. Although it is not simple to compare this cost-effectiveness ration to the one reported in other programmes due to lack of comparability in the costs used for the analysis, the type of programmes, or the lack of statistically significant results of the interventions as is the case of Ozler et al. 2018, the average cost of increasing the total IDELA score by 0.1 SD is also much lower than cost effectiveness ratios found in the literature for similar preschool programmes (Donfouet et al, 2018) in Sub-Saharan Africa.

Qualitative findings

Our qualitative findings are organized into three key thematic areas: the implementation context, parent-to-parent education sessions, and the child-level component:

Implementation Context. Prior to the introduction of the ASR programme, most children were not academically prepared to enter Grade 1 and a minority of parents supported school readiness. Nearly all Grade 1 teachers reported that students over the past 3 years (excluding the current school year) were not fully prepared to enter Grade 1 in terms of their academic abilities. Teachers noted gaps in school readiness such as limited ability to speak or understand Portuguese, inability to hold a pencil, and limited reading and writing abilities. Most parents stated that they either provided no support or provided a low level of support to their children, without any specific efforts to prepare their children to enter Grade 1.

The lack of support for formal education could stem from the lack of information on how to prepare children or the low value given to formal education. Parents and school professionals also struggled to engage children in safe early education because of communities' and schools' lack of resources and infrastructure. Finally, we find evidence of deeply entrenched gender norms that include men serving as primary household decision makers while women appear to have a lesser say in key decisions, such as those about children's education.

Parent to Parent Component. Based on qualitative interviews at end-line with parents, teachers, and other education officials, perceived positive benefits of the parent-to-parent component of the programme included increased awareness and support for children's eating, hygiene, dress, and on-time arrival at school each morning. Programme participants cited two main strengths of the parent-to-parent education sessions: the use of local parents as parent leaders and the programme's ability to create a space for parents to share experiences.

To analyse the fidelity of implementation of the parent-to-parent component we looked at two key aspects: the selection of the parent leaders and the parent leader training. STC and participating parent leaders reported that the programme used the outlined criteria and the proposed participatory processes to select parent leaders. However, parents reported that the programme did not offer adequate benefits for their participation. The largest issue parents reported was a lack of snacks during the parent-to-parent sessions, although a minority of respondents cited the lack of travel subsidies for parents participating in the sessions.

Child-Level Component. Most teachers stated that at the beginning of the school year, ASR students performed at a higher level than students who had not participated in the programme. To understand the perceived effects of the ASR programme, we assess perceptions of student performance on key IDELA skills: motor skills, numeracy skills, literacy skills, socio-emotional skills, and executive function skills. In terms of literacy skills, teachers frequently reported that programme students had a higher level of Portuguese oral comprehension and oral vocabulary knowledge at the beginning of the year than non-programme students. Teachers at endline also noted that children who participated in ASR demonstrated several socio-emotional competencies that their non-programme peers lacked at the beginning of first grade, including knowing how to play with others, knowing how to participate in classroom activities and ask questions, and knowing how to apologize when someone gets hurt. Last, teachers stated that students who participated in ASR demonstrated higher levels of executive function at the beginning of the school year than their peers, including greater ability to focus and follow directions. Indeed, the quantitative results show that children from programme areas performed significantly higher at the end of first grade relative to children in control areas.

To analyse the fidelity of implementation of the summer readiness course, we looked at three key aspects: the selection of volunteer teachers, the training of the volunteer teachers, and the programme materials. Implementers' accounts of the volunteer teacher selection process match accounts from the volunteer teachers themselves and programme documents. Both the programme staff and the implementation communities stated that the programme selected summer school volunteer teachers and developed programme materials through a collaborative process with communities and MINEDH. The programme also provided trainings to volunteer teachers, school professionals, and school councils on the topics and for the duration outlined in programme documents. The main challenges identified were a lack of

transparency in the selection process and difficulty finding volunteer teachers who met the selection criteria.

Conclusions

The evaluation results show that the ASR programme had positive impacts on children's school readiness at midline and endline, 9 months after the end of programme activities. The impact on child-level outcomes persist over time even though the control group is also performing better at the endline wave relative to midline. We also found that the programme had positive impacts on some parental practices. Our results also show that the ASR programme increased on-time primary school enrolment in a significant way, especially for girls. Based on the cost information collected and analysed, the results show that the cost of the ASR programme is lower to comparable interventions in Sub-Saharan Africa (Ozler et al. 2018)[2] and the average cost of increasing the total IDELA score by 0.1 SD is US$6.5, which is also lower than cost effectiveness ratios found in the literature for similar preschool programmes in Kenya (Donfouet et al, 2018). Lastly, our results on programme implementation show that ASR effectively adhered to programme processes and provided programming that was relevant to local challenges to school readiness. The ASR pilot programme provides strong evidence of impact on school readiness and on-time enrolment for a relatively short-term community-based school readiness intervention. In a resource constraint situation, this intervention may constitute a viable option for the Mozambican Government, UNICEF and partners to accelerate access to early learning, which currently stands at less than 5% (Martinez et al., 2012).

Recommendations

Based on the results of this study, we are able to provide recommendations to strengthen the quality of the intervention. The first version of this report was presented in a validation workshop that included UNICEF and its partners, community members, and other key stakeholders. This workshop was used ensure that the evidence from this study – and the resulting recommendations presented herein – have been contextualised and presented in a way that is meaningful and actionable for stakeholders.

Keep the main components of the ASR programme with some adjustments. The ASR programme demonstrated positive, statistically significant impacts on school readiness outcomes and school enrolment. For a programme that was implemented for a short period of time (3 months), these results are promising. Then, the overall logic of the programme and the way it is implemented do not need to be substantively modified.

Introduce enhanced early literacy instruction. Our findings show that there is room for improving students' performance on some key tasks that affect emergent literacy skills such as letter recognition and first letter sounds. These skills should be emphasized during the implementation of the child-level component by adding exercises developed by STC literacy experts specifically to address these skill gaps.

Maintain the introduction of Portuguese as a language of instruction in the ASR activities to help students adapt better to primary school. Our findings underscore the perceived need and desire among educators for children to arrive at Grade 1 with more fluency in Portuguese. To that end, the ASR curriculum, which mixes instruction in Portuguese and local languages, seem to produce a positive impact

[2] Although this intervention was much longer in duration and did not show persistent child-level effects.

so that when students enter primary school, which is taught in Portuguese, have a much better adaptation to school and facilitate instruction to teachers.

Incorporate the extended training to volunteers as part of the regular programme. Given the positive effects of the ASR programme, and the high level of fidelity of implementation, we can conclude that the volunteers delivering the ASR programming to the children did a very good job overall. It was noted that the volunteers required more training than initially anticipated, so we recommend that this more extended training become part of business as usual for programme implementation. It is also important to allocate sufficient time for training since time constraint was cited as an implementation challenge.

Strive to maintain gender parity among volunteers. Despite the challenges of recruiting female teachers in the programme area, ASR succeeded at maintaining gender parity among volunteer teachers to facilitate the effectiveness of delivering programme activities to participating girls. We recommend engaging community leaders in advertising volunteer teaching opportunities to qualified females in their communities to facilitate recruitment of female teachers.

Use of volunteers may not be sustainable over time and other implementation forms need to be explored. Related to the use of the community volunteers to deliver the programme, it is important to consider whether their volunteer status is sustainable if the programme continues over multiple years. It is highly likely that as volunteers become more skilled (based on ongoing experience) and/or the programming becomes more embedded as a routine part of education, that there will be increasing pressure for the job to be considered paid employment rather than a volunteer activity. We recommend that the government considers alternative ways of providing the programme for scale-up and sustainability. We believe that the cost of implementing the programme through current public school teachers will be very high and may not be sustainable over time. In the event that programme delivery cannot be scaled up through volunteers, we proposed two options for addressing the financial constraints. The first option is to follow the example of another preschool programme in the Gaza Province in Mozambique that engaged community members in a series of meetings to plan for the sustainability of the programme. Second, given that the programme is implemented at a time when schools and universities are not operating, we propose creating a teaching apprenticeship programme where those who are studying to become teachers at pedagogical institutions are engaged in the delivery of the programme as part of their training and receive academic credit for doing so. These apprentices will not only receive good pedagogical training to deliver the ASR programme, which can ultimately improve their future teaching skills. These apprentices may receive a compensation similar to the opportunity cost used in the cost analysis as ultimately their participation in the programme will be similar to a training programme.

Maintain the parent-to-parent sessions as an integral part of the model. Our qualitative results found that parental sessions were very useful in building parental knowledge around school readiness, as well as support for children's success in education through proper hygiene and nutrition, and by helping ensure that children come to school ready to learn (e.g., with clean bodies and clothing). However, the parent-to-parent sessions were largely attended by mothers (or other female caregivers), yet fathers typically have more authority over how the children are raised. So, we recommend finding ways to engage fathers in these sessions as well. To do so, it would be better to have separate sessions for fathers because mothers may speak more freely in the sessions without males being present, and/or the sessions for fathers can be presented as something especially for men, to avoid any perceived stigma of being involved in "female"

activities. Additionally, discussions on household decision-making processes around childcare can be incorporated in parent-to-parent sessions to facilitate behaviour change.

Improve the way to transmit key messages to parents during the parental sessions. Some parents reported not fully understanding the reasons behind the practices promoted. Although current programme materials are well developed to transmit key messages to parents on how to improve child-level outcomes, there is room for improvement in terms of clearly explaining the rationale behind suggested changes in parental behaviour. It is important to provide more support to parent leaders in the communities to help them implement behaviour change exercises around existing parenting practices on a more continuous basis. Some of this support can be provided in collaboration with the current primary school officials and school councils. For example, parent leaders could be provided refresher trainings on social and behavioural change communication in order to deliver parental training sessions with key messages about good parental practices more effectively. Lastly, parental leaders could receive some small compensation for their work in order to increase their level of commitment with the programme.

Provide some small incentives to parents who attend ASR activities. We heard from parents that there were some negative responses to the parent-to-parent sessions because parents felt that they had been given insufficient benefits for attending (such as consistent availability of a snack, or a transportation allowance). Given the extent to which participants otherwise enjoyed and learned key information from the sessions, we recommend finding ways to reduce these potential barriers to participation. Also, it is important to provide incentives to those parents who are selected for providing programme activities and find a consistent way to select those parents who are also community leaders and have a higher chance of conducting the parental component successfully.

Keep the timing of the programme for the months right before the start of primary school but increase the reach of programming within communities. Typically, the children who miss out on this kind of programming are the ones who need it the most. Given our findings about the sustained benefits of participating in the ASR programmed, combined with concerns about low rates of enrolment, it will be important for stakeholders to determine how to engage a higher percentage of pre-primary-aged children in this effective intervention. It is possible that the programme being implemented at the time of the harvest season affects programme participation. Nevertheless, we do not recommend changing the timing of the ASR programme. It is likely that the high estimated impacts on first grade enrolment are due to the fact that the programme is provided right before the beginning of primary school, which creates momentum for children to keep attending school activities. If anything, we recommend slightly adjusting the timing of the ASR programme to start in early January if that helps improving attendance to avoid conflicting with end of year activities. However, if agricultural activities are competing with programme activities, one option is to consider when the best timing in the day is for implementing programme activities. In many communities, most agricultural work is done in the morning. It would be worth exploring if the ASR activities can be offered in the afternoon hours.

Make small improvements to classroom infrastructure. While the lack of sufficient classroom space cannot be addressed effectively without incurring in additional costs, smaller improvements can be made to ensure sustainability of the programme, especially if the timing of the intervention does not change. Specifically, we found that classroom floors can accumulate rainwater during the rainy season, which

makes it impossible for children to sit on. We recommend exploring the possibility of engaging the community in contributing chairs made from local materials to address this need.

Introduce a school feeding component. Community members reported that children had trouble concentrating in classes because meals were not provided. Adding a morning snack to the programme can help address perceived concentration issues as well as the general lack of motivation for parents to send children to school and for children to attend school. There is a wealth of evidence that school feeding programmes improve participation, especially for young children in contexts where school participation is low (Adelman et al., 2008; Kazianga, de Walque, & Alderman, 2010). We recommend partnering with the WFP-supported National School Feeding Programme (PRONAE) or other nutrition-focused programmes operating in the region.

Scale-up the programme in other districts in Zambézia as well as other provinces in country. The findings from the evaluation clearly demonstrates that it is possible to establish a low-cost school readiness initiative in Mozambique. The results of the programme indicate that there are positive impacts on key cognitive and non-cognitive child dimensions and that the impacts are long-lasting over time. Moreover, the results show that local communities and parents, as well as the higher government levels, are both interested in and willing to keep participating in this type of early childhood initiatives. Lastly, the results of the costing exercise suggest that initiatives such as the ASR programme is worth exploring given its high levels of cost-effectiveness and that this type of programmes can be the first step to establish a larger preschool initiative in Mozambique led by the Government and supported by UNICEF and other organizations like the World Bank. The high implied long-run returns from investing in this early childhood initiative in Zambézia should serve as the seed to start a national conversation about the urgency of adapting early childhood education models.

2. Introduction, Context, and Evaluation Overview

The purpose of this report is to provide a summary of the main findings from the evaluation of the Accelerated School Readiness (ASR) pilot programme in Mozambique. In this final report, we specify and describe (a) the context for this evaluation; (b) the purpose, uses, objectives, scope, and objects of this evaluation; (c) the evaluation questions and the guiding theory of change; (d) the evaluation methodology and instruments; and (e) the endline results after the conclusion of the ASR pilot programme.

2.1. Evaluation Context

In this section, we describe the importance of testing innovative models of school readiness within the global context of early childhood education. We also describe the specific context in which this evaluation took place.

Importance of Testing Innovative Models to Support School Readiness

School readiness for children is holistic and depends on creating interrelationships between different skills and building a foundation upon which students can equitably enter school (Schoen & Nagle, 1994). A child who is ready for school is "physically healthy, mentally alert, emotionally secure, socially competent and able to learn" (UNICEF, 2012, p. 6). However, according to UNICEF (2012), school readiness is not defined solely by the child's readiness for school; it also encompasses the school's

readiness to create a continuous learning environment and the family's readiness to support the child through school. For example, a ready school has effectively trained teachers who are capable of connecting the new school environment to the students' home culture, including sensitivity to the language of instruction (Lapointe, Ford, & Zumbo, 2007; UNICEF, 2009, 2012).

School readiness is a crucial factor in determining future education outcomes for children of all socio-economic backgrounds (Duncan et al., 2007). While the evidence of short-term impacts of preschool programmes in the developed world is mixed (Puma et al., 2012; Lipsey & Farran, 2016), new literature shows that participation in pre-primary programmes may be associated with positive long-term benefits, such as increases in schooling, high-school completion rates, tertiary education enrolment and completion (Bailey et al., 2018). Recent reviews of pre-primary programmes in the US found that participation leads to reductions in special education placement, grade retention, reductions in delinquency and teen pregnancy, and improvements in high school graduation rates (Chambers et al., 2010; Yoshikawa et al., 2013; Charles McCoy, 2017).

Evidence from developing countries shows that children who enter primary school after a successful pre-primary education programme demonstrate higher test-score performance, class participation and effort, and high school completion rates (Berlinski, Galiani, & Gertler, 2009; Grantham-McGregor et al., 2007). In a review of World Bank projects by Tanner, Candland, and Odden (2015), only early stimulation programmes were found to have positive, long-term effects in all six evaluated categories: physical development, cognitive development, language development, socio-emotional development, schooling outcomes, and employment outcomes in a range of contexts (e.g., Romania, Jamaica, Turkey). The same review concluded that preschool has a positive effect on schooling outcomes in Mauritius (Tanner et al., 2015). McCoy and colleagues (2017) find that participation in an ECD programme had a positive effect on all seven domains on school readiness in Zambia. Similarly, evidence from Guinea and Cape Verde shows that preschool attendance had a positive effect on cognitive development; in Guinea, lower income students benefitted more from the programme (Jaramillo & Tietjen, 2001). Two interventions, one in Cambodia and one in Myanmar, demonstrated that early child development (ECD) programmes aimed at increasing school readiness reduce primary school dropout rates (Nonoyama-Tarumi & Bredenberg, 2009; Save the Children, 2004). The effect holds in Mozambique, where a preschool pilot programme in the Gaza province was also found to increase primary school enrolment rates (Martinez, Naudeau, & Pereira, 2012). Early childhood education can also amplify the effects of other ECD programmes. For example, a 20-year analysis of the Jamaican Study—a psychosocial stimulation programme conducted by Grantham-McGregor and colleagues (1991) in Jamaica—found that children who participated in a stimulation programme in addition to receiving nutrients had better job prospects and health outcomes than those who received nutrients alone (Gertler et al., 2013). In developing countries in particular, school readiness programmes have the potential to provide additional support to students who are otherwise socio-economically disadvantaged (Arnold, Bartlett, Gowani, & Merali, 2007; Gertler et al., 2013). In Indonesia, for example, the Early Childhood Education and Development Project reduced educational achievement gaps between richer and poorer children in project villages, compared to those in non-project villages (Jung & Hasan, 2014). Engle and colleagues (2007) examined a variety of early childhood education interventions, including preschool enrolment, in developing countries such as Kenya, Uganda, China, Bangladesh, Costa Rica, and Colombia, and found that the interventions' potential long-term economic benefits to society were between 6.4 and 17.6 times the cost of the programmes.

While pre-primary education enrollment in Sub-Saharan Africa has doubled between 2000 and 2014, only 32% of children in the region participate in pre-primary education programmes (Bietenbeck et al., 2017; World Bank, 2017). Moreover, there is a lot of variability in access to pre-primary education within Sub-Saharan Africa: for example, only 8% of children were enrolled in pre-primary education in Zambia in 2016, while pre-primary enrollment was virtually universal in Ghana (World Bank, 2016).

In the absence of universal public pre-primary education, ASR programmes could potentially increase on-time enrolment and early-grade achievement for children in sub-Saharan Africa. However, the limited implementation of such programmes to date necessitates further testing to validate their effectiveness. This evaluation contributes to the broader literature on the effectiveness of ECD programmes in sub-Saharan Africa, the long-term effects of such interventions, and the ability of children to acquire school readiness skills despite adverse early environments (Tanner et al., 2015). The results from this study will contribute to the policy dialogue around the effectiveness of pre-primary education in sub-Saharan Africa and potentially stimulate demand for pre-primary education in the region. Impact and cost-effectiveness findings from the evaluation will also inform UNICEF's pre-primary education strategy in Mozambique, where UNICEF is currently focusing its commitments on expanding access to and increasing the quality of pre-primary education (UNICEF, 2017), as well as other countries in the region facing similar capacity constraints.

Context for the Evaluation

School readiness in Mozambique and the ASR programme

Despite a twofold increase in primary school enrolment in Mozambique over the past 15 years, educational outcomes remain largely disappointing (Martinez et al., 2012). In 2014, the cumulative primary school dropout rate in Mozambique reached almost 68%, and only 6% of students achieved basic reading competency by the third grade (UNU-WIDER, 2018; UNICEF, 2016a). Only 4% of children in Mozambique are enrolled in preschool, and most come from affluent, urban populations (Martinez et al., 2012). Without structured ECD programmes, children often enter school late and unprepared (Nonoyama, Loaiza, & Engle, 2006). In addition, children from disadvantaged communities frequently do not have the family or cultural value systems to support formal education because they have additional household duties and often arrive at school malnourished (Grantham-McGregor et al., 2007). By entering school late or without proper support, children are unprepared to succeed in school.

The lack of supports and preparation is further compounded by the fact that the official language of instruction in Mozambique, Portuguese, does not match the languages spoken at home by most students. During the colonial era, the education system was entrusted to Portuguese missionaries with the aim of imposing the Portuguese language, which remains the most relevant legacy of colonialism for the education system to date. In the aftermath of independence, Mozambique has attempted to reverse some of the adverse impacts of Portuguese colonialism on the education system by committing to promote national languages (Varela Canhanga, 2017). However, little practical progress has been made to remove the negative stigma around local languages perpetuated by colonialism, which is reflected in the education system all the way through pre-primary. While Mozambique maintains a policy of dual language instruction, Portuguese is still the dominant language of instruction in the majority of primary schools (UNICEF, 2016b). Mother tongue instruction is positively associated with enrolment, attendance and academic outcomes, while lack of mother tongue instruction is a strong predictor of dropout and poor

performance (e.g., Smits et al., 2008; Chuo & Walter, 2011; Walter & Dekker, 2011). Thus, lack of primary language instruction makes the transition to primary school more challenging (Vawda & Patrinos, 1999).

Pre-primary education in Zambézia. Early childhood education interventions have increasingly become a priority of the Mozambican government to support all children to reach their full potential (UNICEF, 2016a). However, despite efforts to improve access to pre-primary education, many challenges remain in the education system overall and in pre-primary education in Zambézia province in particular. The poverty rates in Zambézia are among the highest in Mozambique and the province has one of the largest child populations in the country (UNICEF, 2017). School infrastructure in the province suffered greatly after the civil war where close to 90% of schools were closed or destroyed. While the infrastructure has mostly recovered, resource constraints in schools remain high: Zambézia, on par with Nampula, has the highest pupil-teacher ratio in the country (UNU-WIDER, 2018). The education system in Zambézia is weak and underdeveloped, with insufficiencies in both the quantity and quality of educational institutions, especially for pre-primary students (Martinez et al., 2012). In addition to a lack of pre-primary institutions, a further challenge is that the pre-primary programmes that do exist are typically community-based (68%) or private (32%), with only 2% of pre-primary institutions being run by the state (UNICEF, 2016a). Where education institutions do exist, they often suffer from infrastructure issues, including lack of water and power, lack of materials, first aid supplies and canteens (UNICEF, 2016a). Furthermore, due to the low quality of education, only 5.7% of children in Zambézia achieve basic reading skills by the end of Grade 3 (UNICEF, 2016a). The lack of quality education can be attributed to shortages in the number of teachers and academic professionals, a lack of materials, challenges with the language of instruction, and a lack of school-readiness or pre-primary programming. For example, primary schools in 2014 had an average student-to-teacher ratio of 62.5 to 1. Within Zambézia, target districts and communities were purposely selected for the programme based on lack of community or non-profit preschools, high rates of 6-7-year-old children being out of school, and high dropout rates in primary schools (UNICEF, 2016c).

To address this need, UNICEF and Save the Children (STC) are testing another pilot, ASR pilot programme, to improve children's educational outcomes through a pre-primary intervention in target districts and communities within Zambézia. The accelerated programme implements three overarching activities with the goal of helping children to transition to primary school and preparing caregivers to help their children through primary school: (1) summer school readiness programme for children aged 5 to 6, (2) capacity building for school councils and locally based education professionals, and (3) parent-to-parent education session (Figure 1). Programme activities were implemented from the last quarter of 2016 to the first quarter of 2018 in 3 districts in Zambézia. The overall cost of implementing the programme was USD$1,057,816 (Save the Children, 2019).[3] A detailed description of ASR activities can be found in the Programme and Theory of Change section below.

[3] We conduct a cost analysis in Section 7 of this report. The cost analysis focuses only on a subset of the implementing districts at a specific time period and only represents a fraction of the total value.

Figure 1: ASR components

Institutional context

After a successful pilot of a community-based ECD programme in Mozambique's Gaza province (Martinez et al., 2012), the World Bank funded a government-led scale-up which involved construction of 350 community-based pre-schools. Notwithstanding this successful mobilization of resources based on evidence generated within the country, implementation has been slow, and the cost for infrastructure too high to be scalable. Thus, the need to increase access to school readiness programme through the accelerated alternative model became more urgent than ever to address the learning crises as prioritized in UNICEF Mozambique's Country Programme (2017-2020).

One of the top priorities for the 2012-2016 (expanded to 2019) Mozambique's strategic plan for education is integration of pre-primary education in the National Education System and "encouraging a holistic and integrated approach at Government level, aimed at the development of children in the pre-school age (0-5 years)" – with the aim of guaranteeing that each child is well-prepared to enter the education system (MinEd, 2012). While Mozambique has made significant progress in expanding access to primary education, budgetary pressures have forced the government to significantly reduce spending, which, combined with significant inflation and weakening currency, has resulted in a shortage of public funds to support these priorities (World Bank, 2017). Considering financial and institutional limitations, the government considers it premature to introduce a pre-primary year as part of basic education at this time. Instead, the state is focused on "different intervention modalities with the objective of preparing for the future expansion of sustainable access to pre-Primary Education […] as part of the education system" (MinEd, 2012). As such, this evaluation is closely aligned with the government's medium-term objectives.

In sum, the ASR initiative constitutes a key programme for both UNICEF and the Government of Mozambique. Indeed, a key pillar of UNICEF's country strategy in the education is to ensure that more children in Mozambique have equitable access to early learning and acquire basic literacy and numeracy competencies. The four pillars are: (1). promote increased access to early learning and school readiness; (2). improve quality of primary education and learning outcomes through more competent and better motivated teachers; (3). promote increased access for vulnerable children and retention of adolescent girls in primary schools; and (4). build capacities for better planning, management and monitoring at national, sub-national and school levels. Thus, the ASR initiative targets directly pillars 1 and 3, making the programme a key initiative to further UNICEF goals and positioning in the country.

Key stakeholders

Below we present a stakeholder analysis that maps stakeholders' responsibilities and contributions to the programme within a rights-based framework.

Table 1: Stakeholder Mapping

Stakeholder	Roles and responsibilities in the project	Potential impact of the evaluation on stakeholder
Rights-Holders		
Parents of pre-primary school aged children	Rights-holders who benefit from parent-to-parent sessions.	Results and recommendations from this evaluation may lead to improved programme delivery and expanded coverage.
Pre-primary school aged children	Rights-holders who benefit from the summer school readiness programme and parent-to-parent sessions.	Results and recommendations from this evaluation may lead to improved programme delivery and expanded coverage.
Duty-Bearers		
Teacher volunteers	Responsible for participating in volunteer teacher trainings and delivering summer school readiness sessions with fidelity.	Results and recommendations from this evaluation may lead to improved training, working conditions, and compensation.
Parent leaders	Responsible for participating in parent leader trainings and delivering parent-to-parent sessions with fidelity.	Results and recommendations from this evaluation may lead to improved training and compensation.
Primary school teachers	Responsible for facilitating a successful transition from the summer school-readiness programme to primary school.	Results and recommendations from this evaluation may lead to improved school readiness and higher on-time enrolment in primary school.
STC staff	Responsible for all aspects of project management and implementation.	Results and recommendations from this evaluation may lead to improvements in programme design and delivery.
UNICEF	Responsible for providing technical support and oversight to the implementing partner. Financier responsible for funding the project and distributing funds to the implementing partner.	Results and recommendations from this evaluation may lead to improvements in programme design and delivery.
Community leaders	Responsible for assisting implementers in selecting parent and teacher volunteers.	Results and recommendations from this evaluation may lead to improvements in programme design, delivery, and increased coverage, which will directly benefit leaders' communities.
District-level government	Responsible for supporting implementation at the district level.	Results and recommendations from this evaluation may lead to improved school readiness and higher on-time enrolment in primary school.
Ministry of Education	Responsible for coordinating programme implementation	Results and recommendations from this evaluation may lead to improved school readiness and higher on-time enrolment in primary school.

2.2. Programme and Theory of Change

Pilot Programme

UNICEF Mozambique and STC, in partnership with the Mozambican MINEHD, are implementing an ASR pilot programme (*Preparando-se para a entrada na escola!*) in Zambézia province from 2016. STC, along with provincial and district directorates of MINEDH, selected target districts and communities within Zambézia based on the following criteria: absence of a community or non-profit preschool initiative that reaches the majority of children aged 5 to 6 years, high rates of children aged 6 to 7 years out of school (primary school begins at age 6), high primary school dropout rates, and adherence to impact evaluation quality standards. In addition, a preference was given to districts involved in the UNICEF primary school programme in Tete and Zambézia in order to foster synergies between UNICEF interventions.

This low-cost ASR pilot programme is being implemented with the goal of better preparing children aged 5 to 6 for Grade 1. The programme targets students aged 5 to 6 years, caregivers of students aged 5 to 6 years, volunteer facilitators, lead parents, education professionals, school council members, primary school teachers, teacher trainers, and playground-building volunteers, and aims to improve readiness in three spheres: children's readiness for school, schools' readiness for children, and families' readiness for school.

To achieve this objective, the programme focuses on the following three activities:

1. providing a 120-hour summer school readiness programme, implemented by trained community volunteers, for children aged 5 to 6;
2. strengthening the ability of school councils and locally based education professionals to support school readiness opportunities and promote a smooth transition for children into primary school;
3. providing 13 weeks of parent-to-parent education sessions, conducted by trained parents in home settings, to improve the skills of parents and caregivers of children aged 5 to 6 and thus promote early success in school.

The programme implements these three overarching activities with the goal of helping children adjust to new learning environments and teaching families to work with the education system to promote children's transition to primary school. The 120-hour ASR summer school exposes children to early learning experiences and provides them with school readiness skills and attitudes to improve Grade 1 outcomes. Trained community volunteers implement the ASR summer school using child-centred principles in the appropriate mother tongue with a minority of activities carried out in Portuguese. The specific curriculum is based on the Ministry of Gender, Children and Social Affairs' national early childhood education guide. To encourage parents' participation in their young children's education, the parent-to-parent education sessions aim to build parents' knowledge of how to interact with children through play-based activities and foster a positive home learning environment. Parent leaders are trained to implement the parent education sessions in other parents' homes. The parent-to-parent component also engages families to participate in ASR programme planning and monitoring to provide additional oversight and buy-in. Finally, the ASR pilot programme sensitises school management committees, teachers, and other education professionals to school readiness methodologies and then engages these actors in implementation decisions.

Theory of Change

Policy-relevant research should be built on a theory of change that maps out the causal chain across inputs, outputs, outcomes, and impacts and should identify the assumptions that underlie the theory of change (White, 2009). Below, we describe the theory of change underlying the ASR pilot programme.

Inputs. As described above, the ASR pilot programme includes three sets of activities aimed at producing specific outputs necessary for improving children's school readiness in Zambézia. The first set of activities trained selected volunteers to then implement a 120-hour programme to promote children's school readiness skills by developing play-based learning activities, materials, and manuals for volunteers and then instructing the volunteers in the use of these materials using in-service training. The second set of activities aimed to build capacity among education professionals through capacity-building and awareness-raising sessions with teachers, principals, and MINEDH staff; supporting school councils to participate in the planning and management of the programme; and training primary school teachers in the implementation of school readiness methodologies. The third set of activities trained leader parents selected from the community to then implement the parent-to-parent education sessions. Volunteer leader parents are trained to deliver theme-driven parental session covering topics such as development of creative play-based activities for pre-school children (such as singing, reading books, telling stories and playing games with local materials), child health, hygiene and nutrition, and sensitization to the importance of school readiness and on-time primary school enrolment. Parents are also offered additional weekly group discussions for monitoring and refreshment of competencies acquired through the parental sessions.

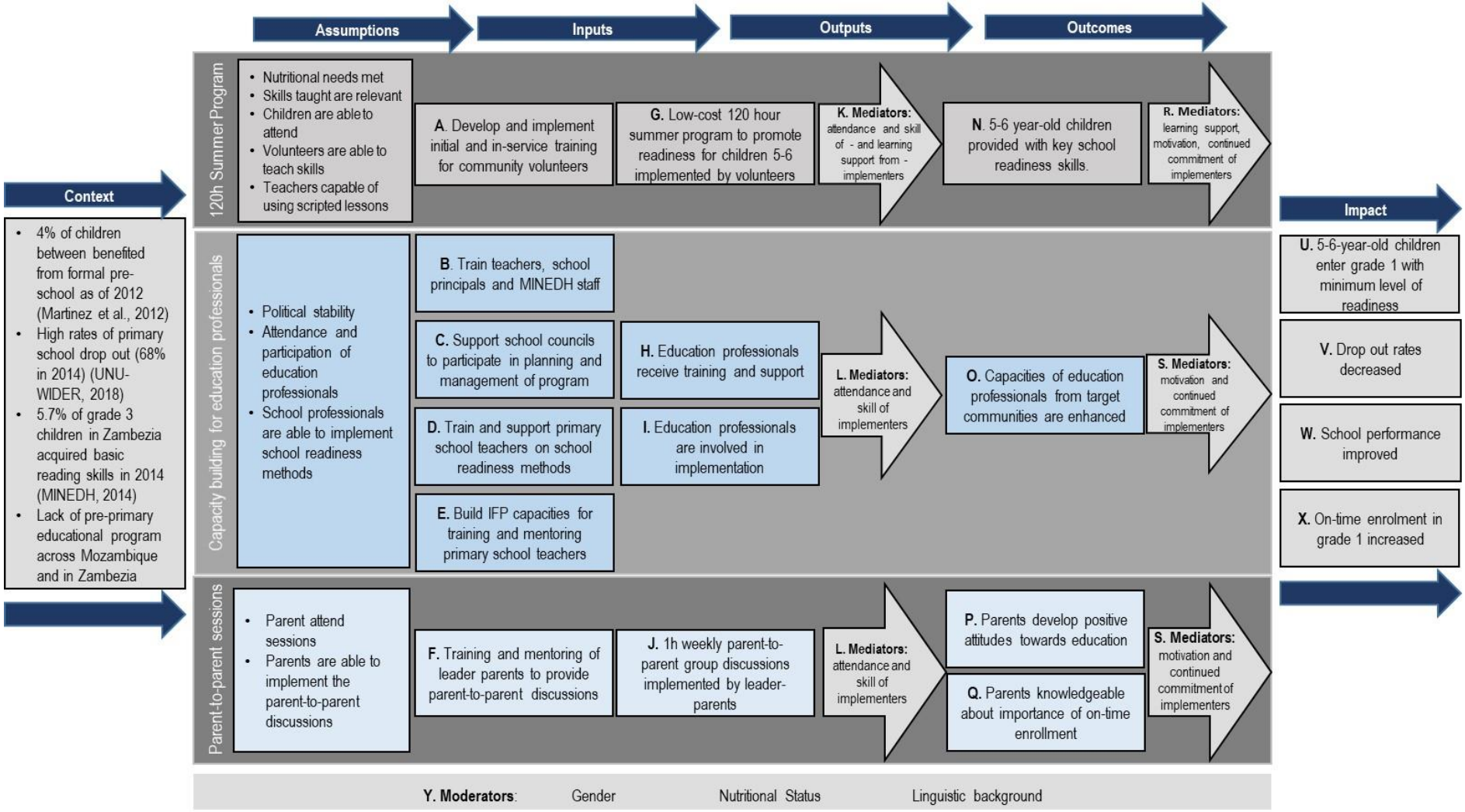
Outputs. If the programme implements the intervention components with fidelity, the programme should provide education professionals, teachers, and parents with increased knowledge about different elements of school readiness and provide students with access to school readiness activities. Children in the programme participate in a 120-hour summer school to promote school readiness, education professionals receive training and support from the programme to implement school readiness activities, and parents participate in weekly 1-hour parent-to-parent education sessions and additional weekly discussion sessions for 13 weeks.

Outcomes. If the children regularly attend the 120-hour summer school designed to promote school readiness, children should acquire key school readiness skills – such as early literacy and numeracy, motor development, socio-emotional development, and approaches to learning (Kagan, Moore and Bredenkamp 1995) – that will eventually enable them to enrol on time and succeed in Grade 1. For the second component, teachers, administrators, and school councils receive capacity-building trainings and support from the programme in order to be better able to support children's school readiness and learning. For the third component, parents who participate in the parent-to-parent education sessions should develop more positive attitudes towards education, higher aspirations for their children's education, and become empowered to support their children's learning and on-time enrolment in school through play-based activities and positive parental practices introduced in the trainings. Specifically, parent-to-parent training sessions provide parents with un understanding of the importance of the role they play in their child's development, which in turn should lead them to take more time to care for the child (including talking and playing with the child).

Impacts. We posit that these outcomes, if sustained, may lead to a series of impacts on children's success in school and overall socio-emotional wellbeing. The outcomes work in concert; that is, the Theory of Change (ToC) does not link specific outcomes to specific impacts, but rather the outcomes taken together, if achieved, are expected to produce the following impacts. Overall, if the outcomes described above are attained, the programme should lead to increased school readiness for 5- to 6-year-old children entering Grade 1. The programme should also increase on-time enrolment for Grade 1 students, improve children's school performance, and potentially decrease dropout rates[4]. Children's participation in the ASR programme develops key school readiness skills needed to succeed in primary school, leading to on-time enrolment, higher levels of school readiness in Grade 1 and fewer dropouts. For the second component, educators have the tools and skills to promote school readiness in the classroom which contributes to children's success in Grade 1, retention, and school performance. Finally, parents' improved attitudes towards and increased aspirations for their children's education, coupled with knowledge of play-based activities that promote school readiness of their pre-school aged children – which leads them to send children to school on time, prepare children for the challenges of primary school, and ensure that their children do not drop out. These impacts may be affected by a series of moderators and mediators, including the ethnolinguistic background, age, gender, wealth, and attendance of children; the amount of learning support from parents and parental motivation; and the continued commitment by all involved in the programme and the education and skill of the implementers. We summarize this theory of change in Figure 2.

[4] This study does not measure longer-term impacts such as primary school dropout rate.

Figure 2: Theory of Change



2.3. Evaluation Overview

In this section, we outline the purpose of the evaluation, the intended uses of the evaluation, the objectives of the evaluation, the scope and overarching approach for this work, and the object of this evaluation (in this case, the ASR pilot programme).

Purpose

Like many other developing countries, Mozambique is seeking effective, affordable, and scalable ways to provide school readiness supports to its children. School readiness programmes have the potential to provide additional support to students who otherwise lack opportunities to acquire the skills and knowledge needed to make a positive transition to primary school. In the absence of universal public pre-primary education, ASR programmes can potentially provide an affordable and scalable model that increases on-time enrolment and early-grade achievement for children in sub-Saharan Africa. However, the limited implementation of such programmes to date necessitates further testing to validate their effectiveness.

The purpose of this evaluation is to test the effects of the ASR pilot programme, as implemented by STC, on children's school readiness and successful transition to primary school in the Zambézia province of Mozambique.

Uses

Given the urgent need for effective, affordable, and scalable ways to support school readiness in low-resource settings, it is important to test these types of innovations. Within Mozambique, we anticipate that the results of this evaluation will be used by the Ministry of Education as an example of cost-effective early learning programme, that can be scaled up to ensure that children have access to equitable and effective programme of pre-school learning. It will assist the newly formed Pre-school Department at the Ministry. Moreover, the evaluation results will be used by other stakeholders who work on the provision of early childhood education for children under 6. It will also be used to strengthen local school boards and education professionals to support school readiness opportunities and promote a smooth transition of children into primary school. The evaluation will also allow UNICEF and implementing partners to adjust the program's approach for the following years. We also anticipate that the results of this evaluation will be informative for other countries seeking innovative ways to increase children's access to school readiness supports. In sum, the evaluation results and recommendations will inform key decision makers on the cost effectiveness of accelerated school readiness programmes as the country moves towards early childhood education models that cover all children and communities in Mozambique.

Objectives

The evaluation objectives are to (a) determine the extent to which provision of the ASR pilot programme improves children's school readiness, on-time enrolment, and academic achievement in Grade 1 relative to the readiness, on-time enrolment, and academic achievement of comparable children in communities with no pre-primary education; (b) calculate the community- and child-level costs of providing the ASR pilot programme; and (c) identify which aspects of community context and implementation seem to facilitate or inhibit the success of the ASR pilot programme.

Methodological Approach

The evaluation objectives are achieved through a mixed-methods randomized controlled trial (RCT). Sixty communities, defined as areas around primary school catchment areas, from Zambézia took part in the study, none of which had any pre-primary education available. To create the sample, we first used administrative data to identify all primary schools in Derre and Morrumabala. The final list included 212 schools in Morrumbala and 71 from Derre. To select the final list of participating schools, we conducted a public event in the village of Morrumabala on September 18, 2017 with representatives from the government at the provincial and district levels, Save the Children's monitoring and evaluation officer, and a staff member from UNICEF Zambézia. We conducted two lotteries, one per district. The representative of each district selected 30 schools by drawing school names from a bag that contained all schools in their district. The name of each selected school was registered in a document based on the order in which the school was selected. The first 15 school in the lists were then assigned to the treatment group and the remaining 15 schools to the control group in that district. Through this process, a total of 60 schools were selected for the evaluation, of which 30 were assigned to the treatment group and 30 to the control group. Note that all schools in the selected districts of Murrumbala and Derre so that all of them have the same chance to be included in the programme. Moreover, the characteristics of all communities in these districts are very similar, implying that there are no major differences in terms of equity and inclusion between the final sample of programme schools and the communities that were not selected.

Within treatment communities, children who were expected to start Grade 1 at the beginning of 2018 were offered the ASR pilot programme. In all 60 communities, we assessed children's school readiness at baseline, at the end of the programme implementation just before children entered Grade 1 (midline), and at the end of Grade 1, 9 months postimplementation (endline). We also collected data on children's attendance, programme costs, and the fidelity of implementation of the programme processes. Children in the sample were also randomly chosen to be part of the programme regardless of their gender or health status as long as they had not attended primary school yet and had the right age.

2.4. Evaluation Questions and Indicators

Table 2 contains an evaluation matrix that includes (1) research questions mapped to (2) indicators used to assess relevant outcomes, (3) data sources used to measure the indicators, as well as (4) the OECD-DAC criteria that each research question corresponds to. All of the research questions addressed under the evaluation of the programme addresses at least one of the five main OECD-DAC criteria and sometimes up to two of the criteria. Research questions 1 to 3 are related to the impact of the programme at different points in time and for different types of final outcomes, including school readiness and primary school attendance and achievement at the end of grade 1. To address research question 4, we conducted a cost analysis of the programme, including a cost-effectiveness analysis. This analysis provides details on how the programme was implemented in the field and the costs of achieving programme objectives. Further, our analysis provides clear inputs to donors and the Government of Mozambique on the costs of scaling up the programme and its sustainability over time. Research questions 5, 5a, and 5b, which are related to programme implementation and we addressed through a process evaluation, allowed us to investigate issues on programme relevance, effectiveness, and sustainability. Note that the analysis of programme monitoring data was not possible in this evaluation since these data were not provided by the client.

Table 2: Evaluation Matrix

	Research Question	Indicator(s)	Data Source(s)	Relevance	Effectiveness	Efficiency	Impact	Sustainability
1	Does provision of the ASR pilot programme improve children's school readiness relative to children in communities with no pre-primary education?	• IDELA score for girls • IDELA score for boys • Perceived effectiveness of the classroom component in enhancing children's school readiness • Perceived effectiveness of parent-to-parent education sessions in improving parental attitudes and parental knowledge of on-time school enrolment	• One-on-one IDELA assessment for children aged 5 to 6 • FGD with school professionals, parent beneficiaries, and parents of children aged 5-6 from control communities • KII with Grade 1 teachers, volunteer teachers, and parent leaders				✓	
2	Does provision of the ASR pilot programme improve children's on-time enrolment in Grade 1 relative to children in communities with no pre-primary education?	• Children's enrolment in Garde 1 within the first two weeks of the school year for girls • Children's enrolment in Garde 1 within the first two weeks of the school year for boys • Attendance at the end of Grade 1 for girls • Attendance at the end of Grade 1 for boys	• Attendance records • Enrolment record				✓	
3	Does provision of the ASR pilot programme improve children's academic achievement and teachers' perceptions of their performance at the end of Grade 1?	• IDELA score for girls • IDELA score for boys • Teacher perceptions of academic performance at the end of Grade 1 • Parent perceptions of academic performance at the end of Grade 1	• One-on-one IDELA assessment for children aged 5 to 6 • KII with Grade 1 teachers and with parent beneficiaries				✓	

4	What are the community- and child-level costs of providing the ASR pilot programme?	• Per-child costs • Per-school/per-community costs	• Budget and expenditure data • Programmatic documents			✓		✓
5	Which aspects of community context and implementation facilitate or inhibit the success of the ASR pilot programme?	• Perceived factors that facilitate or inhibit successful programme implementation	• FGD with school professionals and parent beneficiaries • KII with volunteer teachers and parent leaders		✓			✓
5a	To what extent are programme topics and implementation methods relevant and responsive to the implementation context?	• Perceived relevance of the programme content to the current contextual challenges and expectations	• FGD with school professionals and beneficiaries • KII with parent leaders, volunteer teachers, and Grade 1 teachers	✓				
5b	To what extent was the programme implemented with fidelity?	• The extent to which the selection process for parent leaders was implemented with fidelity • The extent to which the planned number of training sessions for parent leaders were delivered • The extent to which parent leaders received the planned 10 hours of training • The extent to which the training sessions for parent leaders covered required topics • The extent to which the selection of volunteer teachers was implemented with fidelity • The extent to which the training of volunteer teachers was implemented with fidelity • The extent to which programme materials were developed through a participatory process with Mozambican stakeholders • The extent to which programme materials were delivered to programme participants	• Programme implementation checklist (completed in KIIs) • KII with implementers and donors • FGD with parent beneficiaries		✓	✓		

The research questions follow the proposal submitted by AIR and were discussed with UNICEF at the inception phase. No additional changes to the research questions were made after that point (see Annex I for the Inception Report). To answer the questions, we collected quantitative and qualitative data at different points in time as discussed in detail in Section 3. For quantitative analyses, we collected individual-level data from eligible students and their parents. Qualitative data were proposed to trace the perceptions from participants (students, parents, and school officials), implementers, and donors on the process through which the programme was implemented (Research Questions 1, 3, and 5). Qualitative data were also proposed and used to assess teachers' perceptions of children performance at the end of Grade 1 (Research Question 3). There were no deviations from the proposal or the inception report in terms of research questions, timing of data collection rounds, or methods used.

From the onset of the evaluation, it was agreed with UNICEF Country Office that the proposed impact evaluation would focus on collecting detailed information at the outcome and impact levels related to programme components 1 (child) and 3 (parent). It was also agreed that the impact evaluation would be less effective to *directly* assess the impacts of programme component 2, namely, the strengthening of the primary school teachers and school councils from target communities to promote a smooth transition for children into primary school. Component 2 was designed and implemented through two main activities: (1). Meetings with school councils to stress the importance of ensuring that the children were supported and retained in the schools; and (2) trainings of local education professionals on school readiness. While valuable, the content of these two activities was not as fully developed at the time of the inception phase, in contrast to the activities related to components 1 and 3, which had clearly defined impact indicators that could be rigorously estimated through individual-level data, as discussed in the Table 2.[5] Note also that most programme activities had no relationship with how local primary schools function as activities were implemented by volunteers (not primary school teachers) and in many cases programme activities were delivered to children and parents outside the primary school premises. This, component 2 activities were complementary but not as essential to programme definition as components 1 and 3. More importantly, component 2 activities could not be rigorously assessed quantitatively due to the small sample size of the actors involved (e.g., the few primary school teachers and principals in the 30 treatment communities). Although it would have been possible to assess component 2 drawing from qualitative methods, due to financial constraints considerations, it was agreed that the best use of the qualitative data collection efforts was to complement the quantitative data collected to help explain the results at the student and parental level components.

Despite not directly assessing the activities related to component 2, it is still worth noting that the ASR programme is a package of activities working at different levels (children, parents, and communities) to improve school readiness. Thus, we expect all three programme components to contribute to improving school readiness, increasing on-time enrolment in primary school, and increasing primary school attendance. We do not expect, however, that all programme components contribute in the same way and,

[5] Some of the indicators used to monitor component 2 were: Working with primary schools to create a more child-friendly learning environment for first graders; Engaging first graders in collective construction of classroom rules; Providing after school recreational programmes for first graders; Supporting tutoring for children in grades 1 and 2 for children who are having difficulty.

in particular, our quantitative results from Section 4 suggest that component 2 did not play a major role on children school readiness outcomes.

2.5. Ethical Considerations

AIR is registered with the Office of Human Research Protection as a research institution and conducts research under its own Federal-wide Assurance. The AIR IRB follows the standards set forth by the American Evaluation Association Guidelines and the Joint Committee on Standards for Educational Evaluation. AIR follows the Code of Conduct of UNEG that requires both a conflict- and gender-sensitive approach to research and adherence to the "do no harm" principle, among other key principles. AIR respects and adheres to the UN Declaration of Human Rights, the UN Refugee Convention, the Convention on the Elimination of all forms of Discrimination Against Women, and the UN Convention on the Rights of the Child, as well as other human rights conventions and national legal codes that respect local customs and cultural traditions, religious beliefs and practices, personal interaction, gender roles, disability, age, and ethnicity.

National IRB approval for the study was obtained from the National Council on Bioethics and Health in June 2017. AIR's researchers and data collectors were trained and certified on research ethics from relevant national-level ethics board such as the National Institutes of Health (NIH) Office of Extramural, USA. Further, a lead researcher from AIR trained local data collectors on the importance of consent and maintaining participant confidentiality prior to all rounds of data collection. Local data collectors gained informed consent from participants only after sharing all important information as outlined in the IRB approved consent form. Verbal informed consent was also obtained from each participant only after vital information on voluntary participation, confidentiality and the research study were shared and understood by the participant. The informed consent procedures complied with both the local ethics board and AIR's consent requirements. Data collectors were also trained to adhere to cultural norms when collecting data and engaging with communities to ensure that our research did no harm to the participants or the surrounding community. AIR handled all data in accordance with the procedures and protocols approved by both IRBs and all AIR computers are encrypted and password protected.

Furthermore, AIR followed internationally recognized ethical guidelines for research with children (Graham, Powell, Taylor, Anderson, & Fitzgerald, 2013), including obtaining appropriate forms of parental consent and child assent, maintaining confidentiality, and ensuring that children have the right to withdraw their participation at any point. Local data collectors were specifically trained to be attuned to children's verbal and nonverbal cues in order to identify children who may be in distress or wish to withdraw their participation from the study. Enumerators were also instructed to inform distressed children of avenues of support, such as a toll-free child protection hotline.

Throughout the evaluation, the AIR research team maintained its independence and impartiality and can therefore attest to the credibility of all findings presented in this report. No members of the research team had any personal affiliations or past connections to the projects or project staff included in the evaluation.

3. Study Design

In this section, we present our (a) approach to answering the research questions, (b) quantitative methods, (c) qualitative methods, and (d) measurement framework and instruments.

To answer **Research Question 1** (*children's school readiness*), we completed a one-on-one assessment of school readiness for children aged 5 to 6 in November 2017 (baseline) and another assessment in March 2018 (follow-up at the point of expected Grade 1 entry). An impact analysis allowed us to assess the extent to which the ASR pilot programme had improved school readiness relative to the control group. Through focus group discussions (FGDs) and key informant interviews (KIIs), we assessed parent and teacher perceptions of programme effectiveness and investigated the channels through which respondents perceived the summer programme enhanced school readiness. Additionally, we investigated perceptions of parent-to-parent education sessions and how these discussions may influence parental attitudes towards education and parental knowledge of on-time school enrolment. These findings complement quantitative findings on programme impacts and provide additional information on how and why these effects have occurred.

To answer **Research Question 2** (*on-time enrolment in Grade 1*), we examined school records as well as data reported by caregivers to determine which children enrolled in Grade 1 within the first 2 weeks of the school year. These findings were used to determine whether the ASR programme group (the treatment group) had greater on-time Grade 1 enrolment than the control group. We also checked attendance at the end of Grade 1 in November 2018. We triangulated this information with key informant interview (KII) data on attendance trends.

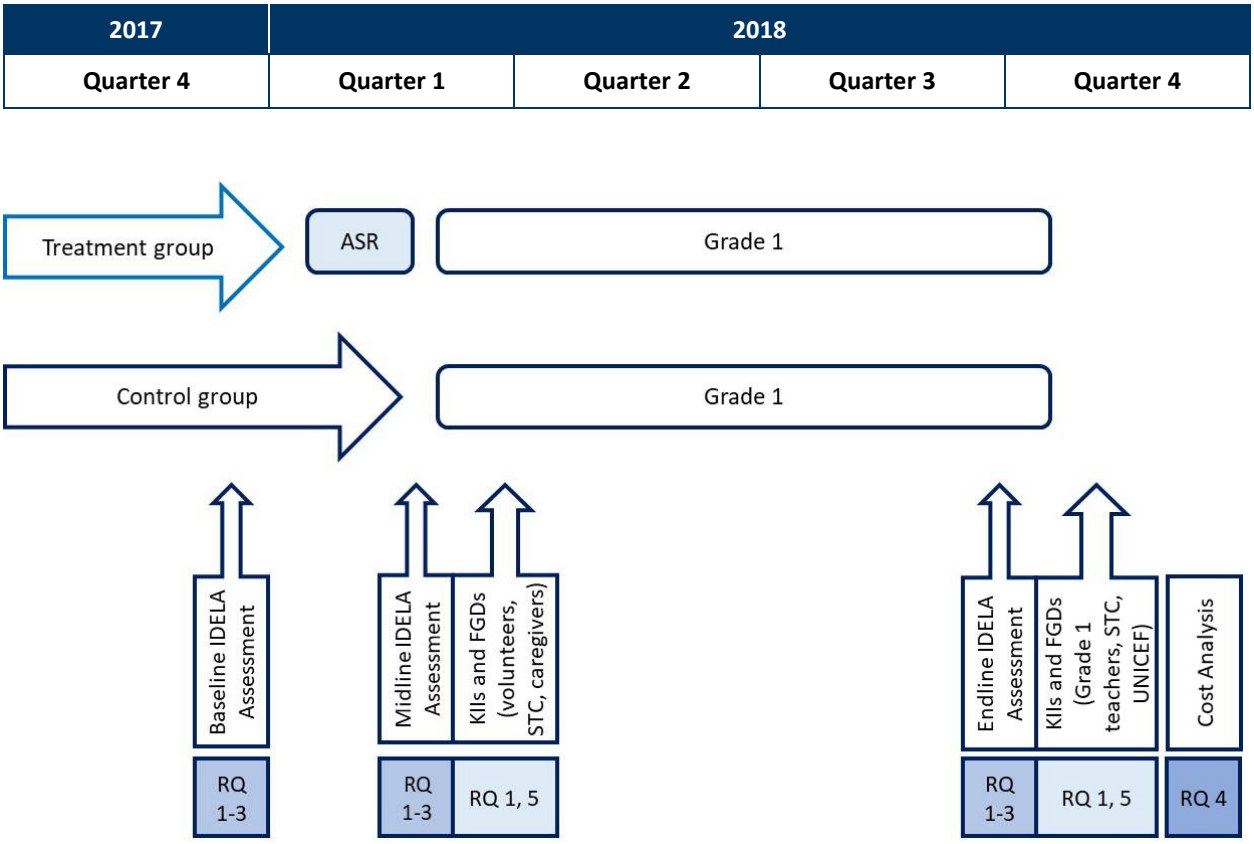
To answer **Research Question 3** (*children's academic achievement at the end of Grade 1*), we conducted a one-on-one learning assessment using STC's IDELA instrument in November 2018. This is a more reliable approach than asking teachers to rate children's learning or use teacher-created tests because (a) teachers may not have sufficient opportunity or adequate training to be able to make a valid assessment of student learning and (b) teacher-created tests and end-of-term marks may not be set against defined and shared criteria, which means that students performing equally could receive very different marks because they have different teachers, leaving uncertainty about how much each child actually knows. We assessed each child's academic learning at endline *regardless of whether he or she has completed the Grade 1 school year.* It is important to include all study children in this assessment for two reasons. First, if the intervention has an effect on on-time enrolment (Research Question 2), a larger percentage of the treatment group would be in Grade 1 relative to the control group. Second, some children are expected to attend Grade 1 sporadically or drop out, and it is important to understand how much academic learning was ultimately achieved by each child.

To answer **Research Question 4** (*cost analysis*), we conducted a cost analysis that allows us to calculate the per-child and per-school/per-community costs of delivering the ASR pilot programme. We used a resource cost model (RCM) approach in order to most accurately measure the resources allocated to implementing and operating the ASR pilot programme. The RCM approach involves explicitly organising the data-gathering effort around the specific activities used to provide programming. The RCM has its roots in the widely accepted "ingredients" approach to cost analysis (Levin & McEwan, 2001), modelling the structure and ingredients of services as they are provided. The ingredients approach is a well-tested systematic

procedure for identifying all the comprehensive costs for implementing programme services, including costs that are often not adequately identified in budget or expenditure data, such as contributed (in-kind) resources, opportunity costs, and costs shared between the programme and other operational activities. The RCM approach also allows us to distinguish costs associated with initial implementation (start-up) from those associated with regular, ongoing operation.

To answer **Research Question 5**, we used FGDs and KIIs with implementers, programme participants, and parents of children aged 5 to 6 from control communities to understand what aspects of the programme worked well, which were challenging to implement, and why. For **Research Question 5a** (*extent to which topics and implementation methods are relevant and responsive to the context*), we looked at the relevance of the programme content to the current contextual challenges and expectations. For **Research Question 5b** (*extent to which the programme was implemented with fidelity*), after implementation we used a programme implementation checklist triangulated with KIIs to analyse the fidelity of implementation of the programme processes, including the selection of lead volunteers, volunteer trainings, and programme materials. Figure 3 summarizes the structure of the evaluation.

Figure 3: Evaluation Structure



3.1. Quantitative Methods

To measure the impacts of the ASR pilot programme, we designed a longitudinal cluster RCT in the districts of Morrumbala and Derre in the province of Zambézia. The purpose of using a cluster RCT to assess programme impacts is to ensure that if the approach is successful, it creates a reasonable counterfactual where the treatment and comparison groups are similar in terms of observable and unobservable characteristics. This means that the only remaining difference is that the treatment group received the programme, enabling us to assess the programme's impact.

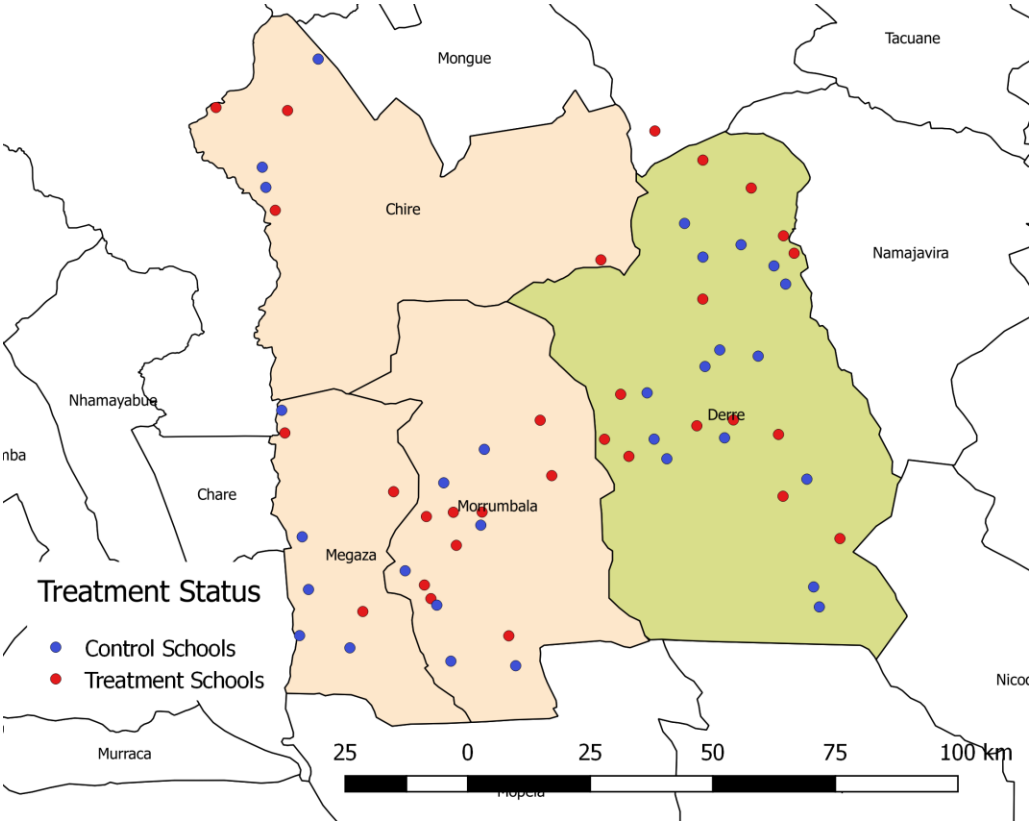
Selection of participating villages. The ASR pilot programme was designed to be implemented in 30 communities evenly distributed in the two programme districts. For the evaluation, we needed to select 30 additional communities from each district, for a total of 60 communities. Within each district, 15 communities were selected to receive the programme and 15 were selected to be part of the control group. Table 3 summarizes the sample for quantitative data collection.

Table 3: Number of Schools Selected for Evaluation by District

	Morrumbala	Derre	Total
ASR pilot programme	15	15	30
Control communities	15	15	30
Total communities	30	30	60

To create the sample, we identified 213 primary schools in Morrumbala and 72 in Derre from the MINEDH list of operating schools. The identified schools did not have any formal pre-primary or school readiness programming options and were willing to implement the ASR pilot programme if selected. The 60 schools for the evaluation were randomly selected in a public event led by UNICEF and STC in September 2017 in Morrumbala Village. Representatives from the province of Zambézia and the two participating districts were invited to learn about the ASR pilot programme and to participate in the selection of the schools. We stratified the selection process by district to increase statistical efficiency. (That is, we conducted two independent lotteries to select the schools, one for Morrumbala and one for Derre, so that each treated community in a given district had a corresponding control community within the same district.) Figure 4 shows the location of the primary schools from Morrumbala and Derre that were selected for the evaluation. The list of schools randomly selected for the evaluation is reported in Appendix D.

Figure 4: Location of Primary Schools Selected in Derre and Morrumbala[6]



Selection of programme participants. To obtain an unbiased sample of children within a school catchment area, we conducted a listing exercise for households in each of the treatment and control communities and then randomly selected children to be included in the sample. To be involved in the programme evaluation, a family in a treatment or control community had to satisfy the following requirements: (a) the family had at least one child aged 5 to 6 years, (b) the family was interested in participating in a preschool programme if it was made available in the community, and (c) the family lived within a 2-kilometre radius of the corresponding primary school.

For programme implementation, UNICEF and STC agreed to work with a maximum of 60 children in each of the 30 treatment villages (in each village, the children were divided into two classes of 30 students each). For the impact evaluation, the power calculations we presented in the inception report (AIR, 2017) indicated the need to have 20 children per school from each of the treatment and control communities, for a total sample size of 1,200 children (600 from treatment communities and 600 from control communities). Table 4 summarizes the number of children that we proposed to include in our sample for the evaluation of the programme. In each of the 60 selected communities, the 20 children needed for the evaluation were randomly selected from the listing exercise.

[6] Note that Morrumbala district has three administrative posts: Morrumbala, Chire, and Megaza

Table 4: Number of Children Needed for Programme Implementation and Evaluation

	Morrumbala		Derre	
	Programme	**Evaluation**	**Programme**	**Evaluation**
ASR children	900 (= 15 × 60)	300 (= 15 × 20)	900 (= 15 × 60)	300 (= 15 × 20)
Control children	0	300 (= 15 × 20)	0	300 (= 15 × 20)
Total children	900	600	900	600

Identification strategy. This study is a longitudinal, cluster randomized, controlled evaluation with repeated measures at the child and caregiver levels. In large-scale social experiments, it is typical to estimate programme effects by using the experimental data within a longitudinal design, including a difference-in-differences design (DD), which compares the average change over time for the treated group to the average change over time for the control group. The DD estimates represent intention-to-treat (ITT) estimates—that is, the average programme impact for children and caregivers who reside in a treatment village regardless of whether any of them took part in any programme activities. To estimate ITT effects, we used the following DD specification:

$$\Delta Y_{is} = \alpha_1 + \beta_1 Treat_s + \gamma_1 X_{it} + \Delta\varepsilon_{is} \quad [1]$$

where ΔY_{is} is the first difference of outcome Y for child i in village s between endline and baseline (i.e., $\Delta Y_{is} = Y_{is,1} - Y_{is,0}$); $Treat_s$ is a dummy variable equal to 1 if child i belongs to a treatment village; X_{it} is a vector of time variant characteristics; and $\Delta\varepsilon_{is}$ is a first difference of the error term. The estimate of β_1 represents the ITT effect of the programme. Because villages were randomly assigned, our ITT estimate represents the causal effect of the programme for those children and caregivers who live in the treated village.

Note that this analysis does not account for whether children and caregivers actually participated in programme activities. To estimate the impact of the programme for those who attended programme activities, we could estimate the following specification:

$$\Delta Y_{is} = \alpha_2 + \beta_2 ASR_{is} + \gamma_2 X_{it} + \Delta\varepsilon_{is} \quad [2]$$

where ASR_{is} is a dummy equal to 1 if child (or caregiver) i in village s received any programme activities and 0 otherwise. However, estimating equation [2] for those who took part in any programme activities may result in biased programme impacts given that families who decide to participate in the programme may be very different in observed and unobserved ways from those who do not participate, which may ultimately affect programme impacts. To address this issue, we conducted an instrumental variable (IV) approach in which we used the random assignment of villages as an instrument for programme participation. The estimated impact is known as the local average treatment effect (LATE) because it estimates the effect of the ASR pilot programme only for those children and caregivers who decide to attend programme activities just because they were assigned to the treatment group. In Appendix E, we describe the LATE method in more technical detail. We used cluster-robust standard errors to account for the clustering of households within villages.

School readiness assessment. We used the International Development and Early Learning Assessment (IDELA), developed by STC, as our school readiness assessment tool. The IDELA measures (a) emergent language and literacy, (b) emergent numeracy, (c) socio-emotional development[7], (d) motor development (fine and gross motor skills), (e) executive function[8], and (f) approaches to learning. IDELA was developed as an alternative to existing instruments that are either too narrow in scope or too expensive to administer, with the majority developed for use in high-income countries making them difficult to adapt to a developing context (Pisani et al. 2015; Fernald et al., 2017). IDELA was specifically developed for use in low-resource settings, and has undergone rigorous validation in 11 countries, including Mozambique (Pisani et al. 2015). The IDELA is intended for use with children aged 3.5 to 6 years, and the children in the study were aged 5 to 6 years at baseline. Each child assessment took approximately 30 minutes. Participating children were given a small incentive (such as a pencil, eraser, and paper) to thank them for their time. We collected the IDELA assessments at baseline, midline, and endline (end of Grade 1).

School record review. Assessors examined the school records at midline for the selected students and recorded their first-grade enrolment. We reviewed school records at midline and endline.

3.2. Qualitative Methodology

To answer Research Questions 1 and 5, we collected qualitative data in two rounds: at programme midline and endline. During midline data collection (March 2018), we interviewed volunteer leaders, school professionals, STC staff, and caregivers of participating children. At the end of Grade 1, 9 months postimplementation (endline), we interviewed Grade 1 teachers and staff from STC and UNICEF. Below we describe the specific processes used to sample participants and collect and analyse data. The qualitative data collection questionnaires are included in Appendix C.

Sampling

Midline

At midline, we used cluster sampling to select sites and a combination of purposive and convenience sampling to select interview participants. To select four school sites, we grouped schools into four implementation school catchment areas using cluster sampling at the community level, then randomly selected one site for data collection from each of the groupings for a total of four qualitative sites. We used the statistical programme Stata for this process of clustering and random selection. This approach allowed us to gather diverse perspectives (geographically) across the selected communities (Sandelowski,

[7] Some examples of IDELA socio-emotional items are: "Think for a moment and tell me what makes you feel sad; how/why does that make you sad? What do you do to feel better when you are feeling sad? how/why does this make you feel better? what makes you feel happy. In another item, the enumerator shows the child a picture card of a girl crying and asks: "how do you think this child is feeling right now? what would you do to help her feel better?". These items look at a child's ability to read the emotions of others, to feel empathy, which may be linked to performance on team-based problem-solving tasks.

[8] Examples of an IDELA executive function items are: (i) The enumerator says a list of numbers, one after another. After the child hears the numbers, he or she needs to repeat them back in the same order. This type of questions assesses short-term memory; (ii). Another example is a game where the child is asked to follow some instructions like "touch your head" or "touch your toes". After this, the child is asked to do the opposite of what he is being told, that is, touching the head when the instruction is touching the toes and vice-versa. This exercise requires relatively high levels of executive function as it tests a child's ability to pay attention, remember rules, and exhibit self-control.

2000). To sample control communities, we used convenience sampling to select the closest community to the selected implementation school.

Participants in each school were then purposively selected based on their role in relation to the programme, such as volunteer teachers or members of the school council. Within the group of eligible individuals in a particular role, we used snowball sampling to identify additional respondents. This involved asking schools to supply references for parents, school professionals, or volunteers who met the selection criteria and were available for interviews and focus groups.

Endline

Our sampling strategy for the endline data collection was purposive, using IDELA impact scores to select 10 particularly high and low performing schools as well as schools with high rates of participation. We used this sampling approach to investigate how perspectives differed across classrooms that had high or low IDELA impact scores at endline. At each of the 10 schools, we selected the Grade 1 teacher who had programme participants in their Grade 1 class during the 2017/2018 school year. In addition, we re-interviewed three key informants from UNICEF and Save the Children to further investigate whether the ASR programme was implemented as planned.

Qualitative Sample Size

We conducted a total of 12 FGDs and 23 KIIs over the course of the evaluation, which equates to obtaining information from approximately 107 individuals since FGDs were comprised of 6-8 individuals each. While this figure (107) is modest in comparison to the quantitative sample, unlike quantitative samples that tend to be large and probabilistic, qualitative samples are not intended to be generalizable or comparable. Smaller qualitative samples do, however, allow in-depth investigation of key concepts. Anthropologist Russell Bernard (2011) notes, "There is growing evidence that 10–20 knowledgeable people are enough to uncover and understand the core categories in any well-defined cultural domain or study of lived experience" (p. 154). Guest et al. (2006) and Morgan et al. (2002) both found that the vast majority of core concepts were uncovered in the first 10-12 interviews. We found that this number of KIIs and FGDs – along with the individuals purposefully sampled—provided us with sufficient data to answer the research questions we aimed to answer qualitatively (see Table 5 below).

Methods

We used FGDs and KIIs to collect the qualitative data. In Table 5, we outline how these methods and their sampling correspond to the theory of change and the research questions.

Table 5: Qualitative Approach

Research question	Theory of change[a]	Instrument	Midline interview #	Endline interview #
RQ 1. How do teachers and parents perceive the overall effectiveness of the ASR programme in terms of improving school readiness? pre-primary	G → N; J → P, Q	FGD with school professionals	4	0
		FGD with parent beneficiaries	4	0
		FGD with parents of children aged 5-6 from control communities	4	0
		KII with Grade 1 teachers	0	10
		KII with volunteer teachers	4	0
		KII with parent leaders	4	0
RQ 5. Which aspects of community context and implementation facilitate or inhibit the success of the ASR pilot programme?	CONTEXT → A, B, F	FGD with school professionals	4	0
		FGD with parent beneficiaries	4	0
		KII with volunteer teachers	4	0
		KII with parent leaders	4	0
RQ 5a. To what extent are programme topics and implementation methods relevant and responsive to the implementation context?	CONTEXT → A, B, F	FGD with school professionals	4	0
		FGD with beneficiaries	4	0
		KII with parent leaders	4	0
		KII with volunteer teachers	4	0
		KII with Grade 1 teachers	0	10
RQ 5b. To what extent was the programme implemented with fidelity?	A → G; F → J	KII with implementers and donors	2	3
		FGD with parent beneficiaries	4	0
		Total number of interviews	22 (12 FGDs + 10 KIIs)[b]	13 KIIs

Note. FGD = focus group discussion; KII = key informant interview.

[a] Arrows in this column indicate that we use the instrument to study the transition between the outlined elements in the theory of change.

[b] Interviews listed in the table are duplicated.

Focus Group Discussions

Data collectors from AIR's partner, ELIM, facilitated FGDs with school professionals and parents in Portuguese, Sena, and Lolo. FGDs with school professionals focused on several themes, including the responsiveness and relevance of the programme to the cultural context and current issues facing school readiness in Zambézia, if programme staff and volunteers implemented the programme guidelines and training as intended, and the perceived effects of the programme on participants. We triangulated information from FGDs with school professionals with information from FGDs with programme participants--both parents of children aged 5 to 6 participating in the programme and parents participating in the programme's parent-to-parent education sessions. FGDs with participating parents covered the same topics as FGDs with school professionals, but the questions were modified to reflect participants' experiences with the programme. Finally, FGDs with parents of children aged 5 to 6 from control communities provided additional information on the programme's responsiveness to the implementation context.

Key Informant Interviews

AIR and ELIM conducted KIIs at midline and endline in Portuguese, English, Sena, and Lolo. At midline, we led two KIIs per school, one with the parent leader of the parent-to-parent education sessions and one with the volunteer teacher for the summer school. We also conducted two KIIs with programme implementers who were working across the selected programme communities. KIIs with programme implementers focused on the way programme activities translated (or did not translate) into programme outputs and the extent to which the programme was implemented as intended.

After the end of Grade 1, we collected endline data from Grade 1 teachers and again from programme implementers. Interviews with Grade 1 teachers focused on understanding their perceptions of programme students' readiness in comparison to non-programme students. Key informant interviews with programme implementers further explored the fidelity of implementation themes from midline through a programme checklist that outlined the proposed programme processes.

Analysis

For our analysis of the qualitative data, we incorporated elements of process tracing so that we could easily relate our qualitative findings to the elements and relationships in the ASR programme's theory of change. Process tracing uses qualitative interview transcripts to break down the theory of change elements into observable steps in order to analyse how change did or did not occur (Vennesson, 2008). We used an interpretivist approach (Norman, 2015) to process tracing in our data collection design and analysis, which does not determine causality but allows researchers to understand participants' perceptions on how and why certain connections between elements in the theory of change took place. This involves understanding patterns in the perspectives and behaviours of informants (through analysis of interview transcripts) to show whether the programme progressed as expected based on the theory of change (Jervis, 2006).

After data collection, researchers sent transcribed audio files for translation into English. ELIM then sent the English transcripts to AIR for review and analysis. AIR staff used qualitative coding to analyse the data. From the data, we developed a descriptive coding scheme linked to the theory of change, with

specific references to themes of interest and research questions. We then loaded the coding scheme and the transcripts into a qualitative data analysis software package (NVivo 11). Coding in NVivo is a manual process based on careful reading of each piece of data (in this case, interview responses and other notes) and subsequent selection of one or more appropriate codes to describe the datum. Once properly coded, the data were reviewed by qualitative researchers, triangulated and refined between researchers, and translated into a written report.

4. Quantitative Results

In this section, we present quantitative findings on programme participation, school readiness, and on-time enrolment in first grade. Programme participation (or attendance) is a key mediator in ASR's ToC (see Figure 2) that we test in this section: we expect to see outcome N (children provided with key school readiness skills) only if the programme is well-attended by those assigned to the treatment condition. School readiness and on-time enrolment results correspond to two of the impacts in the ASR ToC: children enter grade 1 with the minimum level of readiness and an increase in on-time enrolment in first grade. Testing other key impacts from the ToC –specifically on dropout rates and school performance– are out of scope of this evaluation. We are unable to examine whether the ASR programme had an effect on primary school dropout rates due to the timeline of the evaluation: we expect any impacts on dropout rates to manifest themselves beyond the end of Grade 1. Furthermore, we rely exclusively on primary data: AIR was not provided with monitoring data collected by STC and this analysis if beyond the scope of this study. However, we used STC administrative data to conduct the cost analysis (see Cost Analysis section). Although UNICEF did not provide AIR with project targets to benchmark these results against, we discuss how our findings compare to similar programmes in the Conclusions section.

4.1. Attrition

Attrition within a sample occurs when households from the baseline sample are missing in the follow-up sample. Mobility and household dissolution can make it difficult to locate households, and death of sample members is an obvious form of attrition. Attrition causes problems when conducting an evaluation because it not only decreases the sample size (leading to less precise estimates of programme impact) but also introduces selection bias to the sample, which can lead to incorrect programme impact estimates or change the characteristics of the sample and affect its generalizability. There are two types of attrition: differential and overall. Differential attrition occurs when the treatment and control samples differ in terms of the types of individuals who leave the sample. Differential attrition can create biased samples by eliminating the balance between the treatment and control groups achieved through randomization at baseline. Overall attrition is the total share of observations missing at follow-up from the original sample. Overall attrition can change the characteristics of the remaining sample and affect the ability of the study's findings to be generalized to populations outside the study. Ideally, both types of attrition are small.

We investigated attrition at endline by testing for similarities at baseline between treatment and control groups for those who attrited (differential attrition). Testing these groups on baseline characteristics allowed us to assess whether the benefits of randomization were preserved at endline.

The analysis of attrition is shown in Appendix A (Tables A.1 and A.2). In the endline survey, we had 145 attritors, of which 73 were control observations and 72 were from the treatment group, which represents an 12% attrition rate for both the treatment and control groups. Regarding differential attrition, columns 7 and 8 of the referenced Tables in Appendix A show that only four of the 26 IDELA and other child indicators and four of the 34 caregiver attitude and practice indicators were significantly different between the attritors in treatment and control groups. Similarly, we find only minor differential attrition in terms of sociodemographic characteristics: out of 52 households, caregiver and child characteristics as well as poverty, asset and livestock ownership outcomes, only 4 were significantly different between the attritors in treatment and control groups. Overall, we did not find any significant differential attrition at follow-up, which means that we preserved the benefits of randomization.

Next, we briefly discuss sociodemographic characteristics of attritors to contextualize characteristics of children who are included in analysis, i.e. non-attritors. Attrition in Derre was higher than in Morrumbala, although this difference is not statistically significant. Attritors in the treatment group were more likely to have had diarrhoea in last 2 weeks but were also slightly more food secure. Attritors had slightly more modest housing conditions and fewer assets across both groups, but this could be explained by the fact that attritors in both groups had slightly smaller families. Main caregivers of attritors were less likely to speak Sena and more likely to speak Lolo, as compared to primary caregiver of non-attritors, which could be explained by higher (but not significantly) rates of attrition in Morrumbala. While a few small statistically significant differences exist between attritors and non-attritors, these differences are practically insignificant.

4.2. Programme Participation

In this section, we present the first-stage estimates of the effect of being assigned to a treatment village on the probability that children or caregivers participated in any ASR activities. In Table 6, we show that the treatment instrument was strongly correlated with taking part in the ASR pilot programme. The results in column 1 indicate that being in a treatment village increased the probability of participating in ASR activities by 56 percentage points for children in the treatment group relative to those in the control group. This is encouraging since programme participation is a critical mediator of improve school readiness, a key impact of the ASR ToC. Interestingly, a non-negligible proportion of children in the control group claimed to have taken part in the programme, which may have happened because treatment and control schools were in adjacent locations. Using treatment as an instrument allows us to effectively address this potential contamination issue in order to obtain a consistent estimate of participating in the ASR pilot programme.[9]

Nevertheless, it is worth noting that there was not full compliance with programme activities, i.e. ASR did not achieve universal participation in treatment villages. Volunteer teachers and key informants from Save the Children and UNICEF noted that the timing of the programme may have affected participation as it took place during the rainy season, when many families were on holiday and/or working in the fields. (Often, families bring children with them while they work in the fields.) A key informant from UNICEF

[9] In Table 6, we report the F-statistics on the treatment variable to assess the relevance of the instrument. The F-statistic using the sample of panel observations was 16.78, which exceeds the conventional critical values of 10 to assess finite sample bias due to weak instruments (Stock & Yogo, 2005).

stated that families typically leave for the fields 2 to 3 months before the rainy season, return, then go back to work in April, May, and June.

Table 6: First-Stage Regression Results (With Covariates)

	Point	Endline mean			
	Estimate	T	C	*F*-test	*N*
Dependent variables	**(1)**	**(2)**	**(3)**	**(4)**	**(6)**
Did this child attend a preschool programme before attending primary school?	0.56*** (0.06)	0.76	0.20	16.78	1,023

Note. T = treatment group; C = control group. All estimates use single-difference modelling of endline observations for observations in the longitudinal sample. Robust standard errors clustered at the school level are in parentheses. All estimations control for district fixed effects. Control variables used in the regression are: caregiver's education level – primary school education, caregiver's education level – preschool education, an indicator for whether the child lives with his or her mother or father, the language spoken in the child's home is Portuguese, log of distance to the nearest health post (in kilometers), number of children living in the household, age of the main respondent, SES index, indicators for the child being stunted or underweight, and indicators for imputed child's weight for age and height for age. Note that 76% of children in treatment communities participated in the programme versus 20% of children in control communities.
*p < .10. **p < .05 ***p < .01

4.3. Child-Level Component

Next, we present programmatic impacts related to child-level outcomes. For the quantitative findings, we focus on two main groups of results: those related to the IDELA constructs (which examine impact U of the ToC, children enter Grade 1 with minimum level of readiness) and those related to on-time primary school enrolment (impact X of the ToC).

IDELA Constructs

As discussed earlier, the IDELA items can be grouped into six constructs to assess child development. These constructs group items related to socio-emotional skills, motor skill development, emergent numeracy, emergent literacy, executive function, and approaches to learning. In Table 5, we present impact estimates for the total IDELA score as well as each larger construct.[10] Additional results showing the effects on each individual item within each construct are available in Appendix B. As can be seen in Table 7, we found a highly significant impact on the overall IDELA score in all child domains except for the socio-emotional one, which is still positive but imprecisely estimated.[11] Our ITT result (column 1) shows that the ASR pilot programme increased the total IDELA score for children in treatment schools by 9 points (0.52 standard deviations [*SD*]). Column 2 shows the results for those children in treatment schools who actually attended the programme. We found that the IDELA scores for this group increased by 17 points (0.93 *SD*). Again, these overall scores were driven by the impacts on specific sub-constructs: emergent numeracy (ITT: 0.55 *SD*; LATE: 0.98 *SD*), emergent literacy (ITT: 0.39 *SD*; LATE: 0.70 *SD*),

[10] The total IDELA score is a simple average of the socio-emotional, numeracy, literacy, and motor constructs.
[11] The socio-emotional items in the IDELA assessment requires children to talk about their feelings in real and hypothetical situations. Children were less engaged in this type of questions relative to other domains that were more play-based. Challenges with these questions may explain in part the lack of results for this domain.

and motor skills (ITT: 0.44 *SD*; LATE: 0.78 *SD*). Even though we found statistically significant differences in favour of the control group for both emergent literacy and motor skills at baseline, our impact estimates reveal that children in the treatment group were able to catch up and in fact overtake their control group peers with regard to these skills as a result of the programme. This is a trend we first identified in midline, and we are able to confirm that these effects persist at the end of first grade, 9 months after the end of the programme (endline). It is worth noting that the control group has also improved since baseline, but the gap in favour of the treatment group remains.

Tables B.1 to B.6 in Appendix B show the breakdown of each main construct into its constituent items. For instance, Table B.1 highlights that the overall impact on motor skills was driven by highly significant effects on all aspects of motor skills. Similarly, Table B.2 shows that the impact on emergent literacy was also driven by positive effects on most items (emergent writing print awareness, letter identification and first letter sound), while the impact on emergent numeracy was also driven by effects most items (Comparison by size and length, sorting and classification, shape identification, one-to-one correspondence, addition and subtraction, and puzzle completion). Impacts on the socio-emotional and executive function constructs were driven solely by self-awareness (Table B.4) and short-term memory (Table B.5), respectively.

Table 7: Impacts on IDELA Constructs

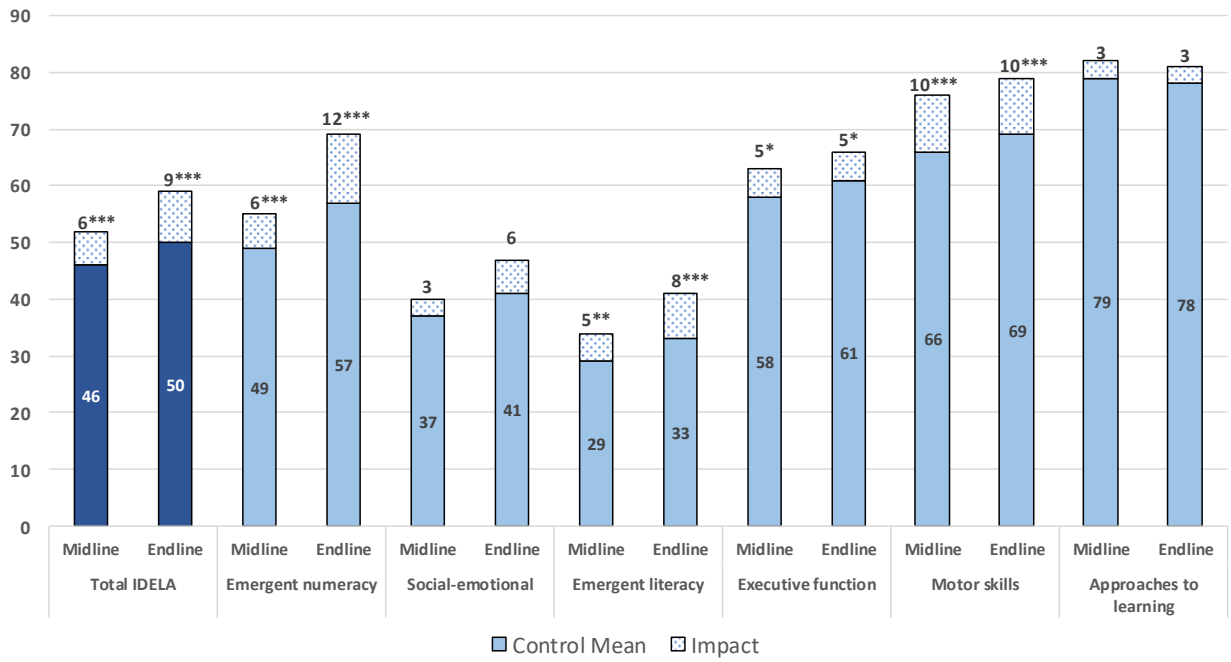
	ITT	LATE	Baseline mean		Endline mean		
	Impact	Impact	T	C	T	C	*N*
Δ Dependent variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Total IDELA	0.09*** (0.03)	0.17*** (0.05)	0.41	0.45	0.56	0.50	1,023
Emergent numeracy	0.12*** (0.04)	0.21*** (0.07)	0.46	0.50	0.65	0.57	1,023
Socio-emotional	0.06 (0.04)	0.10 (0.06)	0.34	0.36	0.46	0.41	1,023
Emergent literacy	0.08*** (0.03)	0.14*** (0.05)	0.30	0.32	0.39	0.33	1,023
Executive function	0.05* (0.03)	0.09* (0.05)	0.52	0.55	0.63	0.61	1,023
Motor skills	0.10*** (0.03)	0.19*** (0.05)	0.55	0.62	0.73	0.69	1,023
Approaches to learning	0.03 (0.03)	0.05 (0.05)	0.75	0.77	0.80	0.78	968

Note. Δ Dependent variables = dependent variable at endline – dependent variable at baseline; T = treatment group; C = control group. All estimates use difference-in-difference modelling with panel observations. Robust standard errors clustered at the school level are in parentheses. All estimations control for district fixed effects. Control variables used in the regression are: caregiver's education level (primary school education and preschool education), an indicator for whether the child lives with his or her mother or father, language spoken in the child's home is Portuguese, log of distance to the nearest health post (in kilometers), number of children living in the household, age of main respondent, SES index, indicators for the child being stunted or underweight, and indicators for imputed child's weight for age and height for age. Note that the sample for Approaches to

Learning is smaller than the overall IDELA sample because 55 children were ineligible to answer questions for this section and thus scores are missing for this item.
*p < .10. **p < .05 ***p < .01

In Figure 5, we compare the midline IDELA results (before children enrolled in first grade) to the endline results (at the end of first grade). Interestingly, the impact estimates at the endline wave were of the same magnitude, if not larger, than the impacts at midline. Moreover, the impact results persist over time even though, as expected, the control group is performing better at the endline wave, which is explained by the fact that children are not only older at endline but are also attending first grade. The results are encouraging as programme impacts did not fade out over time as may have been expected given the programme was short in length and the number of treatment students where just a small proportion of all the students attending first grade.

Figure 5: Comparison of IDELA Impacts at Midline and Endline



Note. Figure compares the control means and impact estimates for each IDELA domain at two points in time, midline and endline. The right axis represents the number of points in the IDELA assessment out of a total of 100 points. The stars next to the impact estimates indicate whether the impact is statistically significant using the following convention: *p < .10. ***p < .01.

Interestingly, the average child who attended the programme (LATE estimates in Table 5) is scoring above 70% of the IDELA test in the last round of data collection (a mean of 56 plus an impact of 17 percentage points equals 73%), which indicates that although children were not entirely ready by the time they entered first grade, they have a achieved a minimum level of school readiness now on average thanks to the programme.

The programme has an OECD-DAC gender equality policy marker score of 1, meaning that gender considerations are an important but secondary objective, hence assessing gender issues was not the primary focus of the evaluation. However, we disaggregate results by gender to investigate potential differential impacts of the ASR programme for boys and girls since gender is a key moderator in the programme's ToC. Below we present main IDELA constructs disaggregated by gender (Table 8). There is no differential impact for boys and girls for total IDELA, or any of the main IDELA contracts: boys and girls benefit equally from the intervention.

Table 8: Impacts on IDELA Constructs by Gender

	ITT	Baseline mean				Endline mean				*N*
	Impact	Treatment		Control		Treatment		Control		
	Difference	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	
Δ Dependent variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
Total IDELA	0.015 (0.03)	0.42	0.41	0.46	0.44	0.58	0.53	0.53	0.46	1,023
Emergent numeracy	0.012 (0.04)	0.45	0.46	0.50	0.50	0.67	0.62	0.61	0.52	1,023
Socio-emotional	0.020 (0.04)	0.34	0.34	0.37	0.35	0.47	0.44	0.44	0.37	1,023
Emergent literacy	0.025 (0.03)	0.32	0.29	0.33	0.32	0.41	0.36	0.37	0.29	1,023
Executive function	0.026 (0.04)	0.52	0.52	0.55	0.54	0.64	0.62	0.63	0.58	1,023
Motor skills	0.005 (0.04)	0.57	0.54	0.64	0.60	0.75	0.71	0.71	0.67	1,023
Approaches to learning	0.013 (0.04)	0.76	0.74	0.78	0.75	0.80	0.80	0.79	0.76	968

Note. Δ Dependent variables = dependent variable at endline – dependent variable at baseline; All estimates use difference-in-difference modelling with panel observations. Robust standard errors clustered at the school level are in parentheses. All estimations control for district fixed effects. Control variables used in the regression are: caregiver's education level (primary school education and preschool education), an indicator for whether the child lives with his or her mother or father, language spoken in the child's home is Portuguese, log of distance to the nearest health post (in kilometers), number of children living in the household, age of main respondent, SES index, indicators for the child being stunted or underweight, and indicators for imputed child's weight for age and height for age. Note that the sample for Approaches to Learning is smaller than the overall IDELA sample because 55 children were ineligible to answer questions for this section and thus scores are missing for this item. *p < .10. **p < .05 ***p < .01

We do not showcase additional analyses of differential impacts because our child sample is homogenous in terms of most important demographic and socioeconomic. Since the programme explicitly targeted pre-school aged children, there is no variation in children's age. Additionally, the programme was implemented in very poor, food insecure areas, with little variation in socioeconomic conditions. With the

exception of the indicator for whether the mother lived in the household with the child, we did not find any statistically significant differences in the variables related to the household, caregiver, or child characteristics between the treatment and control groups at baseline.[12] For example, 99% of children in our sample are in good health and have no disability issues. Because of the homogeneity of the sample at baseline, further subgroup analyses would not yield additional insights.

Primary School Attendance

Next, we assessed whether the programme led to greater attendance in primary school for children, as measured by whether the child currently attends primary school. As seen in Table 9, we found the ITT effect to be a 12 percentage-point increase in attendance over the control group (column 1), and the LATE to be a 21 percentage-point increase (column 2). These results support the hypothesis that ASR programmes can increase the likelihood that children enrol and attend primary school: ASR programme does indeed increase on-time enrolment in Grade 1.

Table 9: Impacts on Primary School Attendance – Single Difference

	ITT	LATE	Endline mean		
	Impact	Impact	T	C	*N*
Dependent variables at endline	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Is this child currently attending school?	0.12***	0.21***	0.90	0.79	1,023
	(0.04)	(0.07)			

Note. T = treatment group, C = control group. All estimates use difference-in-difference modelling with endline observations. Robust standard errors clustered at the school level are in parentheses. All estimations control for district fixed effects. Control variables used in the regression are: caregiver's education level (primary school education and preschool education), an indicator for whether the child lives with his or her mother or father, language spoken in the child's home is Portuguese, log of distance to the nearest health post (in kilometers), number of children living in the household, age of main respondent, SES index, indicators for the child being stunted or underweight, and indicators for imputed child's weight for age and height for age. *p < .10. **p < .05 ***p < .01

In addition to overall programme effects, we examine potential impacts on on-time primary school attendance for boy and girls separately to test one of the key moderators in the ASR ToC (Table 10). We find a positive differential impact on girls' primary school attendance: on average, girls are 11 percentage points more likely to be attending primary school at endline as a result of the programme. This impact is significant at the 10% level.

[12] For a detailed discussion of baseline balance and sample characteristics, please refer to the Midline Report of Evaluation of the UNICEF Mozambique Accelerated School Readiness Programme prepared by AIR.

Table 10: Impacts on Primary School Attendance by Gender – Single Difference

	ITT	Endline mean				*N*
	Impact Difference	Treatment		Control		
		Boys	Girls	Boys	Girls	
Dependent variables	**(1)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
Is this child currently attending school?	0.108* (0.05)	0.90	0.91	0.83	0.74	1,023

Note. All estimates use difference-in-difference modelling with panel observations. Robust standard errors clustered at the school level are in parentheses. All estimations control for district fixed effects. Control variables used in the regression are: caregiver's education level (primary school education and preschool education), an indicator for whether the child lives with his or her mother or father, language spoken in the child's home is Portuguese, log of distance to the nearest health post (in kilometers), number of children living in the household, age of main respondent, SES index, indicators for the child being stunted or underweight, and indicators for imputed child's weight for age and height for age. Note that the sample for Approaches to Learning is smaller than the overall IDELA sample because 55 children were ineligible to answer questions for this section and thus scores are missing for this item. *p < .10. **p < .05 ***p < .01

We do not find any unexpected effects of ASR participation in terms on the examined child-level outcomes. The direction of the observed outcomes is as expected based on the ToC (i.e., improved IDELA constructs and increased on-time primary school enrolment).

5. Qualitative Results

We present qualitative results according to the four research questions listed in Table 2 that can be answered using the qualitative information we gathered through interviews and focus group discussions. We assess perceived improvements in children's school readiness (key impact under the ASR theory of change - see Figure 2), factors facilitating or inhibiting the success of the ASR programme (mediators and moderators under the ASR ToC), programme relevance (a set of key assumptions under the ToC), and fidelity of implementation (key inputs and outputs under the ToC). When we use the term "school readiness" in reference to the qualitative data, we are primarily referring to the specific objectives of the ASR pilot programme, which include on-time enrolment in primary school, parental support for education, and academic preparedness for Grade 1.

5.1. How do teachers and parents perceive the overall effectiveness of the ASR programme in terms of improving school readiness?

Both teachers and parents perceived improvements in children's school readiness that they attributed to the ASR programme. In this section, we first explore perceived effects on students' motor skills, numeracy, literacy, socio-emotional readiness, and executive function. In addition to perceived improvements in these areas, teachers reported that students who participated in ASR were better able to help their peers, suggesting a positive spill-over effect. We also look at perceived changes in teachers and parents following the ASR programme, given that "school readiness" encompasses more than just the students themselves.

Student-Level Perceived Effects

Our qualitative evaluation explored both the perceived effects of the programme on participating students and the perceived effects on Grade 1 teachers receiving students from the programme. To better understand the perceived effects of the ASR programme, we organized student-level information into key IDELA skills: motor skills, numeracy skills, literacy skills, socio-emotional skills, and executive function skills. After we present the effects around each of these skill sets, we discuss the lasting perceived effects at the end of Grade 1 and the teacher-level effects.

Motor Skills

A minority of teachers explicitly noted perceived improvements to ASR students' motor skills. When describing the number of students who could hold a pencil out of the entire class at the beginning of the year, six teachers stated "many," three teachers stated "few," and one teacher stated "all." When describing just the ASR programme students, six teachers stated that many of these students could hold a pencil at the beginning of the year, and three teachers stated that all could. Teachers from three schools specifically cited improvements in students' drawing skills, including increased understanding of a drawing task, ability to complete drawing tasks more quickly, and more independence completing drawing tasks. A Grade 1 teacher explained the difference in the following way:

> *The comparison of these students is that those who left school readiness were prepared and active. I was able to explain one thing, say let´s draw a circle, they already knew that I will draw a circle like this, the teacher could draw after, while those others who did not go did the opposite. So, the work was mine to go back and say we draw a circle like this, I started to get into the pace of others while they no longer needed a teacher to go there and see their work because they already knew how to do it.*

However, teachers who reported many of the largest perceived impacts in improved motor skills were from schools in which the programme students showed only small improvements at the endline. In other words, the perceived increases did not align with patterns in endline impact scores. This could be because teachers observed improvements in motor skills that were not captured through the quantitative assessment.

Numeracy

Despite quantitative impacts on numeracy, there were minimal perceived effects on students' emergent numeracy skills as a result of the programme. In closed-ended responses comparing all students' readiness in emergent numeracy to programme students' readiness, only two teachers reported an increase in programme students' ability to identify shapes and compare sizes. Notably, the two schools that did report an increase in numeracy skills also showed high overall effects in the endline assessment (.68 and .26). Our data suggest that teachers may not have perceived an effect because many students already met their expectations for basic numeracy skills. Eight out of 10 of the teachers sampled at endline stated that at the beginning of the school year many or all students (both ASR and non-ASR participants) were familiar with shapes and comparing sizes, which are part of the IDELA numeracy skills construct. For example, one teacher stated, "*Yes, they were familiar with the pictures, they were also able to identify*

with concrete example, we have here some figures that are in the office of the pedagogic director, I used to hold them and show, they were capable to identify."

Literacy

Consistent with quantitative findings, teachers frequently reported that programme students had a higher level of Portuguese oral comprehension and oral vocabulary knowledge at the beginning of the year than non-programme students. Five teachers reported differences in students' Portuguese skills in closed-ended responses, including three teachers who reported that more programme students could say a few words in Portuguese and four teachers who reported that more programme students could understand Portuguese directions. For example, one teacher stated,

> *If they were here now, [programme students that] they could show that they can speak in Portuguese, not a long sentence, a normal sentence, small. This programme helped a lot and is still helping this class, the names on the list can themselves demonstrate how capable they are now.*

A minority of teachers also cited perceived effects on students' concept of print, familiarity with vowels, and initiative to speak in Portuguese. A teacher explained,

> *This is the difference that the teacher saw, and also, in terms of reading vowels, some had many difficulties to read vowels, they made some confusions with the vowels but others read very well. Even if I spread out the vowels, he already knew that this is a, even putting a in the last place, he knew that this is a, put u in the middle, he knew that this one is u, they did not have this difficulty, with others it was different.*

However, despite these positive reports, one teacher highlighted that the programme still only provides students with 90 days of exposure to Portuguese, which is not adequate for preparing students for a classroom using Portuguese as a language of instruction. The teacher noted, *"As for the Portuguese language, there were many difficulties, I believe it was a 90-day project for the children to abandon their mother language, we speak Lolo, to speak Portuguese language, it was a bit difficult."* Therefore, while we do see positive perceived impacts on Portuguese skills, these overall impacts are limited to initial Portuguese literacy skills, does not fully prepare students to enter an environment where the language of instruction is Portuguese.

Socio-Emotional Readiness

Teachers at endline noted that children who participated in ASR demonstrated several socio-emotional competencies that their non-programme peers lacked at the beginning of first grade. These competencies include knowing how to play with others, knowing how to participate in classroom activities and ask questions, and knowing how to apologize when someone gets hurt. In terms of socializing with others, a teacher commented at endline, *"The ones in the project already had good knowledge … how to play with others, ask something to one another, they already knew."* Another teacher expressed a similar opinion of students who participated in the ASR programme, adding that these students *"were not too shy"* and were less afraid than their non-programme peers. Other teachers echoed the notion that children who participated in ASR were "less afraid" and more eager to participate. Although we did not find impacts on

socio-emotional readiness in our quantitative analysis, the socioemotional skills analyzed by IDELA did not have the same focus on classroom behavior as the qualitative questionnaires.

Executive Function

According to teachers at endline, students who participated in ASR demonstrated higher levels of executive function at the beginning of the school year than their peers, including greater ability to focus and follow directions. A teacher commented on the ability to follow directions: *"When I gave some exercises … or when I wrote or I asked them a question, [the students who participated in ASR] responded so willingly and faster than the others, then the others followed behind."* This teacher also gave the example of students who participated in ASR singing during free time without being told to sing, while a teacher from Cumbabo added that ASR participants showed greater initiative in the classroom: *"those in readiness came with that initiative to do at least something in the classroom."* Other teachers noted that students who attended ASR had greater ability to pay attention, ask questions, and respond actively to the teacher.

Teacher Perceptions of Student Performance at the End of Grade 1

When asked to compare the performance of students who participated in ASR with those who had not participated in the programme at the end of the year, most teachers indicated ASR students performed at a higher level. According to one teacher, *"almost all the contents that we were also teaching in the first-grade seemed a repetition of what they saw in [ASR]. So, it means that in terms of performance it's more positive than those who are not in the programme."* A minority of teachers maintained that while students who participated in ASR were noticeably more prepared to enter first grade at the beginning of the year, by the end of the year, student performance had largely evened out across ASR participants and nonparticipants. To this end, one teacher also referenced positive spillover effects from ASR students helping to boost overall student performance: *"The achievement of those who were not in the project was also positive because those who were at the project helped those who were not, they learned something from the others. So, it is positive on everyone's part."* This positive spillover from ASR participants to non-ASR classmates in first grade is an unexpected outcome of the programme, one that was not reflected in the ASR ToC.

Teacher-Level Perceived Effects

In the past, teachers reported performing an extensive amount of work to help new students transition to the Grade 1 context. Interview data show that many children previously entered Grade 1 without exposure to a classroom setting or a Portuguese-only context or even experience holding a book. Three teachers stated that because of this, students are often shy or closed off at the beginning of the Grade 1 school year. One teacher said,

> *Expectations are that practically the student when he comes in the first days, he is new and closes himself. So, I must create forms on how to be friends of my students, so the student feels free to get up, talk, because the student when he comes in first grade, has something in his head just not well organized. So, I start slowly.*

Because students are unfamiliar with the classroom context, teachers report that they must perform additional work to help acclimate students to classroom activities and norms. A teacher from Namerama explained that in the past,

> *Children believed that when they came in the classroom, most of the work was for the teacher, because the children came without knowing how to hold a pencil, how to position a book, for example, while you gave the book at the correct position, he would turn it on the wrong position, he thought that the person in the picture, walks with hair and all this was teacher's work, and also in terms of behaviour sometimes many were shy, were not so cheerful.*

After the programme, five Grade 1 teachers stated that it was easier to transition children into Grade 1 at the beginning of the year because of the programme. Teachers stated that students were "prepared" and "able to answer any question" and their readiness was so high that it "felt like teaching second-grade." This perception also led to higher teacher expectations, as suggested by a teacher from Marrabuanha who stated,

> *In the beginning the students were very timid, and it was hard for me to deal with them, but as time went by, they got used to me, and I got used to them and it became easier. But this year was a bit easier than in the beginning, because they were able to answer any question, I would ask them. I have positive expectation for some students.*

A minority of teachers also stated that programme students were able to support non-programme students in the classroom, which made the teachers' job easier. Only a fraction of each Grade 1 class participated in the ASR programme. In the classes taught by our sampled teachers, 10–35% of the students were in the programme out of the entire class (Table 11). Teachers noted that programme students helped prompt non-programme students to follow classroom behaviours, and the teachers would purposely pair programme and non-programme students to help support the latter. One teacher explained,

> *I did not put the summer school on one side and those who were not on the other side, no, I spread them, because those of summer school, for example, if it was a drawing lesson, were better prepared than those who were not at summer school. When the teacher gave a drawing lesson, the teacher was only monitoring, they already knew, the ones for summer school knew, they explained to the colleague, do like this, teacher is saying paint with that colour here, paint with this colour, the teacher did not necessarily need to go there and say do like this, I was proud of my class and I was very happy with it.*

This belief that the summer school made the teachers' job easier—another perceived benefit of the programme—was also expressed by parents. According to one parent from the Malua School community,

> *This programme is a good way to prepare the children, because when they leave preschool for elementary school with a good notion, teachers also like [it] because their work is made easier, they do not suffer to teach the first subjects. When they ask, for example, "which letter is this?" the children soon respond "[it] is the letter 'a'"; [when they ask] "what number is this?" the children respond is the number "1." Teachers are grateful for the work of this project.*

Table 11: Share of ASR Students in Qualitative Sample Schools

District	School	Class size	No. ASR students in class	% ASR students in class
Chotama	Escola Primaria Completa de Chotama	48	17	35%
Cumbabo	Escola Primaria Completa de Cumbabo	53	17	32%
Armenda	Escola Primaria Completa de Armenda	60	17	28%
Namarema	Escola Primaria de Namarema	53	13	25%
Camacho	Escola Primaria de Camacho	72	15	21%
Gimo 2	Escola Primaria do Gimo 2	134	22	16%
Marrabuanha	Escola Primaria Completa de Muarrabuanha	79	12	15%
Catulama	Escola Primaria de Catulama	75	11	15%
Malua	Escola Primaria Completa de Malua	50	6	12%
Chirimane	Escola Primaria Completa de Chirimane	63	7	11%

Parent-to-Parent Sessions Perceived to Improve Child Feeding and Hygiene Practices, Parental Support for Education

Based on qualitative interviews at endline with parents, teachers, and other education officials, perceived positive benefits of the parent-to-parent component of the programme included increased awareness and support for children's eating, hygiene, dress, and on-time arrival at school each morning – increased knowledge and awareness being expected outcomes of the programme ToC. A parent from the Malua School community reported learning when to feed children breakfast, lunch, dinner, and snacks. A fellow parent commented,

> *I thank this project because not even mothers knew how to take care of our children at home. But with the arrival of this project most already know how to take care of the child at home, how to give him a bath and feed when they go to school.*

An education official from Namarema added that parents were taught about the importance of dietary diversity and hygiene through the ASR pilot programme. An official from Malua agreed, stating that parent-to-parent sessions taught parents to send their children to school clean and properly dressed. A teacher from Bone observed a difference in students: *"now the children already know a lot, they take a shower, they wash their clothes, they come school clean, they can count up to 10."* A fellow teacher from Bone added that the ASR programme encouraged children to arrive on time for school: The ASR programme *"has changed, not only in the school's education but also in terms of hygiene and time, the children are arriving at the right time."* Overall, we find perceived effects on key outcomes of the programme ToC under the parental component, specifically positive perceived effects on parents' commitment to education, on-time enrolment, and dietary diversity and hygiene practices.

5.2. Which aspects of community context and implementation facilitate or inhibit the success of the ASR pilot programme?

Several aspects of the community context may have inhibited the success of the ASR pilot programme, some of which are reflected in the programme ToC, such as students' linguistic background (specifically limited exposure to Portuguese among ASR participants), and some of which were uncovered during the qualitative analysis, including the limited awareness of school readiness, and poor school infrastructure school. Additionally, several aspects of implementation also presented challenges such as the lack of incentives for participation in parent sessions, limited engagement of men in parent sessions, a perceived lack of transparency in student selection, and difficulty recruiting teacher volunteers. On the other hand, the involvement of local parents was noted as a key strength of the programme.

Minimal Awareness of School Readiness Prior to the ASR Programme

Interviews at endline revealed that only a minority of parents supported their children's school readiness at home prior to the ASR pilot programme. Most parents stated that they either provided no support or limited support to their children, without any specific efforts to prepare their children to enter Grade 1. A volunteer teacher noted that parents who supported their children's school readiness before the programme commonly did so by purchasing supplies (notebooks and pens). The lack of support for formal education could stem from the lack of information on how to prepare children to enter primary school or the low value given to formal education. A minority of parents cited not understanding how to support their children's readiness prior to the programme. One parent stated, *"We help without any basic knowledge, now with this programme has explained, I think we will improve a lot and we will include all the children we have."* Volunteer teachers and school professionals also frequently reported that one of the main challenges to regular student attendance was the low value parents ascribed to formal schooling and students' low motivation to attend school. Parents, teachers, and key informants from UNICEF and STC noted that programme communities had high dropout rates because schools struggled to motivate students to attend school and to motivate parents to send students to school.

Higher Participation of Women in Parent-to-Parent Sessions, But Men May be Making the Decisions about Education

Programme implementers and parent leaders also highlighted the challenge of changing norms around childcare—such as hygiene, dress, or feeding—and who makes decisions about these practices. Parent leaders cited struggling to change existing parenting practices due to deeply entrenched norms around childcare. One parent leader explained, *"My experience with the school readiness programme is good and challenging, because sometimes it is not so easy to work with the community and change their mindsets."* Key informants from UNICEF and STC explained that it was also challenging to shift childcare norms because participation in parent-to-parent sessions was much higher among women while within the implementation context men are typically the decision makers in implementation households. More work may need to be done to support parent leaders, either by providing more information on behaviour change processes, engaging more men for parent-to-parent sessions, or facilitating additional discussions on household decision-making to increase the effectiveness of the programme in shifting childcare norms.

Poor School Infrastructure Makes Educational Programming Difficult

Within the four school catchment communities we visited for endline qualitative data collection, parents and school professionals struggled to engage children in safe early education because of communities' and schools' lack of resources and infrastructure. According to UNICEF (2012), school readiness is not defined solely by the child's readiness for school; it also encompasses the school's readiness to create a continuous learning environment and the family's readiness to support the child through school. This includes having a safe and comfortable place in which to play and learn. Although in some communities ASR activities were conducted in primary school facilities, in several communities activities were conducted in informal settings. The most frequently reported issue in the implementation area was poor school conditions, specifically a lack of sufficient classrooms and chairs. Without enough classrooms for each grade level, teachers taught certain classes under mango trees in the school yard and would often cancel classes during the rainy season for students who did not have a physical classroom. Similarly, the lack of chairs was challenging if rain leaked onto the classroom floor. One parent stated, *"Because [when] the floor is damp children cannot sit on the floor, it can cause illness."* Community members also revealed that children were not "ready" for school because they lacked sufficient food and were therefore unable to concentrate when they arrived at school.

Children Historically Unprepared to Enter Grade 1 Due to Lack of Portuguese

All but one of the Grade 1 teachers interviewed during the endline data collection reported that many of their students over the past 3 years (excluding the current school year) were not fully prepared to enter Grade 1 in terms of their academic skills. Teachers noted gaps in school readiness such as limited ability to speak or understand Portuguese, inability to hold a pencil, and limited reading and writing abilities. At both midline and endline, parents and teachers cited limited understanding of and ability to speak Portuguese (the formal language of instruction) as the main academic obstacle to students' readiness to enter first grade. When asked about the biggest challenges related to school readiness, one teacher commented during the endline data collection that *"children always speak their mother tongue, so always in the beginning, we face difficulties [with Portuguese]."* Teachers from other schools echoed this opinion, adding that children struggle to speak, read, and write in Portuguese and spell correctly when they first enter first grade.

Parents Perceive Insufficient Benefits for Participation in Parent-to-Parent Sessions

Parents reported that the programme did not offer adequate benefits for their participation. The largest issue parents reported was a lack of snacks during the parent-to-parent sessions, although a minority of respondents also cited the lack of travel subsidies for parents participating in the sessions. One parent reported that the lack of snacks was "an embarrassment" and parent leaders added that parents' preoccupation with the lack of snacks was at times an obstacle they were unable to overcome in discussions.

A Small Minority of Parents Perceived Lack of Transparency in Selection Process

Interviewees from the implementation areas stated that the programme used a census approach to selecting children to participate in the summer school. The majority of parents understood how the census worked, describing how researchers collected the names of all children aged 5 to 6 within 2 to 3

kilometres of the school, then selected 60 students from that group to participate. However, two parents reported confusion and fear around the census activity. One parent stated that s/he did not understand when the data were collected during the census that all families would not be able to participate. The parent stated,

> *That group that came, we just saw them writing the names of the children, giving them pencils, notebooks, but we had no good explanation, who were those? Are you from this kindergarten programme? And why did they not come back?*

A different parent explained that the community's previous negative experience with a programme made them fearful of the census activity. However, parents overall had few complaints about the student selection process.

Difficulty Recruiting Volunteer Teachers

Interviews with implementing staff highlighted the challenge of meeting the programme's criteria for volunteer teachers. Interviewees reported that it was a challenge to find qualified volunteer teachers from the community who could speak Portuguese, which was required for leading the summer school programme. Interviews suggest this was due to the low overall formal education level of the implementation area. It was also challenging to have gender parity among teachers. Men are generally more educated in the implementation area, making it harder to find women qualified to act as volunteer teachers. In addition, one key informant stated that women do not typically expect higher level roles to be for them, in large part because they are not frequently offered these types of opportunities. Therefore, women often do not show up when implementing organizations recruit from the community. Indeed, when Save the Children asked community leaders for a list of qualified individuals to potentially serve as volunteer teachers, they were given a list of all men. Despite these challenges, the programme was able to recruit and train a cohort in which just under half of the facilitators were women.

Involvement of Local Parents in Parent-to-Parent Sessions Helped Generate Community Support for ASR

The use of local parents as parent leaders and the programme's ability to create a space for parents to share experiences lent credibility to the parent-to-parent sessions. Parents and STC implementers explained in qualitative interviews that using local parents was necessary because many parents in implementation communities were not fluent Portuguese speakers, which meant that most of the parent-to-parent sessions took place in local languages. In addition, parents reported that the parent-to-parent sessions provided them with an opportunity to share their own experiences fostering their children's school readiness and to learn from other parents' experiences. One parent described this as follows:

> *I have a good experience, because I can convince my son to go to school thanks to the sessions I have had with the other parents, and also preparing the child to go to school was something I had never done but with the conversation with other parents we were able to see that we had the same difficulty then we exchanged ideas on how to improve the child's participation. We saw that it was good to show that there in the preschool is where the child would have many friends and also could learn new things, so they have already got used to it.*

The programme's ability to create a context in which parents could communicate, relate to parent leaders, and share information with other parents helped parents understand how to help and encourage their children to attend school regularly.

5.3. To what extent are programme topics and implementation methods relevant and responsive to the implementation context?

Programme participants largely agreed that the summer school was successful because the skills taught were relevant to local context and equipped students with Portuguese skills needed in primary school. Parents described an interest in participating in the summer school because they felt the programme would provide skills that were beneficial for their children. One parent stated,

> *We chose to enrol our children because we saw a lot of advantages in the explanations we heard from the facilitators that the child will start to study in a school so that, when it comes the time to go to school, they do not face difficulties.*

Parents stated that the summer school content was helpful for improving issues relevant to the selected communities, including helping children to relate to and respect their parents and helping children to improve their hygiene. The programme was also able to provide students with much needed exposure to Portuguese and classroom materials to ease their transition into Grade 1. Nearly all teachers in our sample discussed the challenge of teaching children Portuguese. As noted above in "School Readiness Challenges," the majority of students entering Grade 1 had little to no previous exposure to Portuguese outside of the ASR programme. Many parent responses showed appreciation for the summer school's provision of early exposure to the Portuguese language, including learning letters, numbers, and words for basic objects in Portuguese. Parents from the Malua School community in the Derre district valued the introduction to Portuguese: *"our children already know how to speak Portuguese, which was very difficult before this project … even when they get home they already know how to say [banana in Portuguese]."* School professionals from the Namarema School community also noted the importance of providing materials to students who had never been exposed to them. One stated,

> *[ASR] is a programme that motivates children to learn things they have never seen in their lives [such as] a toy. They've brought a lot of toys for things they do at play time, like putting cars together, making dolls, and it was really exciting to see Namarema kids doing things they had never done before.*

Parents and volunteer teachers also stated that children and teachers enjoyed the materials and were motivated when using them. The programme's provision of both materials and Portuguese instruction to children was responsive to the lack of local materials as well as students' limited exposure to Portuguese in their communities.

5.4. To what extent was the programme implemented with fidelity?

Qualitative data suggest that the ASR programme was implemented with a high level of fidelity and that the processes outlined for various components of the programme were closely adhered to. In the following paragraphs we briefly present findings on the implementation fidelity of the parent-to-parent

sessions and the summer readiness course which correspond to the outputs of the programme ToC for the two programme components.

Fidelity of Implementation: Parent-to-Parent Sessions

We assessed the fidelity of implementation by comparing key informant descriptions of programme activities to programme documents and beneficiary accounts. Our analysis of the fidelity of implementation of the parent-to-parent component included the processes STC used to select and train parent leaders as well as the parent education session topics.

Selection and Training Processes

STC and participating parent leaders reported that the programme used the proposed participatory processes to select parent leaders. The programme used the following criteria to select parent leaders: ability to speak the local language, influence within the community, good communication skills, community respect, residence in the implementation area, and willingness to volunteer. This selection was intended to be done in coordination with community leaders and local committees. Two STC implementing staff confirmed that they used the outlined criteria to select parent leaders, and parent leaders, two STC staff, and a UNICEF staff member confirmed that the programme used participatory processes to select parent leaders. However, we do not have data from community leaders and local committees to triangulate findings around using participatory processes.

Reports from participating parents and interviews with parent leaders at endline suggest that the training adequately prepared parent leaders to implement the parent-to-parent education sessions. After selecting parent volunteers, STC key informants confirmed that they provided parent leaders with 10 hours of training. Interviews at endline found that parent leaders were consistently knowledgeable about the concept of school readiness and able to explain the parent leader role. Parent leaders interviewed at endline understood the goal of the parent-to-parent component of the programme, stating that the parent-to-parent education sessions aimed to help parents be better able to teach and care for their children. One parent leader explained, "*We come together to guide our parents and parents to guide their children*." Another parent stated that the goal of the sessions was to "*change people's awareness of children's education*."

Session Topics

Programme implementers confirmed that the parent leaders implemented all 13 sessions over the 7 weeks and that no parent education sessions were missed. Parents and parent leaders could describe a range of topics that the parent-to-parent education sessions covered, but they most frequently mentioned nutrition and sanitation topics which suggests that nutrition and sanitation messages may have been the most salient or the most effectively delivered. In terms of children's nutrition, parents stated that they learned they should diversify the foods children eat. One parent stated, *"We also change the way we eat, if we eat beans at lunch or dinner, we should look for vegetables, we cannot repeat the food."* Parents mentioned that parent leaders also instructed them on how to improve hygiene practices, including washing children's clothes and faces and bathing children. Other topics and advice parents recalled from the sessions included how to take care of children, not to use physical punishment with children, to keep books in the house, to tell children stories, to play with children, and to send children to school.

Fidelity of Implementation: Summer Readiness Course

To analyze the fidelity of implementation of the summer readiness course, we looked at three key aspects: the selection of volunteer teachers, the training for the volunteer teachers, and the programme materials. We compared data on these processes from programme participants to the programme checklist data and key informant interview data with programme implementers.

Selection Processes

Implementers' accounts of the volunteer teacher selection process match accounts from the volunteer teachers themselves and programme documents. Both the programme staff and the implementation communities stated that the programme selected summer school volunteer teachers through a collaborative process with communities. Community leaders helped the programme to identify eligible community volunteer teachers to teach the summer school using the following criteria: residence in the community, educated through Grade 7, at least 18 years old, Portuguese skill, and proven reading and writing ability. Once a pool of eligible teachers had been identified through the criteria, STC provided volunteers with a Portuguese literacy test. If they passed, volunteers were assigned as volunteer teachers and received training. One teacher summarized this process in the following way: *"We were selected through an interview after the interview we did tests after that we went to a seminar that was a training of 2 weeks."* STC aimed to and was able to achieve near gender parity among volunteer teachers; of the total of 366 volunteers who passed the selection exam, 168 were female and 198 were male. This is important for project implementation because there is evidence from several developing countries that suggests that female teachers can contribute to gains in girls' beliefs and aspirations about their academic abilities and improvements in learning outcomes (Muralidharan, 2014; Lee, 2018; Eble, 2019). Overall, volunteer teachers reported positive experiences with the selection and training process provided by the programme at the beginning of implementation.

Training

The programme provided trainings to volunteer teachers, school professionals, and school councils on the topics and for the duration outlined in programme documents. STC staff confirmed they provided volunteer teachers for the summer readiness programme with 30 hours of initial training and 20 hours of in-service training through a cascading training model. Volunteer teachers confirmed attending the training for the outlined duration and could describe the following training foci: learning how to transition children into schools, learning about the 8-week curricula, and practising the programme activities. STC staff noted that the training took place in local languages to ensure that volunteer teachers clearly understood all the training components. However, several key informants, including programme trainers, noted that the low academic level of participants made the training more challenging to implement (e.g., taking substantially more time to cover the material than originally anticipated). STC and UNICEF confirmed that for their participation facilitators were each given a 650 Meticais ($10) incentive. The programme intended to provide other benefits but was required to be in line with MINEDH rates. The final rate was reviewed and approved by the ministry.

Materials

STC and UNICEF key informants confirmed that the programme successfully developed materials through a participatory process with Mozambican stakeholders. STC reported creating both the topics and the materials for the programme through a participatory process with MINEDH. The materials were created through a collaboration between the ministry, STC, a Mozambican illustrator, and an external consultant. The ministry then reviewed and validated the programme materials. Materials were given to teachers at least 2 weeks before the start of the programme, as outlined in programme documents. The materials included activity books, training manuals, the curriculum for the summer school programme, posters, story books, beans, coconut shells, pencils, and notebooks. Key informants reported that it was a challenge to find locally available play materials. STC also chose to adjust materials to make them simpler based on reports from the field. During the first round of the programme, STC found that most of the volunteers only had a few years of formal education. The majority also spoke a local language as their main language. This led to the materials being further tailored to match participants' educational backgrounds.

Document review revealed that programme design incorporated gender in two ways; first, through aiming for a gender balance among volunteer teachers and parent leaders and, second through creating gender-sensitive instructional materials. We have qualitatively assessed the gender balance of volunteers, which was achieved successfully despite challenges with recruiting female volunteers. Qualitative interviews confirmed that instructional materials were developed through a participatory process with Mozambican stakeholders and were validated by MINEDH, and we examined a selection of these materials to assess the extent to which they incorporated Gender Equality and Empowerment of Women (GEEW) considerations.

The curriculum encouraged the students to think beyond cultural gender stereotypes though presenting children with stories where boys aspired to traditionally "female" roles (e.g., a cook) and girls to traditionally "male" roles (e.g., a doctor). The following quote from the curriculum illustrates this point:

> *"Another boy dreamed that he wanted to become a chef and make wonderful food to feed all the hungry people. Another girl dreamed that she would become a surgeon and help heal people."*

Similarly, volunteer teachers' training module included gender-sensitive recommendations, for example:

> *"You can also use play-based learning to break down stereotypes by having the father hold the baby and encouraging both female and male doctors and nurses. Stereotypes can limit children's aspirations (for example, if girls believe they cannot become doctors), whereas providing equal opportunities can broaden their beliefs and goals."*

Teacher training materials also instruct volunteer teachers to ensure everyone's chance to participate in various ASR activities, including girls, boys, children who are skilled and not very skilled at a particular activity to ensure equal access, participation, and an inclusive environment across gender and ability dimensions. Additionally, each story presented to the children had at least a boy and a girl character, which ensured that both male and female children could identify with the charters in the story.

Finally, qualitative results of this evaluation suggest that the programme benefitted girls and boy in equal measure, although more could be done to engage fathers in parenting sessions. Quantitative results reveal

that boys and girls equally improved their key school readiness skills, and girls enrolled on time at a significantly higher rate than boys.

6. Limitations

In this section, we describe the main limitations of the evaluation and discussed them by research method. There is, however, an overall limitation, which has to do with the fact that the evaluation did not directly assess programme component 2 related to strengthening of the primary school teachers and school councils from target communities to promote a smooth transition for children into primary school. Nevertheless, as discussed in Section 2.4, component 2 included some complementary activities with a limited role to directly affect the outcomes of pre-primary students and their families. As a result, the content and materials intended to be used in component 2 activities were not as fully developed at the time of the inception phase relative to components 1 and 3. Thus, although not assessing this component is a limitation, we do not consider that its omission represents a large drawback of the evaluation.

Quantitative

There are two potential threats to the internal validity of programme impacts. First, we observed some statistically significant differences at baseline in the IDELA constructs in favour of the control group. While we do not observe any systematic differences in any of the other intermediate outcomes or control variables, the observed differences between the two treatment arms support our decision to estimate programme impacts through a DD empirical strategy to account for said imbalances at baseline.

Second, it is important to estimate the effects of those who actually take part in programme activities. But given that programme participants self-select into the programme, estimates from the group of participants could be biased. Fortunately, we can use the fact that programme activities were randomly allocated to villages and, as a result, children in those villages are more likely to attend. That allows us to tease out programme impacts for those who decided to attend the programme just because they were given access to it. Our ability to separate programme impacts from other student characteristics can be compromised if residency in treatment villages is not strongly associated with ASR participation. This could happen if students residing in treatment villages do not participate actively, or if students residing in control villages find a way to participate.

Our data show that only a fraction of children who were offered the programme actually took part in project activities. In addition, there was a non-negligible fraction of children and caregivers in the control communities that reported taking part in programme activities. We use treatment assignment as a proxy for ASR participation to identify the impacts on those that complied with the assignment (see Appendix E for technical details), and a poor proxy could threaten our ability to consistently estimate impacts for programme compliers. However, our results show that children residing in treatment villages are significantly more likely to participate in ASR activities.

Since we relied on LATE impact estimates to circumvent the issue of non-compliance (see Appendix E), we are able to estimate programme impacts for the subset of children who were assigned to and enrolled in the ASR programme. The results do not provide information on the effect the ASR programme could have had on children who were assigned to ASR but did not participate in the programme.

Qualitative

There are two main limitations to the qualitative approach that should be considered when reviewing the findings. We were not able to triangulate all processes because the qualitative data collection did not include direct observations or interviews with children participating in the programme. This meant that the research team was limited to collecting data on the perspectives of programme implementers and parents. Second, recall bias presented a challenge during the endline data collection, particularly when researchers asked teachers to describe school readiness at different time points and for different children. Some teachers had difficulty differentiating levels of school readiness in previous years compared to the current year; teachers also struggled to differentiate end-of-year performance from initial school readiness. In spite of these limitations, the qualitative data do offer valuable insight into the strengths, challenges, and perceived effects of the programme.

7. Cost Analysis

Engaging in a cost study is an important undertaking because it provides essential information to policy makers and stakeholders. First, it provides a comprehensive picture of the programme costs, both the starting and recurring costs, and second because it provides a clear picture of the resources needed to expand the programme. Third, accompanying a cost study with an impact analysis provides the unique opportunity to analyse whether the programme is relatively cost-effective in achieving the key programme outcomes. In this section, we present the estimates of the ASR programme costs based on the schools that participated in the programme in 2017-2018 and in the evaluation of the programme. Then, we discuss the cost-effectiveness measures of providing the ASR programme that are based on the impact estimates presented earlier.

7.1. The ASR Programme Cost Study

This cost study focuses on the one cohort of the ASR programme that was rolled out in the two evaluation districts: Derre and Morrumbala. The analysis includes all the activities needed to deliver all programme components between September 2017 and April 2018. The cost study focused on three supporting research questions:

- What are the programme costs?[13]
- What are the types and quantities of resources invested in the programme?
- How cost-effective is the programme in producing the desired impacts in terms of school readiness?

The ASR programme was implemented in 45 communities in the districts of Derre, Morrumbala, and Milange, with 15 schools per district. Given that the impact estimates come only from the districts where the evaluation took place (i.e., Morrumbala and Derre), we conducted the cost analysis and the cost-

[13] The costs included in the analysis include costs only reported by STC for each person, activity, or material. We included only costs directly related to the programme. However, although we limited the inclusion of some high-level staff from STC the personnel costs in order to give a more accurate representation of the costs of replicating the programme by the government, it is still possible that some of the costs reported by STC include some indirect costs.

effectiveness only for those two districts, that is, for a total of 30 schools, with 120 trained volunteers to implement the programme.

Table 12: Contextual Facts of the ASR Programme

Contextual Fact	Quantity
ASR programme schools	30 schools
Number of classes per school	2 classes per school
Number of children enrolled	2,700 children
Number of volunteers *teaching* summer school	120 volunteers
Leader parent volunteers	120 leader parents
Parents in parent-to-parent program	1,707 parents
Parent-to-parent sessions	13 sessions
Attendees of capacity building training	157 educators
Capacity building training length	30 hours

Source: Data collected by AIR cost study team from STC and AIR Impact Study 2018, and UNICEF Programme Progress Report2019.

7.2. Methodology

To estimate the cost and cost effectiveness of the ASR pilot programme, we employed the ingredients approach to cost analysis (Levin, 1983; Levin & McEwan, 2001). This approach involves modeling personnel and non-personnel resources associated with the implementation of the ASR pilot programme across all schools that were part of the impact study. It is a systematic, well-tested procedure for producing a comprehensive list of costs associated with a programme, including many costs which are oftentimes inadequately identified in budget and expenditure such as donated resources (including volunteer time) and administrative costs, as well as resources that are shared by the programme and other initiatives. By taking a detailed and systemic approach to the resources used by a programme, the ingredients help to capture the true cost of the programme; that is, the cost of all the resources that would be necessary were the programme reproduced in a different context.

To gather these data, the cost team reviewed planning documents and financial reports for the programme as well as relevant data gathered by the impact team (such as the number of children enrolled in the program). Using these data, the cost team produced a series of memos and tables to gather detailed data from UNICEF MCO and STC. The team used these data to produce a database of costs called a resource cost model (RCM) in which each ingredient is attached to a cost and quantity, and then categorized along several different metrics including programme activity, sub-activity, ingredient type, and if the cost is recurring or not. Through this process, we have produced an upper estimate for the cost of the ASR programme in the summer of 2017-2018. Using this estimate and the impact estimates, we also produced a series of cost effectiveness estimates which are standardized measures of how much it costs for a programme to achieve a given result.

Data Collection, RCM Development Process, and Cost Estimation

Our cost analysis is based on data from the September 2017 – April 2018 implementation of ASR pilot programme and the outcome data is based on the endline impact estimates. The following process was used to obtain the information necessary to develop the RCM and data on resource quantities and prices.

Step 1—Document Review and Framework Development

The first step entailed a thorough review of documents sent by STC, which were used to develop the initial RCM framework and begin development of a cost database. The study team used these materials to understand the activities related to the implementation of the programme as well as the quantities of personnel and non-personnel resources that were used by each school.

Step 2—Discussions with UNICEF MCO and STC

The study team had conversations with STC staff regarding the ASR pilot programme, where a first set of interviews were conducted in person. Based on those discussions and the document review, we designed a detailed document (see Appendix H. Detailed Questionnaire) in which we asked STC to provide more in-depth information about the different activities including staff involved, volunteers, and the time they spent on the programme. We followed up with STC to fill in the missing pieces of information.

Step 3—Developing the RCM

The study team tailored the RCM to better capture the information on personnel and non-personnel resources used for each programme and activities provided by ASR pilot programme. Each ingredient was assigned a quantity, a life span, a percentage allocation to the project, and a per-unit price. In those cases, for which no information was available, such as the cost of building huts and the value of the time of volunteers, we made some assumptions that we articulate in the Assumptions Subsection below.

Step 4—Categorization of resources

Every ingredient in the RCM is organized based on a series of categories: the type of ingredient, the programme activity and sub-activity it was used in, whether or not it is a start-up cost, whether it is a cost that would be incurred during a scale-up of the programme, and whether or not it was volunteered or donated to the programme (i.e. in-kind resources).

In order to better understand the costs of the programme, and to compare the programme's costs to the cost of other programmes, we categorized each cost based on resource type. The categories we use are: Personnel, Facilities, Materials, Travel and Accommodations, and Other:

- **Personnel**—Includes all staff time dedicated to the programme. For example, time and pay for teachers, volunteers, and programme officers working for the programme office and its core partners.
- **Facilities**—Includes all costs associated with renting, maintaining, or using physical facilities. The cost of the actual classrooms was not included because the school programme itself is held when primary schools are not in session.

- **Materials**—Includes physical materials used in the operation and implementation of the programme, such as training packets and school supplies.
- **Travel and Accommodations**—Includes all expenses related to travel and housing such as fuel, hotels, and per-diems.
- **Other Resources**—Includes resources not captured in the first four categories. Primarily this captures food and refreshments, as well as miscellaneous non-personnel costs for some meetings and presentations.

Similarly, the programme was broken into four *activity categories* and each cost was assigned to one category. These categories are: Planning, Training, Implementation, and Oversight:

- **Planning**—Includes activities related to designing the programme, organizing and coordinating the programme's launch, and establishing systems and resources for later use (such as building relationships with local communities).
- **Training**—All the trainings necessary for the programme to be delivered are captured in this category. This includes training trainers, volunteers, and leader parents but it does not include the capacity building component of the programme, which includes trainings of primary school teachers and school councils, as that is part of the programme's direct implementation and included in the implementation category below.
- **Implementation**—Includes the direct delivery of the programme's three main objectives: the summer school readiness programme, the capacity building trainings, and the parent-to-parent education sessions. All materials used in these objectives, or delivered as part of these objectives, are captured by this category.
- **Oversight**—Refers to monitoring and oversight done by an outside body during the implementation of the programme.

Each of these activity categories were subdivided as well into different sub-activities. These sub-activities, unlike the activity categories and resource types, are specific to the ASR pilot programme. We used them to analyze the costs of the different objectives and interventions of the ASR pilot programme.

To understand the costs of scaling this programme, we classified each cost as a start-up or recurring cost, and whether or not the cost would be incurred if the programme were scaled-up. Start-up costs are the costs needed to get the programme off the ground, such as designing educational materials, building relationships with communities, and training trainers. Recurring costs are costs that will appear each year, such as annual trainings, school supplies, and the personnel implementing the programme itself. Scale-up costs (not included) are those costs which will be incurred if the programme is implemented in a new community; the costs it excludes primarily relate to developing or translating curricula and trainings. As training materials were developed in Portuguese, scale up costs may be limited to translating and printing in the local language, with minor adaptions. We classified the following types of costs as start-up costs:

- All costs in the Planning activity category.

- All one-time trainings.
- Materials with a multi-year amortization period (e.g., teacher manuals, books, or educational toys).

We assigned the following activities and resources as recurring costs:

- Costs incurred as part of the direct implementation of the programme (e.g. instructional time).
- All costs attached to the Oversight activity.
- Training costs when trainings happen on a regular basis.
- Materials that are replaced every year (e.g., coloured pencils, student workbooks, or paper).

Step 5—Calculating Costs

Using the data and classifications in our cost database, we calculated the cost to the relevant programme of each individual ingredient. To do this, we multiplied the quantity of the ingredient by the price and its allocation to the programme, and then divided this result by its life span or amortization period (see Appendix F for details on amortization periods).

For personnel resources, such as STC staff, the price used was their monthly salary times the number of months used for implementation. For volunteers, the monthly minimum wage was used in place of a salary (see the assumption subsection for details). The price for non-personnel resources was the price paid to acquire or use the relevant material.

After calculating the cost for each individual ingredient, we used the RCM to produce a series of aggregate costs based on programme, activity, and type of resource. To calculate per-child costs, these aggregate prices were divided by the number of children enrolled in the programme.

Another important issue to consider is the costs of volunteers. All volunteer expenses and donated resources were marked as such, enabling us to calculate aggregate costs including and excluding these resources. We present the two different cost scenarios estimated: one that included the costs of volunteers and teachers; the other, that excluded these costs. One of the goals of a cost study is to provide stakeholders, who are thinking of implementing a similar programme, with the information needed to better understand what the resources needed are, regardless of whether or not they can rely on volunteers. Therefore, in the Cost Analysis section below, we present the two different scenarios when discussing the overall costs of the programme. The costs broken down by activity or by ingredients are based on the scenario that includes the costs of teachers and volunteers.

Step 6—Calculating the Cost-Effectiveness Ratio

The study team calculated the relationship between the measured effectiveness of certain outcomes for the programme and the costs per child of the programme. To calculate the cost-effectiveness ratio, we divided the per-child cost estimated of implementing the programme by the total impact of the programme on the selected outcomes. The outcomes that we included in the section 5 of the report were the total IDELA construct, emergent numeracy, literacy and motor skills IDELA constructs, as well as primary school enrolment. We chose to focus on those outcomes that capture broader changes in children's learning and

schooling, and not in the individual IDELA items. The selected outcome had a statistically significant impact.

For the purpose of this cost-effectiveness analysis, we based our calculations on the unbiased impact estimate of the effectiveness from the local average treatment effect (LATE). As discussed in section 5, the LATE estimates of the programme provide the effects of those 2,700 children who took part in programme activities thanks to the programme being offered in their village.[14]

Assumptions

Whenever possible, we used exact data for quantities, costs, and ingredients. This was not always possible, however, and several assumptions were made. In some cases, we had only the overall expenditures across the three districts (i.e., Morrumbala, Derre, and Milange); therefore, we apportioned these expenditures based on the proportion of children enrolled in the ASR programme in the districts that participated in the impact evaluation. Overall there were 2,700 children enrolled across the two evaluation districts.

Likewise, certain data used to calculate these costs could vary in another implementation due to the particular context of where the programme would be implemented. For example, in more developed countries the average compensation for teachers or the accommodations cost tend to be higher; consequently, the programme costs will increase. Even within Mozambique there are cost differences. All the estimates we provide here are averages over the two impact evaluation districts.

To convert between USD and Mozambique Metical, we used the average exchange rate between 2017 and 2018 of 60 MZN to 1 USD. Many components of the ASR Programme are used year after year and it is therefore inaccurate to assign their total cost to a single year of the programme. Instead we took all items in our resource cost model and divided them by their lifespan to determine their cost per year. For the assumed amortization period of different components of the programme, see Appendix F.

Limitations

In the cost-effectiveness framework, the costs of the intervention must be estimated on the impact evaluation sample. We capture *only* the costs of implementing the ASR programme in the evaluation districts. While we aim for precision in all of our estimates and calculations, whenever we were in doubt, we followed best practices in the field and erred on being comprehensive to avoid underestimating the programme' costs.

7.3. Cost Categorization

To estimate the comprehensive costs of the ASR programme in Mozambique, we considered the full context of the implementation. We captured the different people who were involved in the different stages of implementing the programme (e.g., planning, implementing and monitoring) as well as the resources invested in the programme. As discussed earlier, although the ASR programme started in 2016, our

[14] Note that we do not provide the cost-effectiveness estimation based on the ITT impact estimates as the ITT provides the effect of offering the school programme to any child in a treatment village, which means that for the cost-effectiveness calculation we would need to know the total number of eligible children in treatment villages. We do not have this information given that our data only included a representative sample of children in the evaluation villages.

analysis focuses on the costs associated to delivering the programme for the cohort that ended activities in April 2018. As with most development programmes, the cost of creating and getting a new programme off the ground are always much higher than the costs of running a well-established project. Thus, by focusing the analysis on a given cohort, we are able to provide a good characterization of the costs of implementing the programme in similar districts should the programme be expanded as we are able to exclude most of the initial costs of starting the programme, including the creation and fine tuning of all programme materials.

The ASR programme overall cost in the two evaluation districts is USD $163,089[15] spread out over 30 schools, each with two classes, and a total of 2,700 students. The overall cost breaks down to USD $60 per child. As a comparison, a recent early childhood education study in Malawi (Ozler et al. 2018) similar to ASR found that a programme consisting of provision of play and learning materials, training and mentoring of teachers, teacher incentives and parenting education had an average cost per child of USD $93. Interestingly, that programme only finds short term impacts on language skills 18-months after baseline and no impacts three years after programme implementation.

To get a holistic picture of a programme, it is vital to include in-kind costs. First, this approach provides an accurate budgetary estimate of the programme's costs if it is to be replicated or scaled up into an area where volunteers are reimbursed. Second, capturing in-kind costs is a way of capturing the opportunity cost of activities; for example, when teachers attend the capacity building training they are doing so instead of some other activity and best practices for cost analysis is to capture the cost of those choices. All costs in this section include in-kind costs, which comprised of volunteers' time allocated to the ASR programme and the opportunity cost of time for volunteer parents. If in-kind (volunteers time) costs are excluded, the total ASR programme costs fall to USD $55 per child as shown in Table 13.

Table 13: Total Cost of the ASR Programme in USD

Overall Cost	Overall (USD)	Per-Child (USD)
Total cost	163,089	60.4
Total cost excluding in-kind (volunteers) costs	149,073	55.2

Source: Estimates based on data collected by AIR cost study team from STC and AIR Impact Study 2018.

We also looked at the distribution of costs by programme components. As discussed earlier, the ASR includes three main components. The first component, which corresponds to the direct school readiness activities with children account for 41% of the total costs; The parental component represents 6.4% of the costs; and the school capacity building component, which includes the activities related to strengthening the ability of school councils and locally based education professionals to support school readiness opportunities and promote a smooth transition for children into primary school, accounts for 35% of total costs. The remaining 18% of the costs correspond to activities that are common to all components such as creation or programme materials, delivery of materials, general administrative meetings, programme monitoring, and visits to participating communities. The distribution by components is relevant for

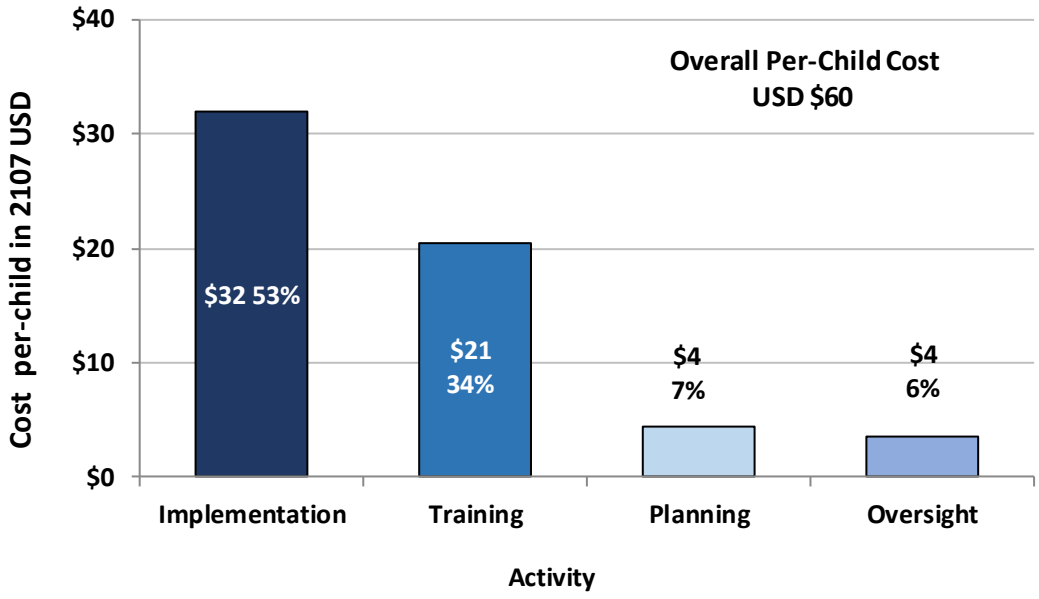
[15] Unless otherwise stated, all costs are in 2017 United States dollars.

scaling up considerations because allows us to assess total programme cost if not all components are implemented. In particular, if the activities associated to the school capacity building components are not included as part of the ASR programme and delivered through other regular interactions with primary schools and communities, then the total cost of implementing the programme would be USD$39 per child.

Costs by Activity

The majority of the programme's costs (53%) are related to the implementation phase, followed by trainings (34%), planning (7%), and oversight (6%). The *implementation* activity, which costs USD$32 per child, has three major sub-activities: (1). School capacity building component, which account for 67% of the implementation category; (2). The implementation of the parent component (11.2% of the implementation category); and (3) the school readiness activities with children (11% of the implementation category). The direct delivery of these three sub-activities makes up 90% of the total cost of the *implementation* of the ASR programme. The remaining expenses are related to the purchase and delivery of materials for the interventions. Although most costs of these sub-activities are related to personnel time, a significant portion also come from purchasing materials used for programme delivery to schools and individuals.

Figure 6: Costs of the ASR Programme by Activity in USD



Note: Percentages do not add to 100% due to rounding.
Source: Estimates based on data collected by AIR cost study team from STC and AIR Impact Study 2018.

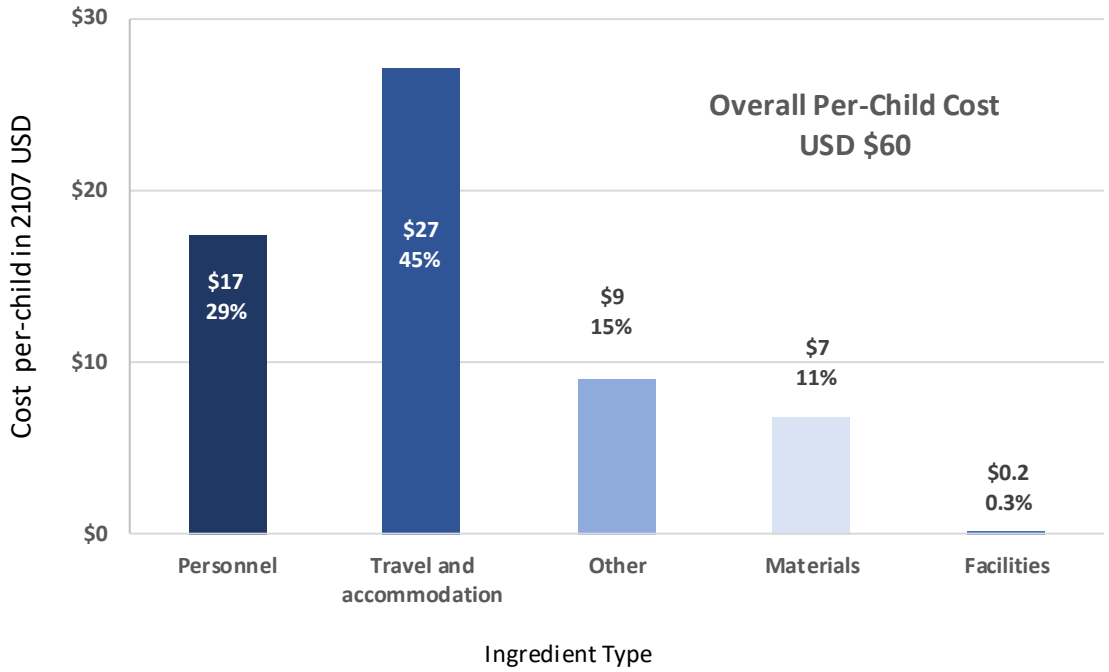
The *training* activity category adds up to USD $21 per child or 34% of the total cost per child. Some key sub-activities within the training category are related to the trainings of volunteers, which for the most part is comprised by accommodation, per diems, and travel expenses. The costs for *planning*, which

account for 7% of the total costs, are primarily related to meetings and presentations both in Zambézia and Maputo to launch the programme and build relationships with participating schools and the communities where they are located. Lastly, the *oversight* activity, which represents 6% of the total cost, is composed entirely of personnel and travel costs for monitoring officials responsible for visiting the sites.

Costs by Ingredients

We also analysed programme costs by its main ingredients. The distribution by ingredients in order of importance are: *travel and accommodation* (45%), followed by *personnel* (29%), *other expenses* (15%), and *materials* (11%). The *travel and accommodation* expenses include mostly the value of per-diems and housing for volunteers, especially during trainings, as well as expenses on the capacity building component for primary school principals and teachers. Regarding the *personnel* ingredient, the most relevant items in order of importance are the capacity building component (37% of the personnel costs), the child school readiness component (23% of the personnel costs), and the parent component (21% of the personnel costs). The *other* ingredient includes mostly the cost of providing lunch to all volunteers during trainings.

Figure 7: Costs of the ASR Programme by Ingredient in USD



Source: Estimates based on data collected by AIR cost study team from STC and AIR Impact Study 2018.

Scale-up costs

For scaling up purposes, we identified which costs will occur in the event the programme is replicated in new locations. Our results show that 93% of the total costs would be incurred should the programme be implemented in a different district with similar characteristics. In terms of ingredients, the scaling up costs are similarly distributed among all of them. That is, when looking at scaling-up costs as a percentage of all costs *within* each one of the programme ingredients (i.e., personnel, materials, travel and accommodation, and facilities), all of them represent approximately 93% of the total costs with some minor deviations, particularly for the other category, which represents 84% of the total costs. Overall, the high value of scale-up costs as a percentage of all costs is not surprising because, as discussed earlier, our analysis excludes the initial years of programme implementation when all programme materials and programme socialization meetings at the national level occurred. That is why we believe that the overall costs discussed in our analysis are a good representation of the costs of scaling-up the programme at different locations.

Table 14: Scale-up Costs by Ingredients in USD

Overall Cost	Total costs (USD$)	Scale-up costs (USD$)	% scale-up costs of total costs
Personnel	$ 46,935	$ 43,955	94
Materials	$ 18,330	$ 16,834	92
Facilities	$ 533	$ 533	100
Travel and accommodation	$ 73,024	$ 69,674	95
Other	$ 24,267	$ 20,301	84
Total	**$ 163,089**	**$ 151,298**	**93**

7.4. Cost effectiveness

To evaluate ASR programme according to their costs and their effect in selected outcomes, the study team engaged in a cost-effectiveness analysis. This type of analysis enables us to compare desired programme objectives and analyze the cost associated with achieving those objectives. As we combine the impact data with a specific outcome with the costs incurred, we estimate a cost-effectiveness ratio that enables us to answer the question *What does it cost to achieve our educational outcome?* (in this case, school readiness and retention to the end of Grade 1).

Cost-effectiveness is measured and displayed as ratios of cost per outcome. These ratios are calculated by dividing the cost of the programme by a given impact. A smaller ratio means the intervention takes fewer resources to achieve a certain outcome and thus more cost effective.

Results

The five child development outcomes that we present are the total IDELA score and four constructs: emergent numeracy, emergent literacy, executive function, and motor skills. These outcomes were statistically significant and have been discussed in section 5. In this section we focus on the cost-effectiveness ratios.

The cost-effectiveness ratio of increasing the average score of a student on the IDELA by 17-points (equivalent to 0.93 standard deviations), based on the LATE estimates, is $3.5 USD (see Table 15). In this case, we divide the per-child cost ($60 USD) by the estimated impact effect (17 additional points in IDELA). As customary, we also report the cost effectiveness in terms of increasing the IDELA score by 0.1 SD. As shown, the average cost of increasing the total IDELA score by 0.1 SD is $6.5 USD. Note that the largest impact estimated was for the IDELA Emergent Numeracy construct. Based on the LATE estimates, a 21-point increase on the child's emergent numeracy score costs $2.9 USD (or $6.1 per 0.1 SD). It is worth noting that the average cost of increasing the total IDELA score by 0.1 SD is lower than cost effectiveness ratios found in the literature for similar preschool programmes (Donfouet et al, 2018) in Kenya.

Table 12: Impact and Cost-effectiveness of the ASR Programme on the IDELA constructs

	Impact	Cost-effectiveness (USD)
Total IDELA	17*** points (0.93 SD)	$3.5 ($6.5 per 0.1 SD)
Emergent numeracy	21*** points (0.98 SD)	$2.9 ($6.1 per 0.1 SD)
Emergent literacy	14*** points (0.70 SD)	$4.3 ($8.6 per 0.1 SD)
Executive function	9* points (0.37 SD)	$6.7 ($16.2 per 0.1 SD)
Motor skills	19*** points (0.78 SD)	$3.2 ($7.7 per 0.1 SD)

Note: In United States 2017 dollars. The per-child cost is 60 USD and includes in-kind costs
Source: Estimates based on data collected by AIR cost study team from STC and AIR Impact Study 2018.

The cost analysis presented here captures the resources needed to implement the ASR intervention so that policy makers in Mozambique and other stakeholders have a complete understanding of the intervention. To that end, we have used the ingredients approach and produced estimates of the cost of the individual programme by ingredient type and activity, as well as comparing start-up and recurring costs on an overall and per-child basis. Our method allows us to consider the time that different staff spent on the programme, the opportunity cost of the volunteers who supported the implementation of the programme, and all of the physical materials and facilities used throughout the entire process.

In sum, the cost analysis presented here captures the resources needed to implement the ASR intervention so that policy makers in Mozambique and other stakeholders have a complete understanding of the intervention. To that end, we have used the ingredients approach and produced estimates of the cost of the individual programme by ingredient type and activity, as well as comparing start-up and recurring costs on an overall and per-child basis. Our method allows us to consider the time that different staff spent on the programme, the opportunity cost of the volunteers who supported the implementation of the programme, and all of the physical materials and facilities used throughout the entire process.

7.5. Sustainability

Mozambique has much to do in building a strong early childhood education system and in expanding access to comprehensive preschool education. In the absence of a comprehensive ECE/preschool programme, the ASR provides a viable option to accelerate access to early learning. Although the pilot programme was implemented by STC, the Ministry of Education officials both at national and sub-national levels were actively involved in formulating the concept through the implementation process until the completion of the pilot in March 2019. In addition to them, local leaders, parents and families played critical roles in the programme, which has created demand for this programme in other districts and communities. Our findings show that Zambézia has now the institutional capacity to expand the programme in other districts.

Its ownership, the capacity building, the transferability of knowledge and the low-cost approach will contribute to the program's sustainability. The ownership of the core activities is ensured thanks to the strong involvement of governmental institutes at the national, province, and district levels. This high level of ownership is partly explained by the fact that programme activities and outputs are in line with provisions of government policies and compromises, such as those presented at the Action Plan for Children 2013-2019 (PNAC II) regarding the aim to raise pre-school education opportunities, to increase school-entry rates at the right age and to improve the academic performance of students, particularly in relation to critical reading, writing, numerical and life skills (PNAC II, 2012, p. 22).

We also expect results to be sustained thanks to the capacity building done at the community, district and provincial levels. The involvement, motivation and reinforcement of key officers are relevant to ensure the durability of the intervention beyond the program's lifetime. Having included school readiness initiatives as a regular topic of discussion within education authorities at all levels is key to ensure sustainability of programme results. Based on the results of the evaluation, it is now important to establish a strategy to transfer the activities and lessons learned to new communities, relying on the structures, professionals and volunteers already trained.

Lastly, the entire programme is based on a low-cost approach, so that its continuity is more likely to occur without the financial support of UNICEF. The use of local and low-cost resources, volunteer work, along with the engagement of key actors and structures as well as local capacity building, contribute significantly to making districts and communities more autonomous in implementing their school readiness initiatives.

8. OECD-DAC Criteria Assessment

This section summarizes main findings discussed above under the OECD-DAC criteria framework. The evaluation questions agreed upon at the inception phase allowed us to fully examine the extent to which the ASR programme meets OECD-DAC's criteria of relevance, effectives, efficiency, impact, and sustainability.

Table 13: Evaluation Findings by OECD-DAC Criteria

OECD-DAC Criteria	Main findings
Relevance	• Target districts and communities in Zambézia were purposely selected for the programme based on lack of community or non-profit preschools, high rates of 6-7-year-old children being out of school, and high dropout rates in primary schools (UNICEF, 2016c). The ASR pilot programme is the first pre-primary intervention in target districts and communities within Zambézia. • ASR programme perceived by parents to equip children with highly relevant skills to succeed in primary school. Children in evaluation communities were historically unprepared to enter grade 1 in terms of having basic cognitive and socio-emotional skills. • Exposure to learning materials through ASR perceived as helpful for transition to primary school. These learning materials were otherwise largely unavailable to children in evaluation communities. • Parents found guidance on children's hygiene (especially bathing and dressing) useful. • Parent sensitization on the importance of on-time enrollment at school was needed and highly relevant.
Effectiveness	• Programme implemented with high fidelity. ○ The programme provided trainings to volunteer teachers, school professionals, and school councils on the topics and for the duration outlined in programme documents. STC staff confirmed they provided volunteer teachers for the summer readiness programme with 30 hours of initial training and 20 hours of in-service training through a cascading training model. Volunteer teachers confirmed attending the training for the outlined duration and could describe the following training foci: learning how to transition children into schools, learning about the 8-week curricula, and practicing the programme activities ○ Volunteer teachers completed child-level activities on time, in all selected communities, and using the materials designed for the intervention. ○ Programme materials were created through a collaboration process between the ministry, STC, a Mozambican illustrator, and an external consultant. The ministry then reviewed and validated the programme materials. ○ Reports from participating parents and interviews with parent leaders at endline suggest that trainings adequately prepared parent leaders to implement the parent-to-parent education sessions. ○ Parent leaders were consistently knowledgeable about the concept of school readiness and able to explain the parent leader role. Parent leaders interviewed understood the goal of the parent-to-parent component of the programme, stating that the parent-to-parent education sessions aimed to help parents be better able to teach and care for their children. ○ Parent leaders implemented all 13 sessions over the 7 weeks and that no parent education sessions were missed. Parents and parent leaders could describe a range of topics that the parent-to-parent education sessions covered.

OECD-DAC Criteria	Main findings

	• As a result, the programme generated improvements in child school readiness and improved preschool and primary school attendance as well as improvements in parental attitudes, knowledge and practices around school readiness and the importance of on-time enrollment in Grade 1
	• Some of the challenges in programme implementation included:
	  ○ Fathers were less engaged in the parent-to-parent component of the programme which limits the effectiveness of the parental component
	  ○ Some parents perceived benefits for attending parent-to-parent sessions as insufficient which may have limited the effectiveness of the component
	  ○ Lack of snacks for the children reduced concentration and may have affected effectiveness of instruction

Efficiency	• High degree of programme participation in treatment villages • Timing of the programme prevented some students from participating due to rainy season • Difficulty finding teacher volunteers that meet the selection criteria, especially female volunteers • Difficulty conducting the volunteer teacher training in the planned timeframe
Impact	• Significant improvement in school readiness for boys and girls, as well as improvement in perceived performance at the beginning of Grade 1 • Significant improvement in on-time enrollment in Grade 1, especially for girls • Perceived improvement in socio-emotional competencies and levels of executive function • Perceived improvement in the level of Portuguese oral comprehension and oral vocabulary knowledge at the beginning of Grade 1 • Perceived improvement in academic performance at the end of Grade 1
Sustainability	• Programme implementation costs are USD $60 per-child • The cost of increasing the total IDELA score by 0.1 USD is US$6.5 (a lower cost-effectiveness ratio than that of comparable interventions) • Use of volunteer teachers needs to be carefully assessed for sustainability. There are some key advantages of using local volunteers that are well trained in terms of costs and knowledge of local context, including local language. However, some communities have a low number of potential candidates, with the basic skills to deliver the programme. Finding female volunteers was particularly challenging in some communities. Thus, we propose approaching the local pedagogical institutions and create a teaching apprenticeship programme where those who are studying to become teachers at pedagogical institutions are engaged in the delivery of the programme as part of their training and receive academic credit for doing so. • Although the pilot programme was implemented by STC, the Ministry of Education officials both at national and sub-national levels were actively involved in formulating the concept through the implementation process until the completion of the pilot. Also, local leaders, parents and families played critical roles in the programme, which has created demand for this programme in other districts and communities. Evaluation findings show that Zambézia has now the institutional capacity to expand the programme in other districts. • Programme ownership, the capacity building done, the transferability of knowledge, and the low-cost approach will contribute to the program's sustainability. The ownership of the core activities is ensured thanks to the strong involvement of governmental institutes at the national, province, and district levels. We also expect results to be sustained thanks to the capacity building done at the community, district and provincial levels. Having included school readiness initiatives as a regular topic of discussion within education authorities at all levels is key to ensure sustainability of programme results. Lastly, the

OECD-DAC Criteria	Main findings
	entire programme is based on a low-cost approach, so that its continuity is more likely to occur without the financial support of UNICEF. The use of local and low-cost resources, volunteer work, along with the engagement of key actors and structures as well as local capacity building, contribute significantly to making districts and communities more autonomous in implementing their school readiness initiatives.

9. Conclusions

In this section we discuss the key findings of the evaluation and provide recommendations based on the data and our analysis. The conclusions are presented using the five research questions that motivated the evaluation.

Improvement of children's school readiness. Our results show that ASR preschool intervention increased children's cognitive (numeracy and literacy skills), motor, and executive function skills at the end of first grade, 9 months after the end of programme activities. Indeed, the impact estimates at the endline wave were of the same magnitude, if not larger, than the impacts we found at the midline report, which were measured right after the end of the ASR programme (six-point improvement, or 0.26 SD on average at midline as compared to a nine-point improvement, or 0.52 SD at endline). The impact on child-level outcomes persist over time even though the control group is also performing better at the endline wave relative to midline. Moreover, the results show that the average student in the treatment group who attended the programme scores above 70 percent in IDELA – a 17-point improvement (or 0.93 SD) at endline as compared to a 15-point (or 0.88) gain at midline – an indication that the programme is helping students to be ready for primary school.

While we do not find significant impacts in socioemotional development as captured by IDELA, qualitative results showed that programme children were less shy and more eager to participate the classroom. We hypothesize that this is due to the fact that IDELA focused on measuring skills related to peer relations, emotional awareness, empathy, conflict-resolution and self-awareness, and may not be explicitly capturing student's self-efficacy and assertiveness.

The one domain where students still struggle on average is emergent literacy, where, despite the positive impacts of the programme, the overall performance of children who attended the programme is just below 50 over 100 percent. Even so, this percentage is in range of the average IDELA sores for this age group globally. A 2018 analysis of global IDELA scores showed that, at 5.5 years old, children's average emergent literacy score is about 45% and increase to just over 55% at 6.5 years old (Pisani, Borisova, and Dowd, 2018). The estimated impacts almost a full year after the end of the ASR activities are very relevant given that most cognitive and non-cognitive impacts of similar preschool programmes in sub-Saharan Africa fade out over time (Ozler et al, 2018). In terms of impact heterogeneity, we do not find differential impacts for boys and girls in terms of the overall IDELA and its individual constructs.

On-time enrolment in Grade 1. We also assessed at midline whether the programme led to greater enrolment in primary school for children. We found that children in programme areas (regardless of whether they attend programme activities) were 14 percentage-point more likely to enrol in grade 1.

Moreover, programme participants were 34 percentage points more likely to attend relative to the control group. These results provide evidence that ASR programmes can increase primary school enrolment importantly. We find statistically significant differences by student gender on primary school attendance. On average, girls are 11 percentage points more likely to be attending primary school at endline as a result of the programme.

In qualitative interviews with parents, teachers, and other school professionals, we observed a perceived increase in parental commitment to their children's education, which they attributed to the ASR pilot programme. Interviews also showed that the ASR pilot programme encouraged attendance and helped children learn not to fear their teachers. Also, several parents reported a lack of previous awareness about when children are supposed to enrol primary school and the importance of learning at home in addition to school. In terms of parental practices, which were only measured at midline, the programme had positive impacts, including telling stories and singing songs to child; not leaving the child alone at home, and teaching new things and showing affection to child. However, we did not find significant impacts in programme dimensions related to positive parental attitudes. Programme participants cited challenges around timing of the programme during the rainy season when many families relocate closer to family field(s), lack of snacks, lack of travel subsidies, lack of classrooms, and too short of a programme duration.

Cost Analysis. We conducted a cost analysis to capture the resources needed to implement the ASR intervention so that policy makers and other stakeholders have a complete understanding of the intervention. We used the ingredients approach and find that the overall cost of the implementing the ASR programme for the evaluation cohort was USD $163,089 and attended a total of 2,700 students in the evaluation districts. The overall cost breaks down to USD $60 per child. If in-kind (volunteers time) costs are excluded, the total ASR programme costs fall to USD $55. We also produced estimates of the cost of the individual programme by ingredient type and activity, as well as assessing the scale-up costs of the programme. As a comparison, a recent early childhood education evaluation in Malawi (Ozler et al. 2018) found that a programme that provided learning materials, training and mentoring of teachers, teacher incentives and parenting education had an average cost per child of USD $93. Furthermore, the ASR programme produced high and statistically significant impacts while the programme in Malawi only generated short term impacts on language skills and no impacts three years after programme implementation. Specifically, the evaluation of that programme at the 18-month follow-up found that children exposed to the combination of teacher training and parenting education improved their language skills and prosocial behaviours. Nevertheless, at the 36-month follow-up, there were no programme impacts at the child level. Our results, on the other hand, show that the ASR programme generates large and statistically significant impacts both in the short- and medium run, with the impacts not only not fading out over time but sustained and in some cases larger relative to the short-run results.

We estimate that the average cost of increasing the total IDELA score by 0.1 SD is US$6.5, lower to cost effectiveness ratios found in similar programmes in Sub-Saharan Africa (Donfouet et al, 2018). It is important to note, when assessing the cost results, that implementation costs are a function of the location of the programme, which is very remote and imposes larger cost due to accessibility. **Fidelity of programme implementation.** Qualitative research found that the ASR programme effectively adhered to programme processes and provided programming that was relevant to local challenges to school

readiness, most notably the need for additional exposure to Portuguese prior to Grade 1. In addition to Portuguese exposure, interviews with parents, teachers, and volunteers suggest that the ASR programme successfully promoted aspects of school readiness such as hygiene, proper dress, and feeding. Prior to the programme, respondents reported that most children in the implementation context were not prepared to enter Grade 1 and a minority of parents were supporting their children's school readiness. In addition, teachers stated that children's limited readiness required them to do additional work to help them adjust to the classroom environment. The programme addressed this need by equipping students with Portuguese skills needed in primary school, providing parents with a space to discuss and share ideas, and using volunteers from the community. Students' level of preparedness led to an increase in certain teachers' expectations of students' performance and a more positive outlook on students' academic prospects. However, the programme did face challenges communicating the child-selection process to communities and recruiting female volunteers. The latter is particularly important in light of emerging evidence on the importance of teacher gender in determining girls' educational aspirations and achievements (Muralidharan, 2014; Lee, 2018; Eble, 2019).

We found positive perceived effects on participating parents, Grade 1 teachers, and participating and non-participating students. Perceived benefits included increased parental awareness and support for children's eating, hygiene, dress, and promptness at school. Grade 1 teachers reported perceived differences at the beginning of the year between participation and non-participating students in terms of students' literacy, socioemotional, and executive function skills. Moreover, Grade 1 teachers stated that it was easier for teachers at the beginning of the school year because participating students had increased readiness and were able to support nonparticipating students. While the majority of respondents reported positive effects, a minority were sceptical about the short duration of the programme or reported that programme effects levelled out between participating and non-participating students by the end of the school year (although the quantitative data confirm differences in end-of-year performance between participating and non-participating students).

The findings from this study show that short-term community-based school readiness interventions can be effective in increasing children's school readiness and on-time enrolment and have a positive effect on parental practices. Parental attitudes towards education remain largely unchanged, likely because they were found to be quite positive at midline and would be challenging to improve further. These findings add to the growing evidence on ECD programming in Sub-Saharan Africa and show that interventions do not necessarily have to be long-term or costly to contribute to positive outcomes for children and their caregivers. While this evidence provides a useful data point for these types of interventions, more testing in different implementation contexts is needed to ensure that effects can withstand contextual variation.

Sustainability and institutional capacity. Conversations with the UNICEF Country Office suggest that, although the pilot was implemented by Save the Children, the Ministry of Education officials both at national and sub-national levels were actively involved in formulating the concept through the implementation process until the completion of the pilot in March 2019. Community engagement was key in this pilot. Local leaders, parents and families played critical roles to the success of the pilot, which has created considerable demand for expansion of this programme in other districts and communities. The local teacher training institute was very much part of the ASR implementation process. They were involved in training the volunteer teachers and education officials.

During the process of implementation of the pilot, the capacities of district and provincial education officials and school Directors have been enhanced in planning and delivering ASR programme. As a result, the summer school programme was implemented successfully by the 3 pilot districts under the leadership of provincial directorate with financial from UNICEF. This clearly indicates that Zambézia has the institutional capacity to expand this programme in the province. However, continued financial and technical support will be required.

In sum, the findings from the evaluation clearly demonstrates that it is possible to establish a low-cost school readiness initiative in Mozambique. The high implied long-run returns from investing in this early childhood initiative in Zambézia should serve as the seed to start a national conversation about the urgency of adapting early childhood education models.

10. Lessons Learned

In this section, we highlight the programme's key strength and weaknesses. Overall, we conclude that the programme is well-designed and well-implemented. Some features of the programme are particularly strong.

In terms of the **child-level component**,

- The quantitative results suggest that the programme uses a strong curriculum that effectively addresses key cognitive aspects of school-readiness, such as early literacy, numeracy, executive function, and motor skills. The impact evaluation results show that this programme is able to produce large effects on the children in a very short period of time.
- The programme curriculum is very detailed in terms of all the activities that volunteer teachers need to conduct every day, with indications on the materials to use and the timing of each activity so that all school readiness components are well developed.
- A strong curriculum reduces the need to find only very strong volunteer teachers because weaker initial candidates can be trained with the numerous programme materials and have the support of a strong curriculum to follow daily.
- Another relevant feature of the programme is that it seems to effectively combine local languages and Portuguese as means of instruction, which later facilities transition to primary school and helped ease the burden of first grade teachers.
- Delivering the child-level activities in the months right before the beginning of primary school, that is, between December and February, seems to have increased importantly the likelihood of enrolling in the first grade, a key outcome of the programme.

Regarding the **parental component**,

- the qualitative results show that it is very important to engage parents in the dissemination of key information through the parental sessions in the programme communities.
- The parental sessions effectively delivered information about non-cognitive aspects of school readiness, such as such as hygiene, proper dress, and feeding practices.

- Although the ASR programme did not have significant impacts on parental attitudes towards education, the sessions were successful at changing parental practices and aspirations for children's education.
- More importantly, the programme was successful at increasing on-time enrolment in primary school, which is a clear indication of the change in perceptions that parents have about the relevance of pre-primary and primary school attendance.
- These combined results indicate the use of community members as parent leaders is an effective strategy, which allows programme information to be shared in local languages facilitating engagement and learning, while making it also cost-effective.

While the core aspects of the programme are sound, tweaking certain aspects of implementation can facilitate uptake of the intervention. Specifically, the following features could be modified to encourage participation:

- While conducting the child-level activities between the months of December and February helps increasing the likelihood that programme participants enrol in primary school, those months may also be problematic for programme implementation as they coincide with the beginning of the rainy season when families are engaged in farming, which may affect participation in programme activities. Some respondents reported that the programme was not implemented in dedicated classroom spaces. The lack of those spaces and chairs, especially during the rainy season where it was impossible to conduct lessons outside, made it more challenging for teachers to conduct classes. As discussed in the recommendations section, it is important to use the local primary school facilities for programme implementation given that the programme is implemented at a time where the schools are not being used.
- Another challenge related to the timing of programme implementation is that some parents and teachers were sceptical of the short duration of the programme. However, as discussed in the recommendations section, there is room for the programme to communicate better the goals of the programme and their results to ensure uptake from the caregivers' side and buy-in from the teachers.
- In terms of training of the volunteer teachers, we identified two main challenges. First, community leaders tended to recommend men for volunteer teacher positions, making it more challenging for implementers to achieve gender parity among volunteers. Including female instructors facilitates the effective delivery of programme activities to participating girls. Emerging evidence from several developing countries suggests that female teachers can contribute to gains in girls' beliefs and aspirations about their academic abilities and improvements in learning outcomes (Muralidharan, 2014; Lee, 2018; Eble, 2019). Second, volunteer trainings took longer than initially expected due to relatively low initial education levels of volunteers.
- In terms of implementing the child and parental activities, the absence of food or snacks for beneficiary children and parents made it harder for them to participate in programme activities. Volunteer teachers reported that some children had a hard time concentrating in the classroom,

which could negatively impact participation and learning. Also, the lack of snacks and travel reimbursement for at parent-to-parent sessions may have discouraged more parents from attending.

- One additional challenge in the implementation of the parental activities is that, although men were found to have more decision-making power with respect to children's schooling, fathers' participation in parent-to-parent session was low.

In the next section, we provide recommendations on strengthening the abovementioned aspects of the programme.

11. Recommendations

Based on the results of this study, we are able to provide UNICEF Mozambique and government stakeholders with several recommendations to strengthen the quality of the intervention. The first version of this report was presented in a validation workshop that included UNICEF and its partners, community members, and other key stakeholders. This workshop was used ensure that the evidence from this study – and the resulting recommendations presented herein – have been contextualised and presented in a way that is meaningful and actionable for stakeholders.

Keep the main components of the ASR programme with some adjustments. The ASR programme demonstrated positive, statistically significant impacts on school readiness outcomes and school enrolment. For a programme that was implemented for a short period of time (3 months), these results are promising. Then, the overall logic of the programme and the way it is implemented do not need to be substantively modified. Below, we provide some recommendations on some specific areas that can help programme implementation such is increasing participation of children and parents in ASR activities as well as thinking carefully about feasibility of and potential for programme scale up.

Maintain the introduction of Portuguese as a language of instruction in the ASR activities to help students adapt better to primary school. Our findings underscore the perceived need and desire among educators for children to arrive at Grade 1 with more fluency in Portuguese. To that end, the ASR curriculum, which mixes instruction in Portuguese and local languages, seem to produce a positive impact so that when students enter primary school, which is taught in Portuguese, have a much better adaptation to school and facilitate instruction to teachers.

Introduce enhanced early literacy instruction. Our findings show that there is room for improving students' performance on some key tasks that affect emergent literacy skills such as letter recognition and first letter sounds. These skills should be emphasized during the implementation of the child-level component by adding exercises developed by STC literacy experts specifically to address these skill gaps.

Incorporate the extended training to volunteers as part of the regular programme. Given the positive effects of the ASR programme, and the high level of fidelity of implementation, we can conclude that the volunteers delivering the ASR programming to the children did a very good job overall. It was noted that the volunteers required more training than initially anticipated, so we recommend that this more extended training become part of business as usual for programme implementation. It is also important to allocate sufficient time for training since time constraint was cited as an implementation challenge. Furthermore,

the programme struggled to recruit volunteers that were sufficiently proficient in Portuguese. Additional Portuguese language resources and refresher training may be incorporated into the training curriculum for volunteers that score just below the passing threshold on the Portuguese assessment to bring their comfort with the language up to the minimum required level.

Keep the gender balance in child activities. Our findings show that the programme did a good job ensuring that both boys and girls had access to programme activities. That feature of the programme is important to be preserved, especially after noticing the positive results in primary school attendance for girls.

Strive to maintain gender parity among volunteers. Despite the challenges of recruiting female teachers in the programme area, ASR succeeded at maintaining gender parity among volunteer teachers to facilitate the effectiveness of delivering programme activities to participating girls. We recommend engaging community leaders in advertising volunteer teaching opportunities to qualified females in their communities to facilitate recruitment of female teachers.

Use of volunteers may not be sustainable over time and other implementation forms need to be explored. Related to the use of the community volunteers to deliver the programme, it is important to consider whether their volunteer status is sustainable if the programme continues over multiple years. It is highly likely that as volunteers become more skilled (based on ongoing experience) and/or the programming becomes more embedded as a routine part of education, that there will be increasing pressure for the job to be considered paid employment rather than a volunteer activity. We recommend that the government considers alternative ways of providing the programme for scale-up and sustainability. Our cost analysis already incorporates the cost of volunteer's time –estimated in terms of the minimum wage– in order to have a better sense of the costs of paying those implementing the programme. As shown in the cost section, adding the opportunity cost of volunteers does not considerably increase the cost per child of the programme, partly because these volunteers are not high-skilled workers with high outside options. We believe that the cost of implementing the programme through current public school teachers will be very high and may not be sustainable over time. Nevertheless, as discussed earlier, a key advantage of the ASR programme is that it has a strong curriculum and well developed materials for programme implementation, which substantially reduces the need of highly qualified teachers to deliver the programme.

However, in the event that programme delivery cannot be scaled up through volunteers, we proposed two options for addressing the financial constraints. The first option is to follow the example of another preschool programme in the Gaza Province in Mozambique that engaged community members in a series of meetings to plan for the sustainability of the programme. During the meetings, each community decided how much each household would contribute, which ranged from 0.5USD to 0.8USD per month. To ensure that community member could meet their contributions, STC (the implementer) linked communities with a local microcredit association to implement an income-generating project (Martinez et al., 2012). Second, given that the programme is implemented at a time when schools and universities are not operating, we propose creating a teaching apprenticeship programme where those who are studying to become teachers at pedagogical institutions are engaged in the delivery of the programme as part of their training and receive academic credit for doing so. These apprentices will not only receive good pedagogical training to deliver the ASR programme, which can ultimately improve their future teaching

skills. These apprentices may receive a compensation similar to the opportunity cost used in the cost analysis as ultimately their participation in the programme will be similar to a training programme.

Maintain the parent-to-parent sessions as an integral part of the model. Our qualitative results found that parental sessions were very useful in building parental knowledge around school readiness, as well as support for children's success in education through proper hygiene and nutrition, and by helping ensure that children come to school ready to learn (e.g., with clean bodies and clothing). However, the parent-to-parent sessions were largely attended by mothers (or other female caregivers), yet fathers typically have more authority over how the children are raised. So, we recommend finding ways to engage fathers in these sessions as well. To do so, it would be better to have separate sessions for fathers because mothers may speak more freely in the sessions without males being present, and/or the sessions for fathers can be presented as something especially for men, to avoid any perceived stigma of being involved in "female" activities. Additionally, discussions on household decision-making processes around childcare can be incorporated in parent-to-parent sessions to facilitate behaviour change.

***Improve the way to transmit key messages to parents during the parental sessions*.** Some parents reported not fully understanding the reasons behind the practices promoted. Although current programme materials are well developed to transmit key messages to parents on how to improve child-level outcomes, there is room for improvement in terms of clearly explaining the rationale behind suggested changes in parental behaviour. It is important to provide more support to parent leaders in the communities to help them implement behaviour change exercises around existing parenting practices on a more continuous basis. Some of this support can be provided in collaboration with the current primary school officials and school councils. For example, parent leaders could be provided refresher trainings on social and behavioural change communication in order to deliver parental training sessions with key messages about good parental practices more effectively. Lastly, parental leaders could receive some small compensation for their work in order to increase their level of commitment with the programme.

Provide some small incentives to parents who attend ASR activities. We heard from parents that there were some negative responses to the parent-to-parent sessions because parents felt that they had been given insufficient benefits for attending (such as consistent availability of a snack, or a transportation allowance). Given the extent to which participants otherwise enjoyed and learned key information from the sessions, we recommend finding ways to reduce these potential barriers to participation. Also, it is important to provide incentives to those parents who are selected for providing programme activities and find a consistent way to select those parents who are also community leaders and have a higher chance of conducting the parental component successfully.

***Keep the timing of the programme for the months right before the start of primary school but increase the reach of programming within communities*.** Typically, the children who miss out on this kind of programming are the ones who need it the most. Given our findings about the sustained benefits of participating in the ASR programmed, combined with concerns about low rates of enrolment, it will be important for stakeholders to determine how to engage a higher percentage of pre-primary-aged children in this effective intervention. It is possible that the programme being implemented at the time of the harvest season affects programme participation. Nevertheless, we do not recommend changing the timing of the ASR programme. It is likely that the high estimated impacts on first grade enrolment are due to the fact that the programme is provided right before the beginning of primary school, which creates

momentum for children to keep attending school activities. If anything, we recommend slightly adjusting the timing of the ASR programme to start in early January if that helps improving attendance to avoid conflicting with end of year activities. However, if agricultural activities are competing with programme activities, one option is to consider when the best timing in the day is for implementing programme activities. In many communities, most agricultural work is done in the morning. It would be worth exploring if the ASR activities can be offered in the afternoon hours.

***Make small improvements to classroom infrastructure*.** While the lack of sufficient classroom space cannot be addressed effectively without incurring in additional costs, smaller improvements can be made to ensure sustainability of the programme, especially if the timing of the intervention does not change. Specifically, we found that classroom floors can accumulate rainwater during the rainy season, which makes it impossible for children to sit on. We recommend exploring the possibility of engaging the community in contributing chairs made from local materials to address this need. It is also important to discuss with the community the use of local primary school and take advantage of the fact that the programme is implemented at a time when primary school is not operating.

Introduce a school feeding component. Community members reported that children had trouble concentrating in classes because meals were not provided. Adding a morning snack to the programme can help address perceived concentration issues as well as the general lack of motivation for parents to send children to school and for children to attend school. There is a wealth of evidence that school feeding programmes improve participation, especially for young children in contexts where school participation is low (Adelman et al., 2008; Kazianga, de Walque, & Alderman, 2010). We recommend partnering with the WFP-supported National School Feeding Programme (PRONAE) or other nutrition-focused programmes operating in the region.

Scale-up the programme in other districts in Zambézia as well as other provinces in country. The findings from the evaluation clearly demonstrates that it is possible to establish a low-cost school readiness initiative in Mozambique. The results of the programme indicate that there are positive impacts on key cognitive and non-cognitive child dimensions and that the impacts are long-lasting over time. Moreover, the results show that local communities and parents, as well as the higher government levels, are both interested in and willing to keep participating in this type of early childhood initiatives. Lastly, the results of the costing exercise suggest that initiatives such as the ASR programme is worth exploring given its high levels of cost-effectiveness and that this type of programmes can be the first step to establish a larger preschool initiative in Mozambique led by the Government and supported by UNICEF and other organizations like the World Bank. The high implied long-run returns from investing in this early childhood initiative in Zambézia should serve as the seed to start a national conversation about the urgency of adapting early childhood education models.

Table 14: Recommendation Priority, Timeframe, and Accountability

#	Recommendation	Priority Level	Recommended Timeframe for Adoption	Person(s)/Organisation(s) Accountable to Recommendation
1	Maintain the introduction of Portuguese as a language of instruction in the ASR activities to help students adapt better to primary school.	**High**	**Immediate**	• STC • UNICEF
2	Incorporate the extended training to volunteers as part of the regular programme.	**High**	**Immediate**	• STC • UNICEF
3	Strive to maintain gender parity among volunteers	**Medium**	**Immediate**	• STC • UNICEF • Community leaders
4	Use of volunteers may not be sustainable over time and other implementation forms need to be explored, e.g., students of pedagogical institutions.	**Medium**	**Medium-term**	• UNICEF • STC • Directorate of pedagogical training institutions • MINEDH staff at district and national levels
5	Maintain the parent-to-parent sessions as an integral part of the model and encourage fathers to attend.	**High**	**Medium-term**	• STC • UNICEF
6	Improve the way to transmit key messages to parents during the parental sessions.	**Medium**	**Immediate**	• STC • UNICEF
7	Provide small incentives to parents who attend ASR activities.	**High**	**Immediate**	• STC • UNICEF
8	Keep the timing of the programme for the months right before the start of primary school but increase the reach of programming within communities.	**Medium**	**Immediate**	• STC • UNICEF • MINEDH staff at district and national levels
9	Make small improvements to classroom infrastructure, e.g. by engaging the community to supply chairs made from local materials.	**Medium**	**Medium-term**	• STC • UNICEF • Community members
10	Introduce a school feeding component.	**Medium**	**Long-term**	• UNICEF • STC • MINEDH staff at district and national levels • Ministry of Health staff at district and national levels • WFP

References

AIR. (2018). *Monitoring, evaluation, and research activities for the Lao Educational Access, Research, and Networking (LEARN) Project*. Washington, DC: Author.

AIR. (2017). *Evaluation of the UNICEF Mozambique Accelerated School Readiness Pilot Programme* [Inception report]. Washington, DC: Author.

Arnold, C., Bartlett, K., Gowani, S., & Merali, R. (2007). *Is everybody ready? Readiness, transition and continuity: Reflections and moving forward* (UNESCO EFA Working Paper). Paris, France: UNESCO.

Bailey, M. J., Sun, S., & Timpe, B. (2018). *Prep School for Poor Kids: The Long-Run Impacts of Head Start on Human Capital and Economic Self-Sufficiency. Working Paper.* Ann Arbor, Michigan: University of Michigan.

Berlinski, S., Galiani, S., & Gertler, P. (2009). The effect of pre-primary education on primary school performance. *Journal of Public Economics*, *93*(1–2), 219–234.

Bietenbeck, J., Ericsson, S., & Wamalwa. F.M. (2017). *Preschool Attendance, School Progression, and Cognitive Skills in East Africa. IZA DP No. 11212*. Lund, Sweden: Lund University.

Chambers, B., Cheung, A., Slavin, R.E., Smith, D. and Laurenzano, M. (2010). *Effective Early Childhood Education Programs: A Systematic Review*. Baltimore, MD: Center for Research and Reform in Education, Johns Hopkins University

Chuo, K.G., & Walter, S. (2011). *The Kom Experimental Mother Tongue Education Project Report for 2011*. Cameroon: SIL International.

Dhaliwal, I., Duflo, E., Glennerster, R., & Tulloch, C. (2011). *Comparative cost-effectiveness analysis to inform policy in developing countries: A general framework with applications for education.* Boston, MA: Abdul Latif Jameel Poverty Action Lab (J–PAL), MIT.

Duncan, G. J., Dowsett, C. J., Claessens, A., Magnuson, K., Huston, A. C., Klebanov, P., . . . Japel, C. (2007). School readiness and later achievement. *Developmental Psychology*, *43*(6), 1428–1446.

Eble, A., & Hu, F. (2019). How important are beliefs about gender differences in math ability? Transmission across generations and impacts on child outcomes. CDEP-CGEG Working Paper 53.

Engle, P. L., Fernald, L., Alderman, H., Behrman, J., O'Gara, C., Yousafzai, A., … Iltus, S. (2007). Strategies for reducing inequalities and improving developmental outcomes for young children in low-income and middle-income countries. *The Lancet*, *378*(9799), 1339–1353.

Fernald, L.C.H., Prado, E., Kariger, P. & Raikes, A. (2017). *A Toolkit for Measuring Early Childhood Development in Low- and Middle-Income Countries*. Washington, DC: World Bank.

Gertler, P., Heckman, J., Pinto, R., Zanolini, A., Vermeersch, C., Walker, S., & Grantham-McGregor, S. (2013). Labour market returns to an early childhood stimulation intervention in Jamaica. *Science, 344*(6187), 998–1001.

Grantham-McGregor, S., Cheung, Y. B., Cueto, S., Glewwe, P., Richter, L., & Strupp, B. (2007). Developmental potential in the first 5 years for children in developing countries. *The Lancet, 369*(9555), 60–70.

Grantham-McGregor, S., Powell, C. A., Walker, S. P., & Himes, J. H. (1991). Nutritional supplementation, psychosocial stimulation, and mental development of stunted children: The Jamaican Study. *The Lancet, 338*(8758), 1–5.

Donfouet, H., Ngware, M., Hungi, N., & Kitsao-Wekulo, P. (2018). Cost and Cost-Effectiveness of a Pre-Primary School Program in Kenya. Economics *Working Paper Archive (University of Rennes 1 & University of Caen)*. Center for Research in Economics and Management (CREM), University of Rennes 1, University of Caen and CNRS.

Jaramillo, A., & Tietjen, K. (2001). *Early Childhood Development in Africa: Can We Do More for Less? Africa Region Human Development Working Paper Series*. Washington, DC: World Bank.

Jervis, R. (2006). Understanding beliefs. *Political Psychology, 27*(5), 641–663.

Jung, H., & Hasan, A. (2014). *The impact of early childhood education on early achievement gaps: Evidence from the Indonesia Early Childhood Education and Development (ECED) Project* (World Bank Policy Research Working Paper No. 6794). Washington, DC: World Bank.

Kagan, S. L., Moore, E., Bredekamp, S. (1995). *Reconsidering children's early learning and development: Toward shared beliefs and vocabulary*. Washington, DC: National Education Goals Panel.

Lapointe, V. R., Ford, L., & Zumbo, B. D. (2007). Examining the relationship between neighbourhood environment and school readiness for kindergarten children. *Early Education and Development, 18*(3), 473–495.

Lee, J., Rhee, D., & Rudolf R. (2019) Teacher Gender, Student Gender, and Primary School Achievement: Evidence from Ten Francophone African Countries. *The Journal of Development Studies*, 55:4, 661-679.

Levin, H. (1983). *Cost-effectiveness: A primer*. Newbury Park, CA: Sage Publications.

Levin, H., & McEwan, P. (2001). *Cost-effectiveness analysis: Methods and applications* (2nd ed.). Thousand Oaks, CA: Sage.

Lipsey, M.W., Farran, D.C. & Hofer, K.G. (2016). *Effects of a State Prekindergarten Program on Children's Achievement and Behaviour through Third Grade. Peabody Research Institute Working Paper.* Nashville, TN: Peabody Research Institute.

Martinez, S., Naudeau, S., & Pereira, V. (2012). *The promise of preschool in Africa: A randomized impact evaluation of early childhood development in rural Mozambique*. Washington, DC, and London, UK: The World Bank Group and Save the Children.

McCoy, D. C., Yoshikawa, H., Ziol-Guest, K. M., Duncan, G. J., Schindler, H. S., Magnuson, K., & Shonkoff, J. P. (2017). Impacts of Early Childhood Education on Medium- and Long-Term Educational Outcomes. *Educational Researcher, 46*(8), 474–487.

McCoy, D. C., Zuilkowski, S. S., Yoshikawa, H., & Fink, G. (2017). Early childhood care and education and school readiness in Zambia. *Journal of Research on Educational Effectiveness,10*(3), 482–506.

Ministry of Education – Mozambique (2012). Education Strategic Plan 2012-2016. Retrieved from https://www.globalpartnership.org/sites/default/files/2012-Mozambique-Education-Strategic-Plan%202012-2016.pdf

Muralidharan, K., & Sheth, K. (2016). Bridging Education Gender Gaps in Developing Countries: The Role of Female Teachers. *Journal of Human Resources*, Vol. 51, no. 2, 269-297

Nonoyama, Y., Loaiza, E., & Engle, P. (2006). *Participation in organized early learning centres: Findings from household surveys* (UNESCO EFA Background Paper). Paris, France: UNESCO.

Nonoyama-Tarumi, Y., & Bredenberg, K. (2009). Impact of school readiness programme interventions on children's learning in Cambodia. *International Journal of Educational Development, 29*(1), 39–45.

Norman, L. (2015). Interpretive process tracing and causal explanations. *Qualitative & Multi-method Research, 13(*2), 4–9.

Pisani, L., Borisova, I. & Dowd, A.J. (2015). *International Development and Early Learning Assessment Technical Working Paper*. Save the Children.

Özler, B., Fernald, L., Kariger, P., McConnell C., Neuman, M., & Fraga, E. (2018). Combining pre-school teacher training with parenting education: A cluster-randomized controlled trial. *Journal of Development Economics*, Volume 133, 448-467.

Puma, S.B., Cook, R., Heid, C., Broene, P., Jenkins, F., Mashburn, A. & Downer, J. (2012). *Third Grade Follow-up to the Head Start Impact Study Final Report, OPRE Report # 2012-45*, Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services.

Sandelowski, M. (2000). Focus on research methods combining qualitative and quantitative sampling, data collection, and analysis techniques. *Research in Nursing and Health*, *23*(4), 246–255.

Save the Children. (2004). *Early childhood care and development: A positive impact, a study from Myanmar of the effects for children, their families and communities*. Yangon, Myanmar: Myanmar Field Office, Save the Children.

Schoen, M. J., & Nagle, R. J. (1994). Prediction of school readiness from kindergarten temperament scores. *Journal of School Psychology, 32*(2), 135–147.

Smits, J., J. Huisman, & Kruijff, K. (2008). *Home language and education in the developing world*. Nijmegen, the Netherlands: Radboud University Nijmegen.

Stock J. H., & Yogo M. (2005). Testing for weak instruments in linear IV regression. In D. W. K. Andrews & J. H. Stock (Eds.), *Identification and inference for econometric models* (pp. 80–108). New York, NY: Cambridge University Press.

The Southern and Eastern Africa Consortium for Monitoring Educational Quality (SEACMEQ). (2019). *Mozambique Education Fact Sheet*.

Tanner, J. C., Candland, T., & Odden, W. S. (2015). *Later impacts of early childhood interventions: A systematic review* (IEG Working Paper 2015/3). Washington, DC: World Bank.

UNICEF. (2009). *Child friendly schools manual*. New York: Author

UNICEF. (2012). *School readiness: A conceptual framework*. New York: Author.

UNICEF. (2016a). *Terms of reference: Evaluation of accelerated school readiness programme*. Maputo, Mozambique: UNICEF Mozambique.

UNICEF. (2016b). The impact of language policy and practice on children's learning: Evidence from Eastern and Southern Africa. New York: Author.

UNICEF. (2016c). UNICEF Mozambique Program Document.

UNICEF. (2017). UNICEF Annual Report 2017: Mozambique. Maputo, Mozambique: UNICEF Mozambique.

Varela Canhanga, M., & Banda, M. (2017). Education Language Policy in Mozambique: A Critical View. *International Journal of Humanities Social Sciences and Education*, Volume 4, Issue 5, May, 12-21

Vawda, A.Y., & Patrinos, H.A (1999). Producing educational materials in local languages: costs from Guatemala and Senegal. *International Journal of Educational Development 19*(4): 287-299.

Vennesson, P. (2008). Case studies and process tracing: Theories and practices. In D. Della Porta & M. Keating (Eds.), *Approaches and methodologies in the social sciences: A pluralist perspective* (pp. 223–239). Cambridge, UK: Cambridge University Press.

Walter, S., & Dekker, D. (2011). Mother tongue instruction in Lubuagan. *International Review of Education, 57*(5-6): 667-683.

White, H. (2009). Theory-based impact evaluation: Principles and practice. *Journal of Development Effectiveness, 1*(3), 271–284.

The World Bank, World Development Indicators. (2016). School enrollment, preprimary (% gross), [Data file]. Retrieved from https://data.worldbank.org/indicator/SE.PRE.ENRR.

The World Bank, World Development Indicators. (2017). School enrollment, preprimary (% gross), [Data file]. Retrieved from https://data.worldbank.org/indicator/SE.PRE.ENRR.

The World Bank, (2017). Project paper on a proposed additional credit to the Republic of Mozambique for the education sector support project. Retrieved from http://documents.worldbank.org/curated/en/281791495480151135/pdf/MOZAMBIQUE-PAD-05152017.pdf

Yoshikawa, H., Weiland, C., Brooks-Gunn, J., Burchinal, M.R., Espinosa, L.M., Gormley, W.T. et al. (2013). *Investing in Our Future: The evidence base on preschool education*. New York, NY/Ann Arbor, MI: Foundation for Child Development/ Society for Research in Child Development.

Appendix A. Attrition Analysis

Table A.1. Attrition Analysis of IDELA Indicators

	Control			Treatment			Difference	
	Attritors	Non-Attritors	p-value	Attritors	Non-Attritors	p-value	Col (1)-Col (4)	p-value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Self-Awareness	0.65	0.61	0.11	0.61	0.54	0.00***	0.04	0.23
Friends	0.42	0.43	0.95	0.40	0.41	0.63	0.02	0.55
Sharing/Solving Conflict	0.25	0.25	0.97	0.18	0.26	0.13	0.07	0.21
Empathy/Perspective Taking	0.28	0.26	0.62	0.24	0.24	0.91	0.04	0.41
Emotional Awareness/Regulation	0.29	0.26	0.46	0.20	0.26	0.10	0.09	0.09*
Drawing a Person	0.59	0.49	0.02**	0.39	0.41	0.56	0.20	0.00***
Folding Paper	0.52	0.53	0.93	0.45	0.44	0.71	0.07	0.27
Copying a Shape	0.75	0.64	0.00***	0.65	0.56	0.03**	0.10	0.04**
Hopping	0.84	0.83	0.81	0.83	0.80	0.52	0.02	0.78
Comparison by Size and Length	0.88	0.87	0.73	0.85	0.84	0.88	0.04	0.48
Sorting and Classification	0.62	0.57	0.26	0.52	0.51	0.85	0.10	0.15
Shape Identification	0.49	0.44	0.29	0.43	0.36	0.05**	0.05	0.33
Number Identification	0.20	0.10	0.01***	0.10	0.10	0.79	0.10	0.03**
One-to-One Correspondence	0.50	0.49	0.66	0.45	0.45	0.98	0.05	0.26
Addition and Subtraction	0.73	0.71	0.74	0.65	0.61	0.40	0.08	0.21
Puzzle Completion	0.38	0.33	0.13	0.38	0.32	0.11	0.01	0.85

	Control			Treatment			Difference	
	Attritors	Non-Attritors	p-value	Attritors	Non-Attritors	p-value	Col (1)-Col (4)	p-value
Oral Vocabulary	0.39	0.35	0.10	0.34	0.34	0.96	0.05	0.13
Print Awareness	0.46	0.46	0.98	0.42	0.43	0.84	0.04	0.56
Letter Identification	0.09	0.04	0.01***	0.05	0.04	0.78	0.04	0.11
First Letter Sounds	0.31	0.25	0.30	0.21	0.21	0.99	0.10	0.18
Emergent Writing	0.41	0.31	0.00***	0.35	0.25	0.00***	0.06	0.21
Oral Comprehension	0.55	0.54	0.80	0.48	0.54	0.22	0.08	0.30
Short-term Memory	0.50	0.52	0.45	0.50	0.49	0.63	-0.00	0.93
Inhibitory Control	0.60	0.57	0.38	0.59	0.55	0.32	0.01	0.92
Persistence/Motivation	0.83	0.84	0.58	0.82	0.81	0.91	0.01	0.79
Overall Observation	0.75	0.69	0.00***	0.72	0.69	0.28	0.03	0.42
N	73	514		72	509		146	
N (%)	12.44%	87.56%		12.39%	87.61%		12.50%	
Other Child Outcomes								
Child attended preschool programme in the last 3 months	0.06	0.04	0.48	0.07	0.02	0.13	-0.00	0.95
Child does household chores or work outside the home	0.06	0.03	0.34	0.06	0.03	0.21	-0.01	0.88
N	71	464		64	437		135	
N (%)	13.27%	86.73%		12.77%	87.23%		13.03%	

Table A.2. Attrition Analysis of Caregiver Attitudes

	Control			Treatment			Difference	
	Attritors	Non-Attritors	p-value	Attritors	Non-Attritors	p-value	Col (1)-Col (4)	p-value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
S/he has crucial role in child development	0.84	0.81	0.66	0.85	0.80	0.26	-0.01	0.86
Important to take care of children because they are very young	0.95	0.88	0.03**	0.83	0.82	0.72	0.11	0.06*
Important to make time to take care of child	0.86	0.83	0.41	0.82	0.77	0.34	0.04	0.53
Knowing how to read and write is important	0.96	0.87	0.02**	0.85	0.80	0.34	0.11	0.07*
S/he will support the child to complete at least high school	0.85	0.80	0.32	0.85	0.78	0.13	0.00	0.98
Can teach child skills to be school ready	0.84	0.78	0.26	0.86	0.75	0.02**	-0.03	0.72
Child can learn skills when playing games	0.88	0.81	0.08*	0.85	0.78	0.10*	0.03	0.64
Important to talk and play with child daily	0.86	0.81	0.30	0.81	0.76	0.34	0.06	0.41
Praising children whenever doing something new is important	0.97	0.87	0.00***	0.89	0.80	0.05**	0.08	0.12
Child will complete primary school	0.55	0.54	0.92	0.53	0.58	0.28	0.02	0.83
Child will complete high school	0.45	0.36	0.25	0.39	0.41	0.73	0.06	0.54
N	71	464		64	437		135	
N (%)	13.27%	86.73%		12.77%	87.23%		13.03%	

Table A.3. Attrition Analysis of Caregiver Practices

	Control			Treatment			Difference	
	Attritors	Non-Attritors	p-value	Attritors	Non-Attritors	p-value	Col (1)-Col (4)	p-value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Read/flip through books with the child	0.04	0.04	0.97	0.13	0.05	0.11	-0.08	0.11
Tell stories to the child	0.39	0.35	0.46	0.34	0.30	0.51	0.05	0.52
Sing songs to or with the child	0.28	0.26	0.72	0.31	0.25	0.39	-0.03	0.73
Take the child away from home	0.38	0.47	0.14	0.42	0.47	0.53	-0.04	0.67
Play simple games with the child	0.25	0.27	0.82	0.38	0.26	0.15	-0.12	0.17
Say the names of objects or draw things for or with the child	0.17	0.21	0.32	0.33	0.22	0.18	-0.16	0.05*
Teach the child something new (e.g., new words)	0.34	0.34	0.98	0.42	0.32	0.18	-0.08	0.34
Teach the child the alphabet	0.11	0.16	0.17	0.23	0.18	0.25	-0.12	0.04**
Teach the child numbers or play counting games	0.21	0.20	0.86	0.27	0.25	0.77	-0.05	0.44
Encourage the child to discover new things	0.35	0.39	0.61	0.50	0.38	0.06*	-0.15	0.12
Hug or show affection to the child	0.66	0.63	0.64	0.63	0.62	0.90	0.04	0.66
Show the child how to get along with others and be respectful	0.79	0.73	0.32	0.78	0.70	0.19	0.01	0.93
Ask the child to say please and thank you	0.70	0.71	0.97	0.75	0.69	0.30	-0.05	0.65
Find tasks for the child to be responsible for	0.49	0.30	0.01***	0.39	0.30	0.17	0.10	0.23

	Control			Treatment			Difference	
	Attritors	Non-Attritors	p-value	Attritors	Non-Attritors	p-value	Col (1)-Col (4)	p-value
Encourage the child to share with others	0.85	0.73	0.03**	0.83	0.75	0.22	0.02	0.84
Help the child understand home rules	0.86	0.77	0.09*	0.81	0.78	0.59	0.05	0.54
Praise the child for what s/he is doing well	0.82	0.68	0.04**	0.78	0.66	0.02**	0.04	0.69
Talked about the consequences of not behaving as expected	0.45	0.30	0.05**	0.39	0.28	0.09*	0.06	0.51
Slap the child because of disobedience	0.39	0.31	0.15	0.44	0.35	0.25	-0.04	0.64
Hit the child because of disobedience	0.38	0.32	0.32	0.41	0.32	0.21	-0.03	0.77
Criticize or yell at the child	0.49	0.44	0.43	0.47	0.47	0.98	0.02	0.82
Make the child feel embarrassed for what they did wrong	0.52	0.35	0.00***	0.44	0.31	0.10	0.08	0.43
Asked the child to repair/apologize for what s/he did.	0.70	0.58	0.09*	0.73	0.54	0.00***	-0.03	0.77
N	71	464		64	437		135	
N (%)	13.27%	86.73%		12.77%	87.23%		13.03%	

Appendix B. Programme Impacts on Individual IDELA Items

Table B.1. Impacts on IDELA Motor Skills Construct

	ITT	LATE	Baseline Mean		Endline Mean		
	Impact	Impact	T	C	T	C	N
Δ Dependent Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Drawing a Person	0.13***	0.24***	0.41	0.49	0.71	0.65	1,023
	(0.04)	(0.07)					
Folding Paper	0.12***	0.21***	0.44	0.53	0.57	0.53	1,023
	(0.05)	(0.08)					
Copying a Shape	0.12***	0.21***	0.56	0.64	0.79	0.74	1,023
	(0.03)	(0.06)					
Hopping	0.05*	0.09*	0.80	0.83	0.86	0.84	1,023
	(0.03)	(0.05)					

Note: Δ Dependent variables = Dependent variable at endline - Dependent variable at baseline. T = treatment group; C = control group. All estimates use difference-in-difference modelling with panel observations. Robust standard errors clustered at the school level are in parentheses. All estimations control for district fixed effects. Control variables used in the regression are: caregiver's education level (primary school education and preschool education), an indicator for whether the child lives with his or her mother or father, language spoken in the child's home is Portuguese, log of distance to the nearest health post (in km), number of children living in the household, age of main respondent, SES index, indicators for the child being stunted or underweight, and indicators for imputed child's weight for age and height for age. *p < .10. **p < .05. ***p < .01.

Table B.2. Impacts on IDELA Emergent Literacy Construct

	ITT	LATE	Baseline Mean		Endline Mean		
	Impact	Impact	T	C	T	C	N
Δ Dependent Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Oral Vocabulary	-0.01	-0.02	0.34	0.35	0.38	0.40	1,023
	(0.02)	(0.04)					
Print Awareness	0.13***	0.23***	0.43	0.46	0.48	0.39	1,023
	(0.05)	(0.08)					
Letter Identification	0.08**	0.15**	0.04	0.04	0.29	0.20	1,023
	(0.04)	(0.07)					
First Letter Sounds	0.08**	0.15**	0.21	0.25	0.20	0.16	1,023
	(0.04)	(0.07)					
Emergent Writing	0.10***	0.18***	0.25	0.31	0.44	0.39	1,023
	(0.04)	(0.07)					
Oral Comprehension	0.08	0.14	0.54	0.54	0.53	0.45	1,023
	(0.05)	(0.09)					

Note: Δ Dependent variables = Dependent variable at endline - Dependent variable at baseline. T = treatment group; C = control group. All estimates use difference-in-difference modelling with panel observations. Robust standard errors clustered at the school level are in parentheses. All estimations control for district fixed effects. Control variables used in the regression are: caregiver's education level (primary school education and preschool education), an indicator for whether the child lives with his or her mother or father, language spoken in the child's home is Portuguese, log of distance to the nearest health post (in km), number of children living in household, age of main respondent, SES index, indicators for the child being stunted or underweight, and indicators for imputed child's weight for age and height for age. *p < .10. **p < .05. ***p < .01.

Table B.3. Impacts on IDELA Emergent Numeracy Construct

	ITT	LATE	Baseline Mean		Endline Mean		
	Impact	Impact	T	C	T	C	N
Δ Dependent Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Comparison by Size and Length	0.08***	0.14***	0.84	0.87	0.91	0.85	1,023
	(0.03)	(0.05)					
Sorting and Classification	0.19***	0.34***	0.51	0.57	0.62	0.48	1,023
	(0.06)	(0.10)					
Shape Identification	0.13***	0.24***	0.36	0.44	0.45	0.39	1,023
	(0.03)	(0.06)					
Number Identification	0.11	0.20	0.10	0.10	0.87	0.75	1,023
	(0.10)	(0.17)					
One-to-One Correspondence	0.09***	0.17***	0.45	0.49	0.54	0.48	1,023
	(0.03)	(0.06)					
Addition and Subtraction	0.16***	0.29***	0.61	0.71	0.69	0.62	1,023
	(0.04)	(0.07)					
Puzzle Completion	0.06*	0.11*	0.32	0.33	0.44	0.39	1,023
	(0.04)	(0.06)					

Note: Δ Dependent variables = Dependent variable at endline - Dependent variable at baseline. T = treatment group; C = control group. All estimates use difference-in-difference modelling with panel observations. Robust standard errors clustered at the school level are in parentheses. All estimations control for district fixed effects. Control variables used in the regression are: caregiver's education level (primary school education and preschool education), an indicator for whether the child lives with his or her mother or father, language spoken in the child's home is Portuguese, log of distance to the nearest health post (in km), number of children living in household, age of main respondent, SES index, indicators for the child being stunted or underweight, and indicators for imputed child's weight for age and height for age. *p < .10. **p < .05. ***p < .01.

Table B.4. Impacts on IDELA Socio-Emotional Construct

	ITT	LATE	Baseline Mean		Endline Mean		
	Impact	Impact	T	C	T	C	N
Δ Dependent Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Self-Awareness	0.10***	0.18***	0.54	0.61	0.67	0.63	1,023
	(0.02)	(0.04)					
Friends	-0.01	-0.01	0.41	0.43	0.47	0.49	1,023
	(0.03)	(0.05)					
Sharing/Solving Conflict	0.05	0.09	0.26	0.25	0.36	0.29	1,023
	(0.06)	(0.10)					
Empathy/Perspective Taking	0.05	0.09	0.24	0.26	0.37	0.33	1,023
	(0.06)	(0.10)					
Emotional Awareness/Regulation	0.09	0.15	0.26	0.26	0.41	0.30	1,023
	(0.06)	(0.11)					

Note: Δ Dependent variables = Dependent variable at endline - Dependent variable at baseline. T = treatment group; C = control group. All estimates use difference-in-difference modelling with panel observations. Robust standard errors clustered at the school level are in parentheses. All estimations control for district fixed effects. Control variables used in the regression are: caregiver's education level (primary school education and preschool education), an indicator for whether the child lives with his or her mother or father, language spoken in the child's home is Portuguese, log of distance to the nearest health post (in km), number of children living in household, age of main respondent, SES index, indicators for the child being stunted or underweight, and indicators for imputed child's weight for age and height for age. *p < .10. **p < .05. ***p < .01.

Table B.5. Impacts on IDELA Executive Function Construct

	ITT	LATE	Baseline Mean		Endline Mean		
	Impact	Impact	T	C	T	C	N
Δ Dependent Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Short-term memory	0.07**	0.12**	0.49	0.52	0.54	0.51	1,023
	(0.03)	(0.06)					
Inhibitory control	0.04	0.06	0.55	0.57	0.72	0.70	1,023
	(0.04)	(0.07)					

Note: Δ Dependent variables = Dependent variable at endline - Dependent variable at baseline. T = treatment group; C = control group. All estimates use difference-in-difference modelling with panel observations. Robust standard errors clustered at the school level are in parentheses. All estimations control for district fixed effects. Control variables used in the regression are: caregiver's education level (primary school education and preschool education), an indicator for whether the child lives with his or her mother or father, language spoken in the child's home is Portuguese, log of distance to the nearest health post (in km), number of children living in household, age of main respondent, SES index, indicators for the child being stunted or underweight, and indicators for imputed child's weight for age and height for age. *p < .10. **p < .05. ***p < .01.

Table B.6. Impacts on IDELA Approaches to Learning Construct

	ITT	LATE	Baseline Mean		Endline Mean		
	Impact	Impact	T	C	T	C	N
Δ Dependent Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Persistence/Motivation	0.04	0.07	0.82	0.84	0.88	0.86	968
	(0.04)	(0.06)					
Overall Observation	0.02	0.03	0.69	0.69	0.71	0.69	1,023
	(0.03)	(0.05)					

Note: Δ Dependent variables = Dependent variable at endline - Dependent variable at baseline. T = treatment group; C = control group. All estimates use difference-in-difference modelling with panel observations. 55 missing outcomes at for Persistence/Motivation due to child not understanding directions for this item. Robust standard errors clustered at the school level are in parentheses. All estimations control for district fixed effects. Control variables used in the regression are: caregiver's education level (primary school education and preschool education), an indicator for whether the child lives with his or her mother or father, language spoken in the child's home is Portuguese, log of distance to the nearest health post (in km), number of children living in household, age of main respondent, SES index, indicators for the child being stunted or underweight, and indicators for imputed child's weight for age and height for age. *p < .10. **p < .05. ***p <.01.

Appendix C. Qualitative Protocols

1. Interview with key informants: Community Child voluntary Preparation

To the interviewer: *start by introducing yourself, explain the purpose of the research, and obtain verbal consent (see consent script) of all respondents.*

Please introduce yourself by first saying your name as well as something interesting about you.

1. What is your name?
2. What is your current job?
3. What is your role in the accelerated school readiness programme?
    a. Please describe your responsibilities in this task.
4. Define school readiness in your own words.
5. Describe your experience with the school readiness programme.
6. How communities were chosen to participate in this programme?
    a. How were the communities informed about the selection?
7. How were children chosen to participate in this programme?
8. How do you disseminate information about the programme in the community?
9. Describes the training programme provided to community volunteers.
    a. When did the training take place?
    b. What did the training include?
    c. Were there any challenges during the training? Please describe.
10. Describe the schedule of a normal day's programme.
    a. Describe any challenges faced.
11. How can this programme be improved?
12. Did parents support the education of their children (aged 5 or 6 years old) before the programme started. If so, how?
13. How does the programme affect parents in the communities?
    a. Did the programme change the way parents support the education of their children? If so, how?
14. To what extent the training favored the promotion of school readiness of children?
15. How did the programme affect children?
    a. Does this programme prepare children for primary school? If so, how?
16. How would you improve the programme to make it more useful for children in the community?

2. Interview with key informants: Parents Leading Parent-to-Parent Sessions

To the interviewer: *start by introducing yourself, explain the purpose of the research, and obtain verbal consent (see consent script) of all respondents.*

Please introduce yourself by first saying your name as well as something interesting about you.

1. What is your name?
2. What is your current job?
3. What is your role in the accelerated school readiness programme?
    a. Please describe your responsibilities (if relevant).
4. Define school readiness in your own words.
5. Describe your experience with the programme.
6. How were communities chosen to participate in this programme?
    a. How were the communities informed about the selection?
7. Describe your experience the parent-to-parent sessions.
8. How were the parents selected for this programme?
9. Please describe the training you received in order to lead the sessions for the programme
    a. When did the training take place?
    b. What did the training include?
    c. What challenges arose during the programme? Describe.
10. Please describe a regular parent-to-parent session.
    a. What topics were covered?
11. How can the parent-to-parent sessions be improved?
12. Did parents support the education of their children (aged 5 or 6 years old) before the programme started. If so, how?
13. How does the programme affect parents in the communities?
    a. Did the programme change the way parents support the education of their children? If so, how?
14. To what extent the training favored the promotion of school readiness of children?
15. How did the programme affect children?
    a. Does this programme prepare children for school? If so, how?

3. Focus group Discussion Guide: Parents of participating children and parents participating in parent-to-parent sessions

To the interviewer: *start by introducing yourself, explain the purpose of the research, and obtain verbal consent (see consent script) of all respondents.*

Please introduce yourself by first saying your name as well as something interesting about you.

1. What is your name?
2. What challenges does the community faces to promote the education of children 5-6 years old?
    a. Which is the most difficult challenge to overcome? Why?
3. Have you ever heard of the Accelerated School Readiness programme?
    a. Please describe what you know about the programme.
        i. How did you first hear about the programme?
        ii. Did you work in the programme?
        iii. What kind of services did the programme provided?
        iv. What are the objectives of the programme?
        v. To what extent the programme responded to the challenges faced by the community?
        vi. How can this programme be improved?
4. How were communities chosen to participate in this programme?
    a. How were the communities informed about the selection?
5. Did you are participating in this programme?
    a. If so, why did you choose to participate?
        i. Would you participate again in the programme if asked? Why or why not?
        ii. How much work did you do for the programme?
6. Describe your experience with discussion sessions of parent-to-parent.
    a. How were parents selected for this programme?
    b. Please describe what usually happens in the parent-to-parent sessions.
    c. To what extent the trainings were relevant to the challenges and realities of the community?
7. Did your children participate in the programme?
    a. How were children chosen to participate in this programme?
    b. Why did you decide to enroll your children in this programme?
        i. Would you enroll your children in this programme if asked again? Why or why not?
    c. Please describe the schedule of a normal day in the programme.

   d. To what extent the trainings were relevant to the challenges and realities of the community?
   e. How can this programme be improved?

8. Did parents support the education of their children (aged 5 or 6 years old) before the programme started. If so, how?
9. How did the programme affect parents in the communities?
   a. Did the programme change the way parents supported the education of their children? If so, how?
10. How did the programme affect participating children?
   a. Did the programme prepare children for school? If so, how?
11. How would you improve the programme to make it more useful for children in the community?

4. Focus group discussion guide: Parents who did not participate in parent-to-parent sessions

To the interviewer: *start by introducing yourself, explain the purpose of the research, and obtain verbal consent (see consent script) of all respondents.*

Please introduce yourself by first saying your name as well as something interesting about you.

1. What is your name?
2. What challenges does the community face to promote the education of children 5-6 years old?
    a. Which challenge is the most difficult to overcome? Why?
3. Have you ever heard of the Accelerated School Readiness programme?
    a. Please describe what you know about the programme.
        i. How did you first hear about the programme?
        ii. Did you work in the programme?
        iii. What kind of services did the programme provided?
        iv. What are the objectives of the programme?
        v. To what extent the programme responded to the challenges faced by the community?
        vi. How can this programme be improved?
4. How were communities chosen to participate in this programme?
    a. How were the communities informed about the selection?
5. If you were invited to participate, would you accept? Why?
    a. If not, why you would not choose not to enroll your child in the programme?
6. If you are familiar with the programme, describe how you were involved in it.
7. Do parents in the communities support the education of their children (aged 5 or 6 years old) before the programme started. If so, how?
8. How does the programme affect parents in the communities?
    a. Did the programme change the way parents supported the education of their children? If so, how?
9. How does the programme affect children?
    a. Does the programme prepare children for school? If so, how?
10. What is the impact of the programme in your life?

5. Focus group discussion guide: School staff (members of the parent teacher association, teachers, school Director)

To the interviewer: *start by introducing yourself, explain the purpose of the research, and obtain verbal consent (see consent script) of all respondents.*

Please introduce yourself by first saying your name as well as something interesting about you.

1. What is your name?
2. What is your current job?
3. Define school readiness in your own words.
4. What challenges does the community face to promote the education of children 5-6 years old?
    a. What challenge is the most difficult to overcome? Why?
5. Have you ever heard of the Accelerated School Readiness programme?
    a. Please describe what you know about the programme.
        i. How did you first hear about the programme?
        ii. Did you work in the programme?
        iii. What kind of services did the programme provided?
        iv. What are the objectives of the programme?
        v. To what extent the programme responded to the challenges faced by the community?
        How can this programme be improved?
6. How were communities chosen to participate in this programme?
7. How were communities informed about the selection into the programme?
8. How was the information about the programme disseminated in the community?
9. Did you participate in the programme?
    a. If so, why did you choose to participate?
        i. Would you participate again in the programme if asked? Why or why not?
10. Please describe the kind of support that you provide to schools?
11. How many trainings did you have as part of the programme?
    a. Who participated in the training?
    b. What topics were included in the training?
    c. How can the training be improved?
12. To what extent the trainings were relevant to the challenges and realities of the community?
13. How were school councils involved in implementing the programme?

   a. Were there any challenges during the implementation of the programme? Describe.

14. Describe your experience with the programme.
   a. How can the programme be improved?
15. Do parents in the community support the education of their children (aged 5 or 6 years old) before the programme started. If so, how?
16. How does the programme affect parents in the communities?
   a. Did the programme change the way parents supported the education of their children? If so, how?
17. To what extent the training favored the promotion of school readiness of children?
18. How would you improve the programme to make it more useful for children in the community?

6. Interview with first grade teachers

Target: *1st grade teachers*

Goal: *Assess if the 1st grade teachers notice a difference between the "readiness" of the students who participated in the programme and students who did not when they entered school and its performance throughout the school year.*

Length: *30–45 Minutes*

Materials: *1) Questionnaire*
2) Consent form
3) Student list enrolled in programme
4) Recorder

To the interviewer: *start by introducing yourself, explain the purpose of the research, and obtain verbal consent (see consent script) of all respondents.*

Please introduce yourself by first saying your name as well as something interesting about you.

1. How long have you been teaching (in years)?
2. How long have you been teaching in this school?
3. How many students were in your class this year?
4. As a teacher, what expectations do you have for students in the first grade (examples: sit in class, raise your hand before speaking, etc.)?
    a. What is the level of Portuguese you expect from children who enter the first grade?

For the next questions, when I ask "how prepared" students are for school, I refer to the ability of students to control their emotions and behavior, be familiar with some words in Portuguese, be able to hold on a pencil or pen, and know few letters and numbers. In short, we are saying that students are ready to learn more complex skills like basic math and pre-reading.

5. Think of the last 3 years as a teacher in the first grade: Describe how prepared students were for the first grade.
    a. What were the biggest challenges you faced in terms of students not being ready for the first grade?
6. Think earlier this year: How prepared were your students as a group when they started the first grade?

For the following sub questions, tell me if any, few, many or all of their students were able to perform the following skills at the beginning of the year:

a. Follow guidelines
b. Socialize with others
c. Be familiar with numbers or figures
d. Be familiar with words in Portuguese

e. Follow directions in Portuguese

f. Hold a pencil. Write

7. Were some students more prepared than others on the first day of school?

   a. If so, how (examples: language, better in-class behavior, knowledge of numbers and letters)?

   b. Would you be able to identify the students who were most prepared (in terms of following guidelines, coexistence, identifying numbers and figures, etc.) on the first day of school? Interviewer: Record the names of the most prepared students.

8. Are you familiar with the Accelerated School Readiness programme?

9. Do you know which students participated in the Accelerated School Readiness programme?

   a. Could you list the names?

If able to *identify the students who participated in the programme continue.*

If unable to *identify the students who participated in the programme, read to the teacher the list of students who participated in the programme.*

10. At the beginning of the school year, how were the skills of the students who participated in the programme compared to students who did not participate in the programme?

11. At the beginning of the school year, how prepared were the students in your class who participated in the ASR programme?

Affirmation: for the following sub questions, tell me if any, few, many or all of their students were able to perform the skills they will quote at the beginning of the year:

   a. Follow guidelines

   b. Socialize with others

   c. Be familiar with numbers or figures

   d. Be familiar with words in Portuguese

   e. Follow directions in Portuguese

   f. Hold a pencil. Write

12. How do you assess the performance of students in the first grade?

13. How was the performance of students who participated in the school readiness programme during the first grade compared to students who did not participate in the programme (Note: If teachers did not assess students, ask about their perception)?

Appendix D. Treatment and Control Schools

Morrumbala	Treat = 1	Derre	Treat = 1
Escola Primaria de King	1	Escola Primaria de Macenda	0
Escola Primaria de Calula	1	Escola Primaria Completa de Malua	1
Escola Primaria do Gimo 2	1	Escola Primaria de Catulama	1
Escola Primaria Completa de Bone	1	Escola Primaria Completa de Chirimane	1
Escola Primaria Completa de Armenda	1	Escola Primaria Completa de Lumba	1
Escola Primaria de Camacho	1	Escola Primaria Completa de Gundasse	1
Escola Primaria Completa de Muarrabuanha	1	Escola Primaria Completa de Coelo	1
Escola Primaria de Muanambua	1	Escola Primaria de Manhela	1
Escola Primaria Completa de Chivungur	1	Escola Primaria Completa de Dula	1
Escola Primaria Completa de Semente II	1	Escola Primaria Completa de M poto	1
Escola Primaria Completa Denguma	1	Escola Primaria de Nhazelemba	1
Escola Primaria Completa Mosse	1	Escola Primaria Completa de Muerrungo	1
Escola Primária Completa de Domingos	1	Escola Primaria de Cocomir	1
Escola Primaria Completa de Cumbabo	1	Escola Primaria Completa de Mecanga - 2	1
Escola Primaria Completa de Chotama	1	Escola Primaria de Namarema	1
Escola Primaria Completa de Estandiquia	0	Escola Primaria de Mpiwa	1
Escola Primaria de Sandramo	0	Escola Primária Completa de Cherene	0
Escola Primaria de Chidanda	0	Escola Primaria de Gida I	0
Escola Primaria completa de Chongolera	0	Escola Primaria de Gemusse	0
Escola Primaria Completa de Chiringoma	0	Escola Primaria Completa de Medumbua I	0
Escola Primaria Completa de Muera	0	Escola Primaria Completa de Chilo	0
Escola Primaria de Ngulengule	0	Escola Primaria Completa de Licuncune	0
Escola Primaria Completa de Cozombe	0	Escola Primária Completa de Mulombe	0
Escola Primaria Completa de Nhambeia	0	Escola Primária Completa de Mugambo	0
Escola Primaria Completa de Siacune	0	Escola Primaria Completa de Nhanzaza	0
Escola Primária Completa de Mazalo	0	Escola Primaria Completa de Maticula	0
Escola Primaria Completa de Munguira	0	Escola Primaria Completa de Licoa	0
Escola Primaria Completa de Quembo 2	0	Escola Primaria Completa de Guligunde	0
Escola Primaria de Ngopo	0	Escola Primaria Completa de Machindo	0
Escola Primaria Completa de Sevene	0	Escola Primaria Completa de Medumbua II	0

Appendix E. Local Average Treatment Effect (LATE) Impact Estimates

In any experiment with treatment and control groups, there are three types of individuals: (1) those who always receive the treatment (e.g., control group children who attend the programme and treatment children who attend but would have attended even if they had been assigned to the control group); (2) those who never receive the treatment (e.g., treatment group children who do not attend the programme and control group children who do not attend and would not have attended even if they had been assigned to the treatment group); and (3) the compliers, who only receive the treatment because of their assignment to the treatment group (e.g., treatment group children who attend the programme but would not have attended if they had been assigned to the control group and control group children who do not attend the programme but would have if they had been assigned to the treatment group). The local average treatment effect (LATE) measures the impact of the treatment on this third subset of people, the compliers, whose treatment status changes as a result of being assigned to the treatment.

The LATE estimate scales the intention-to-treat estimate by one over the fraction of the sample who are affected by the assignment. To see this, consider the following algebraic relationships. Define the share of those who were always treated as $\emptyset_A$, and let Y_A^1 represent the outcome for the always treated when they attend the ASR programme. Define the share of those who had never been treated as $\emptyset_N$, and let Y_N^0 represent the outcome for the never treated when they do attend the programme. Finally, define the share of compliers as $\emptyset_C = (1 - \emptyset_N - \emptyset_A)$; let Y_C^0 represent the outcome for the compliers in the control group who do not attend the programme and Y_C^1 represent the outcome for the compliers in the treatment group who do attend. With these definitions, we can construct the following equations:

The mean outcome for those assigned to the control group is

$$Y^C = \emptyset_A Y_A^1 + \emptyset_C Y_C^0 + \emptyset_N Y_N^0. \quad \text{(A6.1)}$$

The mean outcome for those assigned to the treatment group is

$$Y^T = \emptyset_A Y_A^1 + \emptyset_C Y_C^1 + \emptyset_N Y_N^0. \quad \text{(A6.2)}$$

The difference between these is

$$Y^T - Y^C = \emptyset_C * (Y_C^1 - Y_C^0). \quad \text{(A6.3)}$$

Thus, the LATE estimate, the impact of the treatment on the compliers, is equal to

$$\frac{(Y^T - Y^C)}{\emptyset_C} = Y_C^1 - Y_C^0. \quad \text{(A6.4)}$$

The LATE estimate is equal to the intention-to-treat estimate divided by the fraction of the sample who are affected by the assignment. The LATE estimate can be calculated by an instrumental variables or two-stage least squares approach where in the first stage we estimate programme attendance on the basis of randomised treatment assignment. The first stage enables us to generate predicted values for actual ASR attendance. We can then use the predicted values of attendance in our estimate of the local average treatment effect in a regression, using the predicted programme attendance from the first stage. Note that conducting the two-stage procedure would produce incorrect standard errors. Statistical packages like Stata have built-in modules like ivregress that automatically correct the standard errors.

Appendix F. Amortization Periods

All ingredients used in the cost analysis were assigned an amortization period. All personnel costs (including per-diems) and items replaced on an annual basis were assigned an amortization period of one year. The amortization period for other materials are below.

Ingredient	Amortization Period (years)
School and Teaching Supplies	
Backpacks	5
Books	3
Flashcards for schools	2
Cardboard	1
Folders	2
Highlighter	3
Markers	1
Notebook	1
Notepad	1
Paper	1
Pen	3
Pencils	1
Posters	1
Toys	3

Ingredient	Amortization Period (years)
Programme Materials	
Curriculum Handbooks	3
Manuals	3
Flash cards for parents	2
Presentation materials	1
Training guide	3
Miscellaneous	
Food	1
Housing	1
Fuel	1
Rental car	1
Rental spaces	1

Appendix G. Cost Model

Ingredient Name	Units	Program	Activity	Item Ingredient
Food for stakeholder meetings	Per meeting	Planning	Create programme materials	Other
National Coordinator of Education	Monthly salary	Planning	Create programme materials	Personnel
Per diem for MEAL Officer	Per person per meeting	Planning	Create programme materials	Personnel
for Project Manager	Per person per meeting	Planning	Create programme materials	Personnel
Ticket for MEAL officer	Per person per meeting	Planning	Create programme materials	Travel and accommodation
Ticket for project manager	Per person per meeting	Planning	Create programme materials	Travel and accommodation
April 2017 Maputo presentation	Per attendee	Planning	Dissemination of programme materials	Travel and accommodation
April 2017 Milange workshop (non-personnel costs)	Per attendee	Planning	Dissemination of programme materials	Other
Community Leaders (selecting students)	Monthly salary	Planning	Dissemination of programme materials and activities	Personnel
Coordinators of the zips, directors of schools and pedagogists of the District of Morrumbala N1 (one day) for participate in the presentation of project in Morrumbala	Per person per day	Planning	Dissemination of programme materials	Travel and accommodation

Ingredient Name	Units	Program	Activity	Item Ingredient
Coordinators of the zips, directors of schools and pedagogists of the District of Morrumbala N1 (one day) for participate in the presentation of project in Morrumbala	Per person per day	Planning	Dissemination of programme materials	Travel and accommodation
Coordinators of the zips, directors of schools and pedagogists of the District of Morrumbala N1 (Round trip) for participate in the presentation of project in Morrumbala	Per person	Planning	Dissemination of programme materials	Travel and accommodation
Coordinators of the zips, directors of schools and pedagogists of the District of Morrumbala N1 N3 (Round trip) for participate in the presentation of project in Morrumbala	Per person	Planning	Dissemination of programme materials	Travel and accommodation
Food for community project presentations	Per presentation	Planning	Dissemination of programme materials	Other
Presentation of the project in Derre	Per presentation	Planning	Dissemination of programme materials	Other

Ingredient Name	Units	Program	Activity	Item Ingredient
Presentation of the project in Morrumbala	Per presentation	Planning	Dissemination of programme materials	Other
Technical DPEDH Inspector attending Morrumbala presentation	Per presentation (round trip)	Planning	Dissemination of programme materials	Travel and accommodation
Technical DPGCAS N1 attending Morrumbala presentation	Per presentation (round trip)	Planning	Dissemination of programme materials	Travel and accommodation
Technical SDEJT N1 attending Morrumbala presentation	Per presentation (round trip)	Planning	Dissemination of programme materials	Travel and accommodation
Technical SDSMAS N1 attending Morrumbala presentation	Per presentation (round trip)	Planning	Dissemination of programme materials	Travel and accommodation
UNICEF and Save the Children January 2017 Visit	Per person?	Planning	Dissemination of programme materials	Other
Visit per-diems	Per visit	Planning	Dissemination of programme materials	Travel and accommodation
Copies of presentation	Per training participant	Training	Parent training	Materials
Manual of First Steps	Per training participant	Training	Parent training	Materials
Notebooks	Per training participant	Training	Parent training	Materials
Pens	Per training participant	Training	Parent training	Materials
Posters	Per training	Training	Parent training	Materials

Ingredient Name	Units	Program	Activity	Item Ingredient
Training guide	Per training	Training	Parent training	Materials
8-week curriculum (Colorido)	Per training	Training	Training of trainers	Materials
Agenda	Per training	Training	Training of trainers	Materials
Water	Per training	Training	Training of trainers	Other
Lunch	Per training per participant	Training	Training of trainers	Other
Ticket for trainer	Per training	Training	Training of trainers	Travel and accommodation
Ream of A4 paper	Per training	Training	Training of trainers	Materials
Pens	Per training	Training	Training of trainers	Materials
Community facilitators	Monthly salary	Training	Training of trainers	Personnel
Curriculum Handbook	Per training	Training	Training of trainers	Materials
IFP Technician	Monthly salary	Training	Training of trainers	Personnel
Markers	Per training	Training	Training of trainers	Materials
Lunch	Per training	Training	Training of trainers	Other
Per diem for trainer do IFP	Per person per day	Training	Training of trainers	Travel and accommodation
Ream of A4 paper	Per training	Training	Training of trainers	Materials
Technician	Monthly salary	Training	Training of trainers	Personnel
Technician	Monthly salary	Training	Training of trainers	Personnel
8-week curriculum for provincial trainer & project staff	Per person	Training	Training of volunteers	Materials
Bostik	Per training	Training	Training of volunteers	Materials

Ingredient Name	Units	Program	Activity	Item Ingredient
Box of colored pencils	Per training	Training	Training of volunteers	Materials
Cartridges A3	Per training	Training	Training of volunteers	Materials
Facilitator manuals	Per person	Training	Training of volunteers	Materials
Little treasure	Per training	Training	Training of volunteers	Materials
Marker box	Per training	Training	Training of volunteers	Materials
N1 Trainers Facilitation Grant	Per facilitator	Training	Training of volunteers	Other
N3 Trainers Facilitation Grant	Per facilitator	Training	Training of volunteers	Other
Notebook	Per training	Training	Training of volunteers	Materials
Paper glue	Per training	Training	Training of volunteers	Materials
Pen	Per training	Training	Training of volunteers	Materials
Ream of A4 paper	Per training	Training	Training of volunteers	Materials
Ream of colored cardboard	Per training	Training	Training of volunteers	Materials
Travel expenses	Per volunteer per transit day	Training	Training of volunteers	Travel and accommodation
Volunteer housing (lodging)	Per volunteer per day	Training	Training of volunteers	Travel and accommodation
Volunteer weekday per-diems	Per volunteer per day	Training	Training of volunteers	Travel and accommodation
Volunteer weekend per-diems	Per volunteer per day	Training	Training of volunteers	Travel and accommodation
Weekday lunches	Per lunch	Training	Training of volunteers	Other
Rental car	Per trip	Implementation	Delivery of materials	Travel and accommodation

Ingredient Name	Units	Program	Activity	Item Ingredient
Fuel	Per trip	Implementation	Delivery of materials	Travel and accommodation
for driver	Per trip	Implementation	Delivery of materials	Travel and accommodation
A to Z flashcards	Per school	Implementation	Parental programme materials	Materials
Number flashcards	Per school	Implementation	Parental programme materials	Materials
Nutrition manuals for children under 5	Per school	Implementation	Parental programme materials	Materials
Picture flash cards (14)	Per school	Implementation	Parental programme materials	Materials
Picture flash cards (8)	Per school	Implementation	Parental programme materials	Materials
80 pages A5 Notebooks for children	Per school	Implementation	Provision of learning materials to communities	Materials
Black Chalkboard	Per school	Implementation	Provision of learning materials to communities	Materials
Blue Pens for facilitators	Per facilitator	Implementation	Provision of learning materials to communities	Materials
Book of Stories Summer School	Per school	Implementation	Provision of learning materials to communities	Materials
Bostik	Per training	Implementation	Provision of learning materials to communities	Other

Ingredient Name	Units	Program	Activity	Item Ingredient
Box of colored pencils	Per school	Implementation	Provision of learning materials to communities	Materials
Coast Backpack for Facilitators	Per facilitator	Implementation	Provision of learning materials to communities	Materials
Cola tubes	Per school	Implementation	Provision of learning materials to communities	Materials
Facilitator manuals	Per facilitator	Implementation	Provision of learning materials to communities	Materials
File folders Summer School	Per school	Implementation	Provision of learning materials to communities	Materials
Giant paper	Per school	Implementation	Provision of learning materials to communities	Materials
Jumping Rope for Kids	Per school	Implementation	Provision of learning materials to communities	Materials
Lapis a charcoal	Per school	Implementation	Provision of learning materials to communities	Materials
Markers	Per school	Implementation	Provision of learning materials to communities	Materials
Media Ball for Kids	Per school	Implementation	Provision of learning materials to communities	Materials

Ingredient Name	Units	Program	Activity	Item Ingredient
Posters	Per school	Implementation	Provision of learning materials to communities	Materials
Puzzle Games	Per school	Implementation	Provision of learning materials to communities	Materials
Reams of A4 Paper	Per school	Implementation	Provision of learning materials to communities	Materials
Scissors	Per school	Implementation	Provision of learning materials to communities	Materials
A5 thick cover for facilitators	Per school	Implementation	Provision of learning materials to communities	Materials
Set of 10 number cards	Per school	Implementation	Provision of learning materials to communities	Materials
Set of 26 letter cards	Per school	Implementation	Provision of learning materials to communities	Materials
Set of 8 picture cards of nature, transport and animals	Per school	Implementation	Provision of learning materials to communities	Materials
Wooden Children's building blocks 2017 - 2019	Per school	Implementation	Provision of learning materials to communities	Materials
8-Week Curriculum	Per school	Implementation	Capacity building program	Materials
A4 paper reams	Per school	Implementation	Capacity building program	Materials

Ingredient Name	Units	Program	Activity	Item Ingredient
Lunch	Per training	Implementation	Capacity building program	Other
Capacity building training participants	Per participant per day	Implementation	Capacity building program	Personnel
Color pencil boxes	Per school	Implementation	Capacity building program	Materials
Transportation of staff to Derre	Per trip	Implementation	Capacity building program	Travel and accommodation
Transportation of staff to Milange	Per trip	Implementation	Capacity building program	Travel and accommodation
District team	Monthly salary	Implementation	Capacity building program	Personnel
DPEDH Team	Day	Implementation	Capacity building program	Personnel
Gas to transport staff to Milange and Derre project (round trip)	Per trip	Implementation	Capacity building program	Travel and accommodation
Giant paper	Per school	Implementation	Capacity building program	Materials
Glue tubes	Per school	Implementation	Capacity building program	Materials
Lunch	Per staff per day	Implementation	Capacity building program	Other
Lunch for ten staff during training	Per staff per day	Implementation	Capacity building program	Other
Markers	Per school	Implementation	Capacity building program	Materials
Notepads	Per school	Implementation	Capacity building program	Materials

Ingredient Name	Units	Program	Activity	Item Ingredient
Participant per-diem	Per participant	Implementation	Capacity building program	Travel and accommodation
Participant travel costs	Per day per person	Implementation	Capacity building program	Travel and accommodation
Pens	Per school	Implementation	Capacity building program	Materials
for Project Staff Training on Local Materials Production and ELM (Treinamento do Staff do Projecto sobre Producao de materiais locais e ELM; Ensino de Pre-nemeracia e pre-literacia)	Per person	Implementation	Capacity building program	Travel and accommodation
for training project staff on knowledge management and documentation	Per day per person	Implementation	Capacity building program	Travel and accommodation
for driver	Per day per person	Implementation	Capacity building program	Travel and accommodation
for driver	Per day per person	Implementation	Capacity building program	Travel and accommodation
for driver	Per day per person	Implementation	Capacity building program	Travel and accommodation
for staff	Per day per person	Implementation	Capacity building program	Travel and accommodation
School councils	Per council	Implementation	Capacity building program	Personnel
Snack for ten staff during training	Per day	Implementation	Capacity building program	Other

Ingredient Name	Units	Program	Activity	Item Ingredient
Pay for trainers	Per trainer	Implementation	Capacity building program	Travel and accommodation
Trainer per-diem	Per trainer per day	Implementation	Capacity building program	Travel and accommodation
Trainer travel costs	Per trainer	Implementation	Capacity building program	Travel and accommodation
Trainers	Per day	Implementation	Capacity building program	Personnel
Training spaces	Rent per day	Implementation	Capacity building program	Facilities
Health and Nutrition Technicians	Per person per day	Implementation	Parent program	Personnel
Leader parents	Per person per hour	Implementation	Parent program	Personnel
Parents	Per person per hour	Implementation	Parent program	Personnel
Project officers	Monthly salary	Implementation	Parent program	Personnel
1 L mug for washing of the hands	Per school	Implementation	School program	Materials
10 L bucket for hand washing	Per school	Implementation	School program	Materials
30 L Water Reserve	Per school	Implementation	School program	Materials
60 L Water Reservoir	Per school	Implementation	School program	Materials
Cup for drinking water	Per school	Implementation	School program	Materials
District Team	Monthly salary	Implementation	School program	Personnel
Facilitators	Monthly salary	Implementation	School program	Personnel
Parents/Siblings	Per person	Implementation	School program	Personnel

Ingredient Name	Units	Program	Activity	Item Ingredient
MEAL Save the Children Staff	Monthly salary	Oversight	General administrative meetings	Personnel
National Coordinator	Monthly salary	Oversight	General administrative meetings	Personnel
Provincial MEAL Coordinator	Monthly salary	Oversight	General administrative meetings	Personnel
Fuel	Per trip	Oversight	Programme monitoring	Travel and accommodation
for Driver	Per driver per trip	Oversight	Programme monitoring	Travel and accommodation
for MEAL Officer	Per day per person	Oversight	Programme monitoring	Travel and accommodation
for Project Manager	Per day per person	Oversight	Programme monitoring	Travel and accommodation
Provincial Monitoring Officer for Learning and Accountability Assessment	Per day per person	Oversight	Programme monitoring	Personnel

Appendix H. Detailed Questionnaire

Mozambique Accelerated School Readiness Programme Cost "Ingredient" Questions

*Note that for questions that ask "who," we want to know the position of that person, not their name (e.g., lead trainer, primary school teacher, parent volunteer).

For each position listed (e.g., trainer), please tell us the minimum qualifications for the job:

- Community volunteer: Selection criteria developed by each community's committee, such as good communication skills and the respect of the community. Volunteers will desirably have at least a grade 10 education and pass a literacy and numeracy assessment test.
- Leader parents: Selection criteria developed by each community's committee, such as power to influence, good communication skills, and community respect.
- Describe others

Exhibit J.1 Cost Ingredients Questions

Questions	Answers
1.1.1 Development of play-based learning activities and provision of learning materials and volunteers' manuals with visual aids	
Design of programme activities	
Who designed these activities, and what was their process to do it? Who were the key partners?	
Who coordinated this activity (such as organizing stakeholder meetings), and what was their process to do it?	
Who gathered input from stakeholders, and what was their process to do it?	
In what way did the Ministry of Education and Human Development (INDE) participate (who, what activities, etc.)?	
In what way did end users (facilitators, children), participate (who, what activities, etc.)?	
Development of volunteer manuals	
Who designed the manual(s), and what was their process to do it? Do you have to tailor the manual at all depending on the community/school?	
Is there only one kind of manual, or more than one? Just one booklet or more than one?	
Once contents were developed, who prepared for printing and what was their process to do that?	
How were the manuals physically produced (printed, etc.)? Who did this?	
How did the manuals get to the volunteers? And who shipped or carried them?	
Provision of learning materials	

Questions	Answers
Who designed or selected the materials, and what was their process to do it?	
What is in the materials (books, toys, etc.)? And are the same materials given to every participating community?	
How were the materials obtained? Who did this?	
Once obtained, who prepared the materials for communities? And how did they do this?	
How did the materials get to the communities? And who shipped or carried them?	
1.1.2 Develop initial and in-service training for selected community volunteers in each targeted community	
Development of initial training for community volunteers	
Who designed the initial training, and what was their process to do it?	
What materials were developed for the initial training (manuals, etc.)?	
Who prepared the materials for the initial training (e.g., printing), and what was their process to do so?	
Implementation of initial training for community volunteers	
Who were the trainers for the initial training?	
How were the trainers prepared to deliver the initial training?	
Were the initial trainers supervised by anyone? If yes, who and in what way?	
Who participated in the initial training?	Three times the number of needed community volunteers were trained. They were selected by school management committee or other community committee.
For how much time were community volunteers trained? How many hours over how many days?	Community volunteers were trained for 30 hours each.
Who arranged the initial training (venue, etc.) and what was their process to do so?	
Where did the initial training take place (communities, central location, etc.)? Did any trainers travel to deliver the training? Did any participants travel to attend the training? If any travel, how did people get there and how long did they stay?	
What materials were used in the initial training?	
How did the materials get to the initial training? And who shipped or carried them?	
Development of in-service training for community volunteers	
Who designed the in-service training, and what was their process to do it?	
What materials were developed for the in-service training (manuals, etc.)?	

Questions	Answers
Who prepared the materials for the in-service training (e.g., printing), and what was their process to do so?	
Implementation of in-service training for community volunteers	
Who were the trainers for in-service training?	
Who arranged the in-service training (venue, etc.) and what was their process to do so?	
How were the trainers prepared to deliver the in-service training?	
Were the in-service trainers supervised by anyone? If yes, who and in what way?	
Who participated in the in-service training? How were the community volunteers selected?	Two best candidates from each community, selected from the three that took part in the initial training.
How much time was spend delivering the in-service training? And spread out over how many days/weeks?	20 hours, over #? days
Where did the in-service training take place (communities, central location, etc.)? Did any trainers travel to deliver the training? Did any participants travel to attend the training? If any travel, how did people get there and how long did they stay?	
What materials were used in the in-service training?	
How did the materials get to the in-service training? And who shipped or carried them?	
What incentives were provided to community volunteers in training? And who provided these incentives?	
1.1.3 Implementation and monitoring of 120h-programme to promote readiness for school in 64 communities	
Programme implementation	
Who implemented the programme in each community?	
What was the timeframe for implementation?	Three-hour sessions held daily over 40 days (six weeks), for a total of 120 hours.
Aside from directly delivering the programming 3 hours per day to the children, did the community volunteers have other responsibilities (such as recruiting children, developing activities or materials, outreach to families, etc.)?	
How were children in the target age range identified? How did families know about the programme?	
How did children get to the programme?	
What teaching and learning materials were used in the programme? Where did these materials come from?	
What other materials were used in the programme (soap, mats, chairs, etc.)?	

Questions	Answers
Were the children provided with snacks or meals? If yes, who provided the food? Who prepared? Who served to the children?	
Did the community volunteers who delivered the programme receive anything, such as certificates, gifts, etc.? If yes, what did they receive and who provided it?	
Programme monitoring	
Who developed the monitoring plan, and how did that happen?	
Who were the monitors?	
Who trained the monitors, and how does that happen?	
Were materials or manuals used in training monitors?	
Who supervised the monitors, and how did that happen?	
What did the monitors do, and how often did they do it?	
Did the monitors travel to do their jobs?	
Did the monitors use any materials to do their jobs?	
2.1.1 Provide capacity-building and awareness-raising sessions with teachers, school principals and MINEDH staff at district and provincial levels on school readiness programme's approach and methodologies	
Design of capacity-building and awareness-raising sessions	
Who designed the capacity-building and awareness-raising sessions, and what was their process to do so?	
How were the participants identified for the capacity-building and awareness-raising sessions? Who selected them? Who invited them? What did this process look like?	
Who arranged the capacity-building and awareness-raising sessions (venue, etc.) and what was their process to do so?	
Delivery of capacity-building and awareness-raising sessions	
Who delivered the capacity-building and awareness-raising sessions, and what was their process to do so?	
Were the session facilitators supervised by anyone? If yes, who and in what way?	
Who participated in the sessions? Were multiple sessions held with different kinds of stakeholders?	
Where did the capacity-building and awareness-raising sessions (communities, central location, etc.) take place? Did any facilitators travel to deliver the sessions? Did any participants travel to attend the sessions? If any travel, how did people get there and how long did they stay?	
What materials were used in the capacity-building and awareness-raising sessions?	

Questions	Answers
Who prepared the materials for the capacity-building and awareness-raising sessions, and what was their process to do so?	
How did the materials get to the capacity-building and awareness-raising sessions? And who shipped or carried them?	
On average, how many participants attended the sessions?	
2.1.2 Support existing school councils to participate in the planning and management of the accelerated school readiness program	
Who designed the support process for school councils?	
Who is typically on a school council? How many council members does each school typically have?	
How did school councils become involved in planning and management of the programme? How did they know what to do?	
What did school councils do to participate in the planning of the programme?	
What did school councils do to participate in the management of the programme?	
What support (if any) was given to the school councils to help them do a good job planning and managing the programme?	
Did all school councils basically do the same things to support their school, or did it vary by school?	
2.1.3 Train and support primary school teachers in the implementation of methodologies and activities to promote a smooth transition of children from home into a primary school learning environment	
Design of teacher training	
Who designed the primary school teacher training, and what was their process to do it?	
What materials were developed for the primary school teacher training (manuals, etc.)?	
Who prepared the materials for the primary school teacher training (e.g., printing), and what was their process to do so?	
Implementation of teacher training	
Who were the trainers for primary school teacher training?	
Who arranged the primary school teacher training (venue, etc.) and what was their process to do so?	
How were the trainers prepared to deliver the primary school teacher training?	
Were the primary school teacher trainers supervised by anyone? If yes, who and in what way?	
Who participated in the primary school teacher training? Did they receive stipends?	

Questions	Answers
How often did the primary school teacher training take place? How long do the training lasted?	
Where did the primary school teacher training take place (communities, central location, etc.)? Did any trainers travel to deliver the training? Did any participants travel to attend the training? If any travel, how did people get there and how long did they stay?	
What materials were used in the primary school teacher training?	
How did the materials get to the primary school teacher training? And who shipped or carried them?	
Design of teacher support	
Who designed the primary school teacher support, and what was their process to do it?	
What materials were developed for the primary school teacher support (manuals, etc.)?	
Who prepared the materials for the primary school teacher support (e.g., printing), and what was their process to do so?	
Implementation of teacher support	
Who provided the teacher support?	
Who arranged the teacher support, and what was their process to do so?	
How were the trainers prepared to deliver the teacher support?	
Were the primary school teacher support facilitators supervised by anyone? If yes, who and in what way?	
What kinds of teachers participated in the teacher support?	
How often did the teacher support take place?	
Where did the teacher support take place (schools, central location, etc.)? Did any support facilitators travel to deliver the support? Did any teachers travel to attend the support? If any travel, how did people get there and how long did they stay?	
What materials were used in the teacher support?	
How did the materials get to the teacher support? And who shipped or carried them?	
2.1.4 Build IFP [Instituto de Formação dos Professores] capacities for training and mentoring primary school teachers on children's preparedness to enter Grade 1	
Development of training package	
Who adapted programme materials for use with the IFP, and how does that process happen?	
Who developed the teachers' guides and activity sheets, and how did that process happen?	

Questions	Answers
Who developed the plans to provide training at the IFP?	
In what way(s) were the MoE and INDE engaged in the design and development of the training?	
Delivery of training at IFP	
How was training delivered at the IFP? Who provided the training? How many sessions were held?	
Who organized the training?	
Who participated in the training? How were participants selected?	
How did participants know about the training? Who invited them, and how?	
Where was the training held?	
Did anyone need to travel to participate in the training? If yes, who, and to where?	
Were any materials used during the training? Was anything provided to participants (snacks, notebooks, manuals, etc.)?	
3.1.1 Training and mentoring of leader parents to provide parent-to-parent discussions in home settings	
Design of leader parent training	
Who designed the leader parent training, and what was their process to do it?	
What materials were developed for the leader parent training (manuals, etc.)?	
Who prepared the materials for the leader parent training (e.g., printing), and what was their process to do so?	
Implementation of leader parent training	
Who were the trainers for leader parent training?	
Who arranged the leader parent training (venue, etc.) and what was their process to do so?	
How were the trainers prepared to deliver the leader parent training?	
Were the leader parent trainers supervised by anyone? If yes, who and in what way?	
Who participated in the leader parent training?	
How much time was spent delivering the leader parent training? And over what duration (days/weeks)?	Ten hours delivered over #? days
Where did the leader parent training take place (communities, central location, etc.)? Did any trainers travel to deliver the training? Did any participants travel to attend the training? If any travel, how did people get there and how long did they stay?	
What materials were used in the leader parent training?	
How did the materials get to the leader parent training? And who shipped or carried them?	

Questions	Answers
Design of leader parent support	
Who designed the leader parent support, and what was their process to do it?	
What materials were developed for the leader parent support (manuals, etc.)?	
Who prepared the materials for the leader parent support (e.g., printing), and what was their process to do so?	
Implementation of leader parent support	
Who provided the leader parent support? How many participants attended the sessions?	
Who arranged the leader parent support, and what was their process to do so?	
How were the trainers prepared to deliver the leader parent support?	
Were the leader parent support facilitators supervised by anyone? If yes, who and in what way?	Two-hour weekly group discussions over the 12 weeks of programme implementation.
How often did the leader parent support take place?	
Where did the leader parent support take place (schools, central location, etc.)? Did any support facilitators travel to deliver the support? Did any leader parents travel to attend the support? If any travel, how did people get there and how long did they stay? Did the leader parents got any financial support to attend these sessions?	
What materials were used in the leader parents support?	
How did the materials get to the leader parents support? And who shipped or carried them?	
Were any refreshments or incentives provided? If yes, what was provided, and by whom?	
3.1.2 Development of learning materials and learn-by-play activities guidelines with visual aids for parental education	
Who designed these materials, and what was their process to do it?	
What materials were distributed to parents?	
What was the process to obtain these materials that were provided to parents?	
How did the materials get to the parents?	
3.1.3 Implement 1h weekly parent-to-parent group discussions facilitated by one leader parent over 12 weeks	
What did leader parents need to do to prepare for each session?	
How did parents know about the sessions?	
Were any materials for the discussions provided by the participating families or the community (snacks, etc.)?	

Questions	Answers
Were trainings provided for parents on provision of health meals? If yes, who provided the training? Who organized the training? How did the person giving the training know what to do? What materials were typically used, and who provided them? Where did the discussions take place?	
Were parents also given added individual support at home? If yes, who provided this? What kinds of support were provided?	
Cross-cutting: Build and maintain formal and informal communication channels with local leaders, government officials, religions leaders, other local influences (e.g., older women), and the community in general to build awareness of the importance of school readiness.	
Formal meetings	
What formal meetings took place? What kinds and how many?	
Who arranged these meetings?	
Who participated in these meetings?	
Did people have to travel to participate in these meetings?	
What resources we used in these meetings (programme informational materials, refreshments, etc.)?	
Informal meetings	
What informal meetings took place? What kinds and how many?	
Who led these meetings?	
Who participated in these meetings?	
Did people have to travel to participate in these meetings?	
What resources we used in these meetings (programme informational materials, refreshments, etc.)?	
Cross-cutting: Establish local partnerships and agreements to ensure holistic development opportunities for children	
What local partnerships were established? How many, and with what kinds of providers?	
Who arranged these partnerships?	
What was the process to arrange these partnerships?	
Did people have to travel to arrange these partnerships?	
What resources we used to establish these partnerships (programme informational materials, refreshments, etc.)?	
Cross-cutting: Establish community playgrounds	
How many playgrounds were established?	
Who designed these playgrounds, and what was the process to do so?	
Who constructed these playgrounds, and what was the process to do so?	
Did people have to travel to establish these playgrounds?	

Questions	Answers
What material resources we used to establish these playgrounds, and who provided them?	
Cross-cutting: Create and disseminate video records presenting successful case studies of the programme's results	
How many videos were created?	
Who designed the videos, and what was the process to do so?	
Who filmed the videos, and what was the process to do so?	
Did people have to travel to film the videos?	
Who carried out final editing and packaging of videos, and what was the process to do so?	
How were videos shared with intended audiences?	
Cross-cutting: Organize visits to promote experience sharing and to sensitize government representatives, donors, and community leaders	
How many visits took place, and what happened on those visits?	
Who arranged the visits, and what was the process to do so?	
Who took part in the visits?	
Did people have to travel to make the visits?	
Did communities need to do anything to prepare for the visits?	
Were visitors provided with any materials (programme information, snacks, etc.)?	

Appendix I. Inception Report (Attached as an independent file)

Appendix J. TOR

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