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2023

APPLIED POLICY PROJECT

# IMPROVING EARLY CHILDHOOD DEVELOPMENT IN RURAL UGANDA

**PREPARED BY TIFFANY THAI  
PRESENTED TO THE FRANK BATTEN SCHOOL  
OF LEADERSHIP AND PUBLIC POLICY**



**Acknowledgment**

To my mentors, family, and friends, who have shaped me into the person I am today, this report is dedicated to you. Thank you Professors Jim Wyckoff and Christopher Ruhm for your guidance and support. Thank you to Jamie Van Leeuwen and Sharon Carnahan for valuing my voice. And finally, thank you to my family and friends who have given me endless laughter and love. To my younger self—we did it!

**Disclaimer**

The author conducted this study as part of the program of professional education at the Frank Batten School of Leadership and Public Policy, University of Virginia. This paper is submitted in partial fulfillment of the course requirements for the Master of Public Policy degree. The judgments and conclusions are solely those of the author, and are not necessarily endorsed by the Batten School, by the University of Virginia, or by any other agency.

**Honor Code**

On my honor as a student, I have neither given nor received unauthorized aid on this assignment.

A handwritten signature in black ink, appearing to read "Tiffany", with a long horizontal flourish extending to the right.

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## Glossary

<b>DEO</b>	District Education Officer
<b>DES</b>	Directorate of Education Standards
<b>ECCE</b>	Early Childhood Care and Education
<b>ECD</b>	Early Childhood Development
<b>GoU</b>	Government of Uganda
<b>GWP</b>	Government White Paper
<b>MoES</b>	Ministry of Education and Sport
<b>NGO</b>	Non-governmental organization
<b>NIECD</b>	National Integrated Early Childhood Development
<b>NPC</b>	National Planning Authority
<b>OER</b>	Open Educational Resources
<b>PTC</b>	Primary Teachers' College
<b>TLM</b>	Teaching and learning material

## Executive Summary

**In Uganda, too few rural households have access to quality early childhood development (ECD) services.** The insufficient provision of ECD services is a persistent problem in Lake Bunyonyi, Uganda where resource constraints and lack of training hinder the capacity of early childhood professionals to offer quality care and education to young children (Carnahan, 2022). Insufficient access and quality have contributed to a learning gap between rural and urban communities that urgently needs to be addressed (National Planning Authority, 2020).

### **Investing in early childhood development demands attention from policymakers.**

Children who receive quality services are more likely to develop strong cognitive, social, and emotional skills (Nores & Barnett, 2010). This can have long-lasting effects on their success in school, care, and later in life, and these benefits can extend to households and society at large (Rao et al., 2014; SABER, 2013). Therefore, the Global Livingston Institute (GLI) must prioritize initiatives that improve the quality of services, particularly in historically underserved communities.

**GLI aims to address this gap by continuing its collaboration with local pre-primary centers in Lake Bunyonyi.** This report identifies three alternatives backed by rigorous evidence to increase the quality of early childhood provisions in these centers, prioritizing interventions that improve early childhood teachers and caregivers:

1. **Pre-service training:** utilize free and modifiable open educational resources (OER) to facilitate teacher-led workshops.
2. **In-service training:** provide technical assistance to Kabale University to ensure the implementation of a standard curriculum for training providers.
3. **Material and resource support:** identify instructional materials such as lesson plans, storybooks, and teaching aids and coordinate with providers to adapt to the local context.

Each alternative will be measured on four evaluative criteria to determine the best option:

1. **Cost:** the economic expenses involved in developing and implementing an option.
2. **Effectiveness:** how well an option enhances the ability of providers to deliver quality service.
3. **Administrative feasibility:** whether a policy option can be effectively and efficiently implemented by GLI or other administrative bodies.
4. **Equity:** whether an alternative promotes greater quality improvements for communities disproportionately affected by no or low-quality services.

**Based on a comprehensive analysis, the report recommends that GLI provide material and resource support to schools in the Lake Bunyonyi region.** This alternative has medium cost and effectiveness, and high administrative feasibility and equity. GLI can evaluate the existing lesson plans and identify any gaps with the national curriculum. GLI can then adapt free or low-cost lessons suitable for the local context. This alternative encourages GLI to collaborate directly with providers to ensure that their support meets

the specific needs of the schools and students in the area. However, it is crucial to note that the effectiveness of providing quality material and resources to teachers is dependent on their ability to implement it effectively; therefore, GLI should consider investing in training programs in the future as well. Overall, this alternative has the potential to significantly improve the quality of education in the Lake Bunyonyi area, and with proper support and resources, teachers can provide their students with a higher quality of care.

## Introduction

The earliest years of a child's life are crucial for their physical, cognitive, and emotional development (Nores & Barnett, 2010). Children who experience positive early childhood development are more likely to thrive later in life and have a greater chance of realizing their full potential in terms of academic and career success, as well as social and emotional well-being (UNICEF, 2019). These benefits also extend beyond the individual child and have a positive impact on society as a whole. By targeting vulnerable children and families, improved ECD interventions can help tackle deep-rooted social problems such as poverty, and inequality (Ashley-Cooper et al., 2019).

With a host of research supporting the sustained benefits of investing in children, global interest in early childhood development has surged over the past several decades. Global frameworks, such as the Sustainable Development Goals, prioritize access to early childhood development, care, and pre-primary education for all boys and girls, and countries like Uganda have committed to improving access to ECD services (UN General Assembly, 2015). As such, many non-governmental organizations like GLI have directed their attention and resources toward improving the earliest years of education.

Despite these commitments to improve access to quality early childhood development services in Uganda, little progress has been made, and the sudden disruption caused by the COVID-19 pandemic has exacerbated existing inequities (Musisi, 2022). To address this ongoing issue, the following report investigates the factors that contribute to inadequate access to quality services in Uganda and provides evidence-based policy recommendations for GLI. Finally, the report evaluates the potential outcomes and concludes with a recommendation and steps for implementation.

### **Problem Statement**

**In Uganda, too few children access quality early childhood development (ECD) services in rural communities.** Only one in five children aged 3-5 access pre-primary services at all, and for many of those who do access ECD, the quality is often limited (Musisi, 2022). This access gap is particularly pronounced in areas such as Lake Bunyonyi, where there are no or limited quality early childhood development services compared to urban areas (Carnahan, 2022). With rural communities more likely to experience higher poverty rates, many ECD providers are unable to deliver quality services to rural children who continue to fall behind their urban peers in development outcomes, despite the National Integrated Early Childhood Development (NIECD) policy establishing that all young children have the right to basic education (National Planning Authority, 2020; UNICEF, 2020).

### **Client Overview**

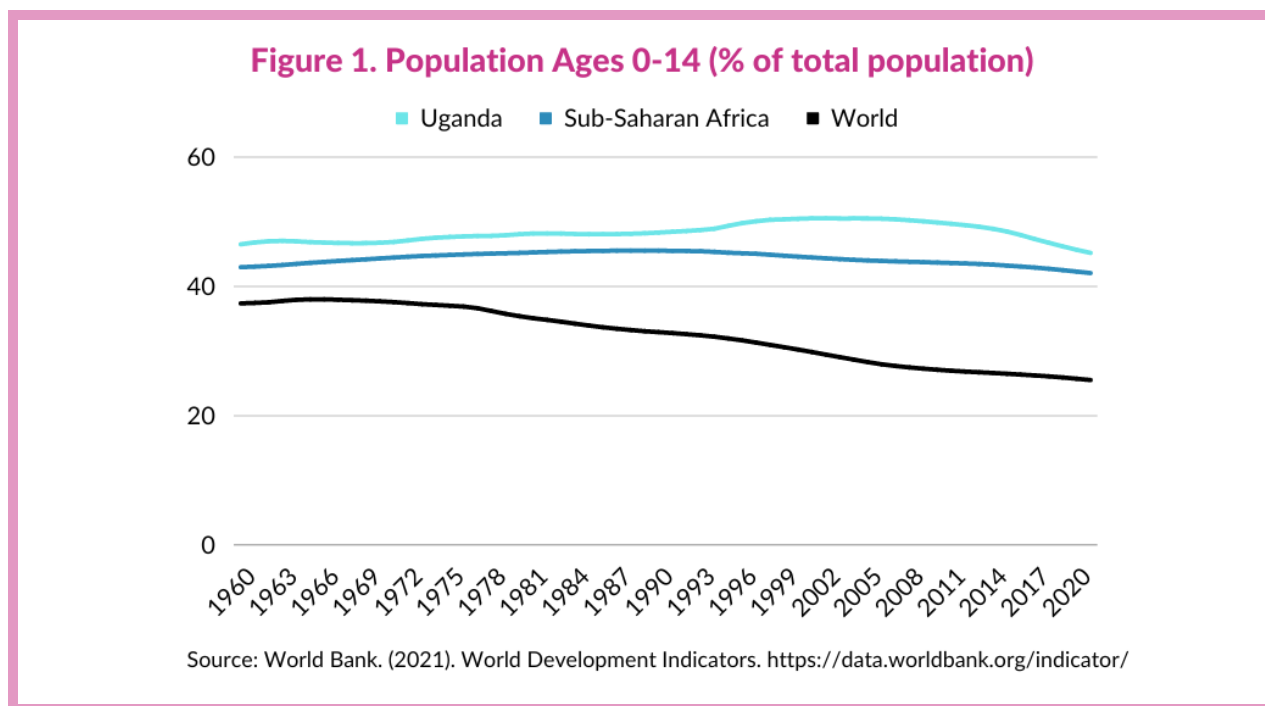
The Global Livingston Institute (GLI) is a non-governmental organization that listens and works collaboratively with local communities to address challenges in education, development, and health. The mission of GLI is to “educate students & community leaders on innovative approaches to international development and empower awareness, collaboration, conversations and personal growth” (Global Livingston Institute, 2023). The organization has worked towards this goal by continually partnering with local businesses and schools in East Africa.

In 2019, GLI and the Entusi organization embarked on a research project to identify the state of early childhood education programs, their needs, and strategies for empowering ECD improvement in Kabale, Uganda (Sharon Carnahan, personal communication, February 17, 2023). Initial interviews and site visits culminated in the Uganda School Readiness Summit at Entusi, a resort and meeting center on Lake Bunyonyi, Kabale. Driven by values of equity, sustainability, and cultural responsiveness, GLI convened local teachers and government leaders who identified major areas of concern and developed action plans for the rural Lake Bunyonyi schools—lack of teacher training and classroom resources were identified as a major barrier to implementing early childhood development widely (Carnahan, 2022). This challenge serves as the impetus for GLI’s ongoing research efforts which aim to support local communities in meeting their educational needs.



### Background on the Problem

Uganda, in line with other developing nations, has recently placed greater emphasis on meeting the educational needs of its young children. With a growing population of 48.4 million, Uganda has the second youngest population in the world and according to **Figure 1**, approximately 45% of its citizens are under the age of 14. This is significantly higher than the global average of 25% (United Nations Population Fund, 2023). The Government of Uganda (GoU) has recognized the rapidly growing youth population and the importance of investing in their early years by implementing several policy and legal frameworks aimed at ensuring equitable access to ECD services for all Ugandans.

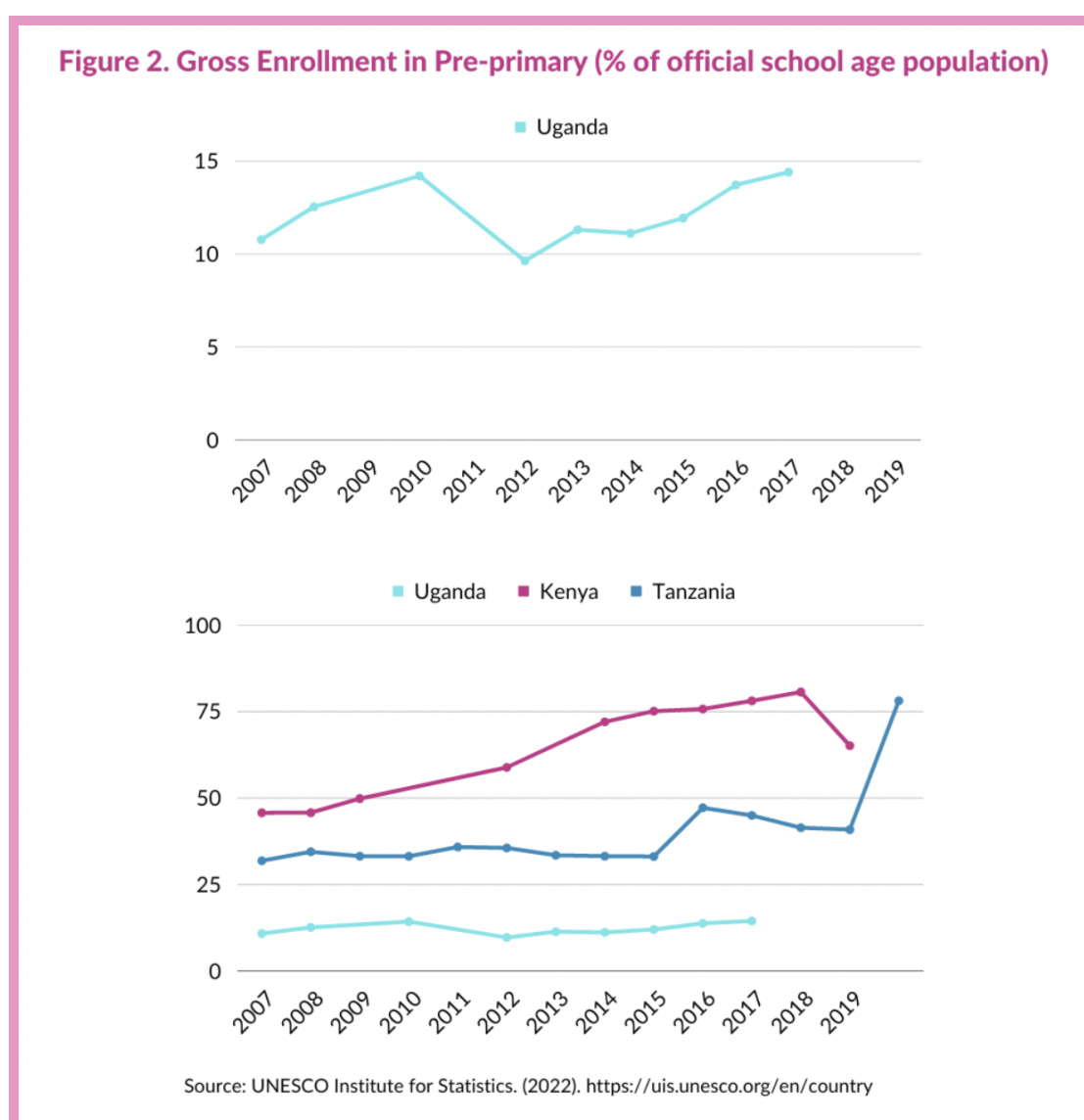


The Government White Paper on Education (1992) defines the mission and value of education in Uganda and recognizes the pre-primary level as the foundation of education (Ministry of Education and Sports, 2019). This monumental policy provided a framework for subsequent education interventions, including The Early Childhood Development Policy (2007) and the National Integrated Early Childhood Development Policy (2016). Despite these efforts, however, these policies have largely been insufficient in meeting the needs of the most marginalized populations, particularly low-income, rural households (Cambridge Education, 2017; National Planning Authority, 2020). Therefore, it is crucial to assess and address the current state of early childhood development in Uganda, especially in the aftermath of the nationwide lockdowns, to determine how to best support communities and provide every child with a strong start in life.

The Early Childhood Development Policy (2007) aimed to regulate the pre-primary sector by defining the roles of various stakeholders. Historically, ECD services have been led by

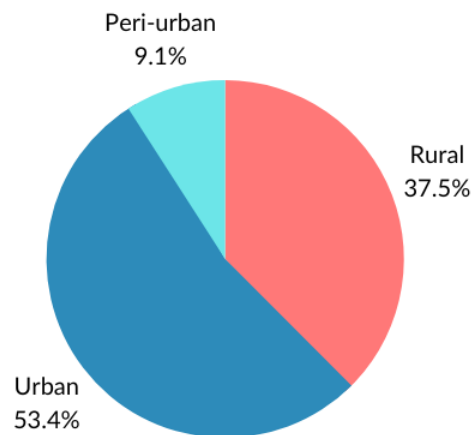
private actors, such as NGOs and for-profit providers, with limited government involvement (Ejuu, 2012). The ECD Policy attempted to provide a more comprehensive framework by assigning responsibility for the initiation and implementation of programs to the private sector and local governments, while the Ministry of Education and Sport (MoES) took on an oversight role. The government provided policy guidelines and standards but avoided any direct commitments to public funding (Ejuu, 2012; Uwezo Uganda, 2021).

The data presented in **Figure 2** indicates that gross enrollment in Uganda slightly increased after 2007, but the rate remained below 15%. This translates to a significant proportion of children, roughly 85%, who are not accessing and receiving the benefits of early childhood development (UNESCO Institute for Statistics, 2017). This contrasts with neighboring countries such as Kenya and Tanzania, which have gross enrollment rates of 65% and 77%, respectively (UNESCO Institute for Statistics, 2019, 2021).



The gap in pre-primary enrollment between Uganda and its neighboring countries is substantial, but this gap is also present within the country itself, particularly between urban and rural areas (Cambridge Education, 2017; Musisi, 2022; National Planning Authority, 2020). **Figure 3** reveals that rural areas, where approximately 75% of the country's population resides, have only 37.5% of the total ECD enrollment (National Planning Authority, 2020; World Bank, 2021).

**Figure 3. Net Enrollment in ECCE Centers by Location**

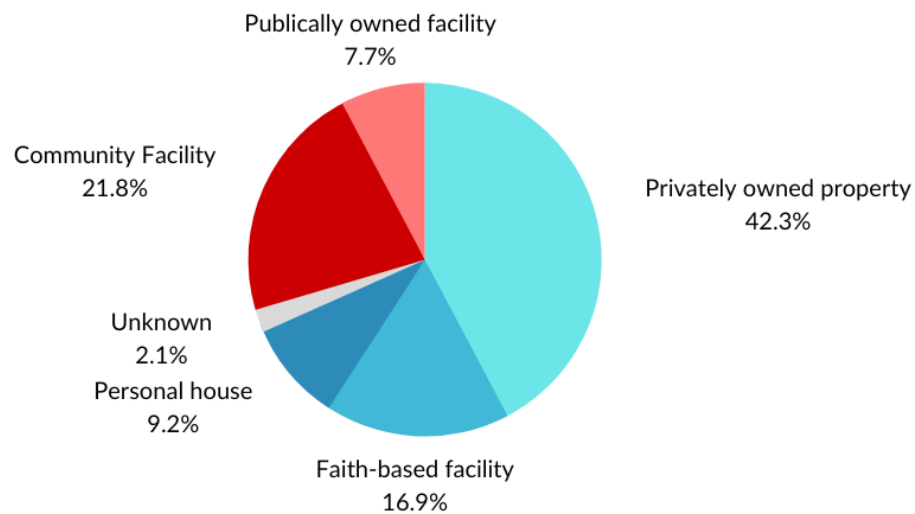


Source: Cambridge Education. (2017). Report on the existing ECE models and implementation status of the ECD policy provisions. Cambridge Education.

Growing evidence suggests that privately-driven early childhood education systems amplify educational inequity, as low-income families tend to have limited access to quality services. This results in substandard or no provision compared to wealthier families (Akkari, 2022; Penn, 2005; Woodhead & Streuli, 2013). With the rate of multidimensional poverty in rural areas (55%) more than double that in urban areas (23%), rural children are particularly vulnerable to limited and poor-quality provisions in Uganda (UNICEF, 2020). Limited resources prevent providers, teachers, and caregivers from delivering services that align with national standards and policies. This contributes to a persistent learning performance gap between rural and urban children (Burger, 2011; Sumida & Kawata, 2021; Zhang, 2006).

To address this issue, the GoU launched the National Integrated Early Childhood Development (NIECD) Policy in 2016. The policy aimed to establish more effective governance and coordination among multiple partners to deliver holistic ECD services (Ministry of Gender, Labour and Social Development, 2016). However, a 2017 survey of ECCE centers revealed that centers remained concentrated in urban and wealthy regions of the country, with limited intersectoral coordination and financing (Cambridge Education, 2017). As seen in **Figure 4**, approximately 8% of ECD centers are publically owned. Despite the ECD (2007) and NIECD Policy (2016) providing an elaborate framework for service delivery, compliance monitoring remains inconsistent, resulting in significant variations in teacher training, curricula, and materials among diverse stakeholders (National Planning Authority, 2020; Uwezo Uganda, 2021).

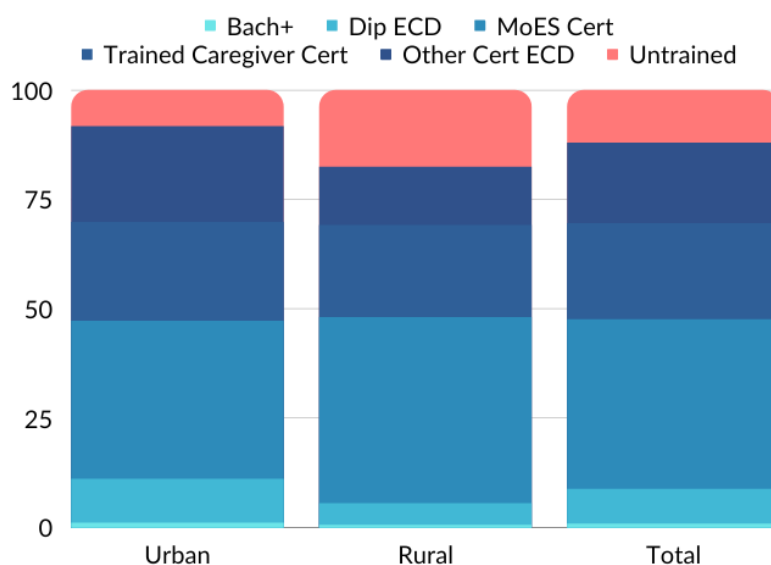
**Figure 4. Ownership of ECD Center Premises**



Source: Cambridge Education. (2017). Report on the existing ECE models and implementation status of the ECD policy provisions. Cambridge Education.

Furthermore, approximately 12% of caregivers in ECD centers lack formal training, with a higher concentration of untrained providers in rural areas. In **Figure 5**, 17.54% of rural caregivers are untrained, compared to 8.31% of urban caregivers (National Planning Authority, 2020). It is important to note that while most caregivers are trained, their qualifications vary widely, ranging from Bachelor's degrees to the more common Ministry of Education Certificate in early childhood care and education (National Planning Authority, 2020). There is no standardized implementation of the training curriculum, which undermines the effectiveness of the training and the capacity of ECD teachers to provide quality services when they enter the classroom (Cambridge Education, 2017; National Planning Authority, 2020).

**Figure 5. Qualifications of ECCE Caregivers**



Source: National Planning Authority. (2020). Planning for Increased Access to Early Childhood Care and Education Thematic Studies Final Report.

## **Consequences of the Problem**

Early childhood development plays a crucial role in establishing a solid foundation for a child's future success. Unfortunately, in Uganda, access to quality ECD services is limited, and this failure to provide quality services can generate major consequences for individuals, households, and society at large.

### **Individual**

Poor quality early childhood services can have a significant negative impact on the cognitive, social, and emotional development of children, resulting in a range of negative outcomes. Research has shown that students who do not receive quality ECD are less likely to be literate and numerate, and exhibit lower levels of social and emotional development (UNICEF, 2019). Low-quality early childhood education has been found to have limited or even negative effects on children's cognitive development (Rao et al., 2014).

### **Household**

Poor quality services can also have significant consequences on households. Parents and caregivers may have to bear the burden of caring for children who are not able to fully benefit from early childhood interventions, resulting in reduced productivity and missed work days (SABER, 2013). The impact can be particularly challenging for households from socioeconomically disadvantaged backgrounds, where pre-primary experiences can play a critical role in reducing disparities in school readiness and learning achievement (Rao et al., 2014).

### **Society**

The consequences of poor quality ECD services and their impact on society have been extensively researched and documented. Inadequate ECD can result in lower productivity and decreased economic growth, leading to a heavy financial burden on society (World Bank, 2012). The continued inaccessibility of quality provision costs Uganda in two major ways: dropout rates and grade repetition (Kan & Klasen, 2021; National Planning Authority, 2020; Winifred Kisitu, 2017). According to the Ministry of Finance, it is estimated that for every 1,000 Uganda shillings invested in Universal Primary Education, the government loses 600 shillings because of early dropouts and grade repetition, which is attributed to children not receiving the benefits of pre-primary education (2016; National Planning Authority, 2020; Winifred Kisitu, 2017).

## **Evidence on Potential Solutions**

Where early childhood development is an indicator of future academic, career, and life outcomes, ensuring that lower-income, rural communities can access quality ECD services is essential for educational equity (Akkari, 2022). Although services are a holistic issue that encompasses many areas, GLI has expressed interest in improving quality by targeting providers (Sharon Carnahan, personal communication, February 17, 2023). This approach is backed by mounting research which suggests that teacher quality plays a crucial role in improving student learning and success in programs (Buhl-Wiggers, Julie et al., 2017; Manning et al., 2019). This section examines existing research on interventions boosting the capacity of providers.

### **Pre-Service Training**

Pre-service, or initial preparation, refers to training in which an individual engages before beginning a position (National Association for the Education of Young Children (NAEYC) & National Association of Child Care Resource and Referral Agencies (NACCRRA), 2011; Radhika Mitter & Vidya Putcha, 2018). In many countries, some form of pre-service training is required for early childhood professionals to serve in a role. The driving goal is to ensure that the workforce is equipped with the tools, skills, and knowledge to provide high-quality services to young children and their families (Ministry of Gender, Labour and Social Development, 2016)

The effectiveness of in-service training for improving teaching quality and children's learning outcomes in early childhood education has been widely debated. Several studies suggest that in-service training can enhance teaching quality and improve children's learning outcomes (OECD, 2018; Wolf, 2018). For instance, pre-service training programs that focus on supporting teachers in implementing evidence-based instructional practices can improve children's language, literacy, and social-emotional skills (Neuman et al., 2019; Weiland et al., 2016). Furthermore, higher levels of pre-service training, such as a bachelor's or master's degree, are associated with better staff-child interactions in Denmark, Portugal, and the United States (OECD, 2018)

Despite the potential benefits of pre-service training, its effectiveness may depend on various factors such as the quality of the training, the content, and the implementation strategies (Hsu & Lin, 2020; Tasdemir et al., n.d.). To maximize the effectiveness of pre-service training, it is important to design and implement programs that are tailored to the specific needs of teachers and align with local needs and wants (USAID, 2015). Additionally, ongoing evaluation and feedback can help identify areas for improvement and ensure that pre-service training, whether through PTCs or private programs, is meeting its intended goals—in Uganda, this means aligning with national training curricula.

## **In-Service Training**

In-service, or ongoing training, is a form of professional development where childhood professionals continue to enhance their skills and remain current regarding knowledge and practice in the field (National Association for the Education of Young Children (NAEYC) & National Association of Child Care Resource and Referral Agencies (NACCRRA), 2011; Radhika Mitter & Vidya Putcha, 2018). This approach is meant to complement pre-service training by promoting professional development and growth beyond the initial certification program.

In-service training is important for early childhood professionals because it enables them to stay current with emerging best practices and develop new skills that can improve their teaching. It helps educators enhance their knowledge and skills, which in turn can lead to better outcomes for young children (National Association for the Education of Young Children (NAEYC) & National Association of Child Care Resource and Referral Agencies (NACCRRA), 2011; Radhika Mitter & Vidya Putcha, 2018). In Uganda, in-service training can also help teachers and caregivers meet the demands of the ever-changing ECD landscape and provide high-quality care and education to young children (Ministry of Gender, Labour and Social Development, 2016)

Several studies have examined the effectiveness of in-service training programs for early childhood educators. One study conducted in Kenya found that in-service training is related to improving teaching standards, however, it also noted that such programs must address the unique educational context. These programs failed to address more fundamental issues surrounding teaching professionalism and this gap between programs and local needs failed to improve in-service training provision (Lowe & Prout, 2019).

Despite this, recent research suggests that in-service training can enhance teaching quality by addressing some of the gaps that exist in pre-service training (Raikes et al., 2015). For example, a study that assessed the impact of in-service training on the quality ratings and child development of ECCE professionals found a moderate effect on quality and a smaller effect at the child level (Buhl-Wiggers, Julie et al., 2017). Taken together, these findings indicate that improving quality is a critical means of promoting the optimal development of young children.

In-service is a promising part of the professional development of ECD providers. The research indicates that in-service training can improve the quality of care that young children receive and enhance the skills of professionals. The aforementioned studies indicate that in-service training can compensate for insufficient pre-service training and further research is necessary to explore the most effective types of in-service training programs and to identify the most appropriate ways to implement these programs for early childhood professionals.



## **Materials and Resources**

Several studies have shown that providing material resources and pedagogical materials to early childhood educators can significantly impact the quality of early childhood development in Africa. A study conducted in Kenya found that providing teachers with learning materials led to improvements in children's cognitive development and school readiness (Tuimur & Chemwei, 2015). In Ghana, teachers and headteachers reported that the availability of teaching and learning materials (TLMs) was essential for quality provision. The study found that the lack of access to TLMs hindered children's accessibility and active interaction with them.

Therefore, schools and centers should ensure that TLMs are available and accessible and that children are encouraged to interact with them, particularly as the DoES emphasizes play-based learning (Department of Early Childhood Education, University of Education, Winneba, Ghana & Oppong Frimpong, 2021). Indeed, the study also found that play-based pedagogical approaches, as represented in the availability and use of pedagogical materials (storybooks, classroom material, playthings) matter in improving early learning outcomes (Diane Coury & Diana Ortiz, 2019). However, pedagogical materials are not always used appropriately, indicating a lack of knowledge and skills in how to effectively use them.

## Evaluative Criteria

The outcomes of each alternative are assessed on four evaluative criteria—cost, effectiveness, administrative feasibility, and equity. As expressed by the client, the largest resource constraints are cost and administrative feasibility which are weighed the highest (Sharon Carnahan, personal communication, February 17, 2023). The alternatives will be ranked Low, Medium, and High according to the extent that they achieve the desired outcome described below. **Appendix A** provides additional information on each criterion.

### 1. Cost

Cost examines the economic expenses involved in developing and implementing a policy option, taking into account personnel, materials, technology, and other resources. Due to budget constraints in the ECD sector, cost holds significant weight, and GLI must ensure that alternatives are financially viable and sustainable. To accurately compare options with varying time frames, cost estimates are calculated on an annual basis, and expressed as a present value in USD that accounts for inflation and exchange rates. Costs are ranked according to a scale provided by GLI where a Low rating is anything below \$5000 per year, Medium rating is between \$5000 and \$8000 per year, and a High rating is more than \$8000 per year. Ratings will be adjusted by evaluating the long-term costs. Detailed cost calculations are presented in **Appendix B**.

### 2. Effectiveness

Effectiveness measures how well a policy option enhances the ability of providers to deliver quality services. Given limited research on early childhood development in Africa, effectiveness is weighted down and the report evaluates similar programs and conducts a literature review. To ensure sustainability, the long-term effects and whether additional policies and practices are needed for sustained benefits will also be considered. A High rating indicates strong potential for intended outcomes and lasting impact, supported by evaluation in similar contexts. It implies that the policy option has been tested and shown to be effective in similar contexts, providing confidence in its potential success. A Low rating suggests a limited impact on improving providers and unlikely success in achieving quality services.

### 3. Administrative Feasibility

Administrative feasibility measures whether a policy option can be effectively and efficiently implemented by GLI or other administrative bodies, such as NGOs, PTCs, and ECD centers. This assessment considers the resources, capacity, and infrastructure required to execute the policy given the existing landscape. A Low rating indicates that implementing the policy would require significant additional resources, capacity building, and infrastructure and may not be achievable within Uganda's policy and legal framework. By prioritizing highly feasible policy options, GLI and other administrative bodies can maximize their impact and ensure the sustainability of their CD interventions in the long term.

#### 4. Equity

Equity is determined by whether an alternative promotes greater quality improvements for communities disproportionately affected by no or low-quality services. In Lake Bunyonyi, equity is assessed based on how well the alternative ECD policy addresses the needs of rural communities, which are more vulnerable to the lack of or low-quality services. Levels of equity will be ranked High, Medium, or Low, with High meaning that the policy directly supports rural communities and Low meaning that the policy either harms or generates no effect.

## Policy Alternatives & Evaluation

### Alternative 1: Pre-Service training

GLI will provide technical assistance to Kabale University to ensure that its curriculum aligns with government standards. While District Education Officers (DEOs) and the Directorate of Education Standards (DES) monitor and inspect Primary Teacher Colleges (PTCs), the DES only offers basic support due to limited government participation in Early Childhood Development, as noted by the National Planning Authority (2020). PTCs need additional support in implementing training frameworks and GLI can support and complement government efforts as a non-governmental organization. Directing attention towards PTCs prepares teachers from the beginning, and GLI can provide the latest research and best practices in the field to help universities and colleges train teachers effectively.

#### **Cost - UGX 143,722,335 (\$38,400) per year**

In a report released by the Ministry of Gender, Labour and Social Development, the average PTC has six tutors and no more than two tutors have ECD specialization (2020). The majority of PTCs reported inadequate human and financial resources for training providers because there is no budget within the government to hire fully qualified providers and PTCs depend on meager tuition and limited donor support (National Planning Authority, 2020). In other words, approximately four out of six ECD tutors at Kabale University are underqualified.

As such, this policy option trains four ECD tutors and pays them a competitive salary to attract and retain tutors at Kabale. This alternative will span two years which is the length of a Bachelor of Education (Early Childhood) program at Kabale (Kabale University, 2023).

- The average salary of an ECD tutor is UGX 24,700,000 (\$6,600) per year (*Tutor Average Salary in Uganda 2023 - The Complete Guide*, n.d.)
- UGX 24,700,000 (\$6,600) x 4 tutors x 2 years = UGX 197,600,000 (\$52,800)

Furthermore, there are no designated spaces within the PTCs for training caregivers. This alternative requires renting a space for approximately 15 weeks each semester at Kabale. Students take 15 credits per semester and two semesters each academic year, meaning that the total time in a classroom is 15 hours per week (Kabale University, 2023).

- Classroom rentals are between UGX 56,139 (\$15) to UGX 130,992 (\$35) per hour (*Meeting Rooms Kampala - Boardroom Hire | Regus*, n.d.). I will approximate the rental cost at UGX 93,565 (\$25) an hour x 15 hours a week x 30 weeks in a year x 2 years = UGX 84,208,500 (\$22,500)

Adjusted for inflation, the total cost is UGX 143,722,335 (\$38,406) which makes this alternative high cost.

### *Effectiveness - Medium (2)*

A study published in 2017 found that pre-service training had a positive impact on teacher effectiveness in Uganda, as measured by teacher self-assessments (Britto et al., 2017). Another paper found that training programs emphasizing practical, classroom-based experience were more effective in improving teacher quality than those relying solely on theoretical coursework (Pearson et al., 2017). This is an important finding because practical, hands-on training aligns with Uganda's national teaching standards, and tutors and the university administrator will presumably ensure that pre-service training is up to national standards.

However, a possible limitation is the level of support provided to trainees after the program itself. Centers should provide consistent support to these teachers after the training program itself—according to the NIECD, pre-service training should be complemented by in-service training (Ministry of Gender, Labour and Social Development, 2016). This indicates that pre-service training must be complemented by other practices and policies to generate sustained improvements in teacher quality.

As such, this alternative is medium feasibility because it generates quality improvements for providers but the effects are not sustained on its own.

### *Administrative Feasibility - Low-Medium (1.5)*

Pre-service training involves coordinating between the government, the private sector (GLI), and the public PTC (Kabale University). In Uganda, the provision of services has primarily been left to the private sector with the government playing an oversight role through District Education Officers (DEOs) and the Directorate of Education Standards (DES) who inspect and monitor PTC but at a limited capacity due to lack of funding and resources. In the meanwhile, there has been limited coordination between PTCs and the private sector. The NIECD calls for more coordination between multiple sectors but limited progress has been made over the past few years, especially because the country is still recovering from the longest nationwide school closures during the pandemic. GLI has not worked with Kabale University in the past and this alternative would require building a new partnership from the ground up, a challenge that is compounded by the fact that Kabale is still 1.5 hours away from the closest Lake Bunyonyi school.

This alternative is low-medium feasibility because there is a policy precedent for GLI to implement pre-service training, however, it would be difficult for GLI and Kabale University to jointly implement this alternative given that there is no prior relationship between the two organizations and it requires new coordination between the private and public sector.

### *Equity - Low (1)*

Even if teachers are adequately trained, there is no indication that qualified teachers will seek employment in lower-income, rural communities. The average salary of rural centers is lower than urban and suburban centers and low pay for caregivers is one of the major

causes of centers' failure to attract and retain qualified and experienced staff (National Planning Authority, 2020). Trained providers will most likely gravitate towards higher-paying schools and centers unless additional policies incentivize them to teach in lower-income schools.

This alternative is low equity because it does not promote greater quality improvement for low-income communities. Qualified teachers may not seek employment in Lake Bunyonyi schools.

## Alternative 2: In-Service Training

To address this gap, the Global Livingston Institute will deliver workshops and feedback to teachers through “technology leapfrogging” (Winthrop, 2018). Technology can help education “leapfrog” by directly delivering personalized content to ECD providers who cannot access it through traditional channels, such as PTCs, due to geographic isolation or limited resources (Vegas et al., 2019). In particular, the OER4Schools program is a promising professional development program. It uses free and modifiable open educational resources (OER) to facilitate 28 teacher-led workshops. These workshops consist of discussion, teaching skills, exploration and clarification of pedagogical concepts, technical skills, and activities using technology that is available in the individual school context (Hennessy et al., 2016a).

### Cost - UGX 32,181,376 (\$8,600) per year

The OER4Schools curriculum is freely available as an OER, but additional costs include infrastructure development and technical support (Saalim Koomar et al., 2020; *The OER4Schools Professional Learning Resource - OER in Education*, n.d.). When the OER4Schools program was piloted in a Zambian primary school, they set up a teaching lab with four laptops. In Lake Bunyonyi, there are seven public schools with attached ECD centers. Implementing the program in a similar format would require approximately 28 devices (Carnahan, 2022).

- Given that the program can be implemented on mobile devices and that GLI has indicated a preference towards solar-powered tablets, 28 low-cost tablets will cost roughly UGX 14,671,129 (\$3,920) at UGX 523,968 (\$140) per device (Malakata, 2021).
- A subscription to 4G internet connection is roughly UGX 100,000 (\$26.72) per month. To implement the program for one year (the projected time it takes to complete 28 workshops), internet connection will total UGX 1,200,000 (\$320) (Ventura, 2021).
- Finally, previous iterations of the program included technical support in the form of a program facilitator. To manage seven centers, GLI will dedicate funds towards a part-time program facilitator at an average salary of UGX 27,001,700 (\$7,215) x 0.5 = UGX 13,500,850 (\$3,607) (*Average Education Coordinator Salary in Uganda for 2023*, n.d.).

Adjusted for inflation, the total cost is UGX 32,181,376 (\$8,599) per year.

This alternative is high cost according to GLI’s scale but it is adjusted to medium-high because the large initial technology set-up costs are limited to the first year and there is still the option to reduce technology costs by delivering training through non-digital learning.

### **Effectiveness - High (3)**

There are few to no studies examining in-service training in early childhood professions, however, one study examines the effect of in-service teacher training on supporting and enhancing the professional development of primary school teachers in Uganda (Bonney et al., 2021). It looks at informant interviews and questionnaires of three districts in southwestern Uganda that neighbor Lake Bunyonyi. In a sample of 610 primary teachers and education stakeholders, over 97.34% agree that in-service training enables them to acquire new skills and knowledge and 90.77% agree it enables them to provide quality education to learners.

Furthermore, a qualitative, in-depth study of OER4Schools in Zambian primary schools yields promising results in improving teacher quality. The study found that participating teachers were more able to adapt lessons to the knowledge levels of pupils, raised their expectations of pupil capacity, and incorporated more interactive teaching into their classes. Moreover, teacher interviews showed that the initiative became self-sustaining, where even after the pilot, participating teachers continued to facilitate the program (Hennessy et al., 2016a)

As such, this alternative is highly effective because it directly improves the quality of ECD providers without requiring additional policies and practices.

### **Administrative Feasibility- Medium (2)**

In addition to the NIECD, Uganda continues to conform to the ECD Policy (2007). This policy recognizes the importance of pre-and in-service training but places the MoES in an oversight role. In-service training, as well as initial training for ECD teachers, is typically conducted by private institutions, including NGOs and for-profit providers (National Planning Authority, 2020). Therefore, it is feasible for the GLI to implement in-service training in public schools. The decentralized structure of the OER4Schools program also allows it to be adapted to local contexts and translated into different languages.

Local educators and government leaders in GLI's School Readiness Summit of 2019 have identified teacher training as a key priority, indicating that community members and schools would likely support the delivery of in-service training. A possible limitation, however, is infrastructure development. This program may be difficult to implement in Lake Bunyonyi due to its location—Lake Bunyonyi schools are geographically isolated and have low connectivity (Hennessy et al., 2016a). With that being said, the curriculum makes it possible to implement the program without technology or expensive inputs, given that the education provider pays for the printing and distribution of materials (Saalim Koomar et al., 2020). Nevertheless, GLI has indicated an interest in leapfrog technology and I will assume that they want to implement the program at its full capacity (Sharon Carnahan, personal communication, February 17, 2023).

This alternative is medium feasibility because there is a policy precedent for GLI to implement in-service training and there is buy-in, however, GLI may encounter unique administrative challenges given Lake Bunyonyi's unique context.



### *Equity - High (3)*

OER4Schools is suitable for low-resourced schools and freely available as an OER (Saalim Koomar et al., 2020). The program also incorporates materials for contexts with and without access to technology because it focuses on pedagogy rather than technology usage; therefore, lower-income communities will be able to implement in-service training despite potential internet and technology challenges, although there is no study on how this impacts the effectiveness of the program (Hennessy et al., 2016b).

This alternative is high equity because it directly promotes greater quality improvement for low-income communities by working directly in targeted Lake Bunyonyi schools.

### Alternative 3: Material and Resource Support

This policy option improves the quality of ECD teachers by providing them with adequate teaching and learning materials. GLI identified insufficient access to printed resources as a key concern among providers in Lake Bunyonyi. There are national curriculum standards, however, teachers are often underprepared to construct effective lesson plans on their own (National Planning Authority, 2020; Sharon Carnahan, personal communication, February 17, 2023). To address these concerns, GLI can identify educational resources such as lesson plans, teaching materials, storybooks, and technical support and adapt them to align with the local context and national curriculum.

#### Cost - UGX 24,490,540 (\$6,500) per year

The costs of this alternative are associated with printing and distributing materials. GLI has indicated that they are interested in identifying and providing open educational resources which can be accessed online (National Planning Authority, 2020; Sharon Carnahan, personal communication, February 17, 2023). Accessing teaching and learning material through digital libraries and networks is free, and often, modifiable. To modify OER to the local contexts and needs of seven individual schools, I propose hiring a part-time curriculum developer.

- The average salary of a curriculum developer = UGX 15960000 (\$4,264) x 0.5 part-time = UGX 7,980,000 (\$2,132) (Curriculum Developer Average Salary in Uganda 2023 - The Complete Guide, n.d.)
- Given that each center is isolated and it's not feasible for GLI to personally deliver materials to seven centers, it's important to provide a wireless printer at each school: UGX 220,000 (\$58) x 7 = UGX 1,540,000 (\$411) ("Hp Deskjet 2710 Wireless Office Printer | Printers Shop Kampala Uganda," n.d.)
- The cost of supplies and materials can be derived from school fees which range from UGX 29,941 (\$8) to UGX 41,168 (\$11) (per term (*Build an Early Childhood Education Centre, Uganda*, 2019)). School materials represent only a smaller portion of school fees because these fees are also used to pay for teacher salaries, meals, school maintenance, etc. I will estimate that material and supply costs are approximately UGX 14,970 (\$4) each term (Sharon Carnahan, personal communication, February 17, 2023). There are approximately 500 children aged 3-5 across seven Lake Bunyonyi centers. The material cost for GLI to implement a new curriculum is (Carnahan, 2022):
  - UGX 14,970 (\$4) school materials x 500 students x 2 terms per year = UGX 14,970,540 (\$4000)

Adjusted for inflation, the total cost is UGX 24,490,540 (\$6,544) per year.

This alternative is medium cost according to GLI's scale but adjusted to low-medium because the bulk is the initial set-up of printers which is limited to the first year.

### **Effectiveness - Medium (2)**

Providing curriculum and lesson plans to teachers can improve teaching quality in Africa, but the effectiveness of this policy option depends on several factors, such as the quality of the curriculum and lesson plans provided, the level of teacher training and support, and the availability of teaching resources and materials (Cambridge Education, 2017).

In general, teachers who have access to well-designed curricula and lesson plans are more likely to provide structured, effective instruction that meets the learning needs of their students. However, it is important to note that simply providing teachers with curricula and lesson plans is not enough to improve teaching quality. Teachers also need adequate training and ongoing support to effectively implement the curriculum and lesson plans in their own classrooms (Winthrop, 2018).

This alternative is medium feasibility because it generates quality improvements for ECD providers but the effects are not necessarily sustained without additional training.

### **Administrative Feasibility - High (3)**

GLI has previously worked with the nonprofit, *enjuba*, to provide storybooks to teachers and schools in Lake Bunyonyi. Scaling up this policy option to include lesson plans and teaching materials for seven schools is feasible because it builds upon existing relationships between GLI and local businesses and centers. Furthermore, this would advance the NIECD goals of more coordinated ECD services between the private and public sectors (National Planning Authority, 2020)

This alternative is highly feasible because the partnership between GLI and local ECD centers has been already established, making it likely for GLI to implement the alternative. Additionally, a form of this alternative has already been implemented.

### **Equity - High (3)**

Given that the majority of the resources will be free or low-cost, this alternative aids all students regardless of their economic background by providing materials directly to Lake Bunyonyi schools. This would particularly benefit low-income households, as they often struggle to pay additional fees and costs associated with education expenses (Cambridge Education, 2020). By directly providing teachers and schools with instructional materials, this policy option would partially eliminate the burden on families to pay for these education expenses.

This alternative is high equity because it places resources directly in low-income schools.

### Outcomes Matrix

Criterion	Cost (30%)	Effectiveness (20%)	Administrative Feasibility (25%)	Equity (25%)	Final Score
Pre-Service Training	\$38,400 (1)	Medium (2)	Low-Medium (1.5)	Low (1)	1.33
In-Service Training	\$8,600 (1.5)	High (3)	Medium (2)	High (3)	2.30
Instructional Material	\$6,500 (2.5)	Medium (2)	High (3)	High (3)	2.65

### Recommendation

I recommend GLI identify and provide material and resource support that is adaptable to Lake Bunyonyi schools. Given that the GLI and Lake Bunyonyi schools have limited financial and material resources, the limited costs and high feasibility and equity of this option make it an attractive alternative. Although pre-and in-service training would likely be more effective in sustaining the overall quality of ECD provisions in the long run, the reality is that many schools in Lake Bunyonyi may not have the resources to invest and implement such training.

By providing material and resource support, GLI can help bridge this initial gap and ensure that children in the region have access to quality provisions regardless of their family's financial situation. This option directly addresses poor provisions due to poor curriculum alignment and builds on existing work that GLI has already done to provide resources to lower-income, rural centers.

## Implementation

### **Step 1: Evaluate existing lesson plans and curriculums at Lake Bunyonyi Schools**

Due to the pandemic and nearly two years of school closures in Uganda, GLI should re-evaluate the current state of Lake Bunyonyi classrooms. Local educators and administrators convened for GLI's School Readiness Summit in 2019 and identified classroom materials as a key concern in implementing the national curriculum. As such, GLI should revisit the seven pre-primary centers they visited before the pandemic and evaluate the teaching and learning conditions at school. As GLI has already worked with these schools, I anticipate limited resistance to working with GLI once again, especially because this option presents little to no cost to the school.

### **Step 2: Research gaps between existing teaching materials and the national curriculum**

The next step is identifying gaps between the local school curriculum and the national curriculum. This requires researching Uganda's national education policies as well as working with the DEOs of the respective school. GLI should use this research process to identify specific gaps and potential opportunities for improved curriculum within the individual Lake Bunyonyi schools since educational needs are on a school-by-school basis. A potential challenge is working with DEOs because pre-primary centers tend to operate with limited interference from district officials (Sharon Carnahan, personal communication, February 17, 2023). Nevertheless, establishing this relationship is important to implement the program at scale, as well as increasing access to local government funding and resources (including data collection).

### **Step 3: Identify and adapt free or low-cost lesson plans to the Lake Bunyonyi context**

GLI should utilize open education resources to find lesson plans and curriculums that can fill in the gaps identified in Steps 1 and 2. From there, GLI officials should hire and train a local curriculum developer to adapt the lesson plans to the local context of Lake Bunyonyi schools. Given that GLI has an office in Uganda, this requires working with local teachers and administrators to rework the online lesson plan and provide technical assistance in implementing it. GLI must work with local providers to ensure that they have agency in deciding and crafting the types of materials that they will be teaching in the classroom. Receiving the approval of teachers is essential in ensuring that the material will be implemented in the classroom.

### **Step 4: Pilot and test the adapted lesson plans in the seven Lake Bunyonyi classrooms**

Once the adapted lesson plans are developed, GLI should pilot them in a select number of Lake Bunyonyi classrooms to test their effectiveness. GLI should work with local teachers and administrators to implement the new curriculum in a way that is feasible and sustainable for the school. This includes providing additional training to teachers, ensuring that the curriculum aligns with the school's goals, and collecting feedback from teachers, students, and parents to assess the curriculum's impact. Based on the feedback received, GLI should revise and refine the lesson plans as needed.

### **Step 5: Scale up and disseminate successful lesson plans to other schools**

After piloting and refining the lesson plans, GLI should disseminate them to other pre-primary centers in the Lake Bunyonyi area. This can be done through partnerships with local government agencies, NGOs, and other education organizations. GLI should also provide technical assistance to schools that adopt the new curriculum to ensure effective implementation. Finally, GLI should continuously monitor and evaluate the effectiveness of the curriculum in the schools that adopt it, making any necessary adjustments to ensure its continued success.

### **Conclusion**

The government has implemented several national policies to improve early childhood development in Uganda, including The Early Childhood Development Policy of 2007 and the National Integrated Early Childhood Development Policy of Uganda (NIECD) of 2016-2021. These policies provide a comprehensive framework for the provision of early childhood development services, as well as regulatory oversight of the sector providers (Khamis, 2022), however, they fail to fundamentally address the challenges encountered by early childhood students, teachers, and their communities. The matter is, providers are ill-prepared to effectively deliver services due to a lack of investment into improving the capacity of teachers, and even when students do access these services, it is often low quality.

Adapting free and low-cost open education resources to Lake Bunyonyi contexts has the potential to improve services in Uganda, especially for lower-income schools that struggle to deliver quality services with limited resources. By working with teachers and administrators at seven local schools, GLI can ensure that teachers have access to lesson plans and curriculums that align with national standards, therefore ensuring that lower-income, rural schools are not lagging behind wealthier, urban schools that have access to high-quality instructional materials.

## Appendix A: Criteria

The designation of effectiveness, administrative feasibility, and equity are the following:

- **Low (1):** criteria dissatisfied
- **Low-medium (1.5):** criteria somewhat dissatisfied
- **Medium (2):** neutral
- **Medium-high (2.5):** criteria somewhat satisfied
- **High (3):** criteria totally satisfied

The client has expressed the following scoring scale for the cost (Sharon Carnahan, personal communication, February 17, 2023).

- **Low (3):** <\$5000 per year
- **Medium (2):** \$5000 - \$8000 per year
- **High (1):** >\$8000 per year

**Table 1: Evaluation Criteria**

Criterion	Evaluation	Method	Weight
Cost	The extent to which a policy option produces economic expenses associated with developing and implementing it.	Calculate the total costs based on personnel, materials, equipment, etc.	30
Effectiveness	The extent to which a policy option improves the quality of ECD providers.	Literature review; examine similar programs.	20
Administrative Feasibility	The extent to which a policy option can be implemented by the Global Livingston Institute or other administrative bodies.	Literature review; personal communications with experts.	30
Equity	The extent to which a policy option promotes greater quality improvements for low-income communities.	Literature review; evaluate the likelihood of the policy being implemented evenly in rural Uganda.	20

## Appendix B: Costing

Given that the costs of each alternative uses data from multiple years, I need to translate the costs to 2024 when the alternatives will be implemented. I divide the projected CPI for 2024 by the CPI for X Year (the year of the data) to calculate the inflation rate. I then multiply the cost in X Year by the inflation rate to get the adjusted figure for 2024. If the cost is in US dollars, I use an exchange rate of \$1 equals UGX 3,742.64 (*USD To UGX: Convert United States Dollar to Ugandan Shilling - Forbes Advisor, 2023*)

Using data from the Uganda Bureau of Statistics, I will be using the January CPI of the following years:

- |                         |                      |
|-------------------------|----------------------|
| • January 2024 - 129.19 | Inflation Rate: 1    |
| • January 2023 - 126.19 | Inflation Rate: 1.02 |
| • January 2022 - 114.30 | Inflation Rate: 1.13 |
| • January 2021 - 111.3  | Inflation Rate: 1.16 |
| • January 2020 - 109.1  | Inflation Rate: 1.18 |
| • January 2019 - 106.4  | Inflation Rate: 1.21 |

### Alternative 1: Pre-Service Training

#### Tutor

- This data is from 2023
- Average salary of ECD tutor is UGX 24,700,000 (\$6,600)
- UGX 24,700,000 (\$6,600) x 4 tutors x 2 years = UGX 197,600,000 (\$52,800)
- UGX 197,600,000 (\$52,800) x 1.02 inflation = **UGX 201,552,000 (\$53,859) in 2024 value**

#### Space

- This data is from 2023
- UGX 93,565 (\$25) an hour x 15 hours a week x 30 weeks in a year x 2 years = UGX 84,208,500 (\$22,500)
- UGX 84,208,500 (\$22,500) x 1.02 inflation rate = **UGX 85,892,670 (\$22,952) in 2024 value**

#### Total

- **UGX 201,552,000 (\$53,859) + UGX 85,892,670 (\$22,952) = UGX 287,444,670 (\$76,812) for two years. To make a fair comparison across outcomes, I calculate the per year cost: = UGX 143,722,335 (\$38,406) per year**



## Alternative 2: In-Service training

### Tablets

- This data is from 2021
- UGX 523,968 (\$140) per device x 28 devices = UGX 14,671,129 (\$3,920)
- UGX 14,671,129 (\$3,920) x 1.16 inflation rate = UGX 17,018,509 (\$4,547)

### Internet

- This data is from 2021
- UGX 100,000 (\$26.72) for one month of 4G connection x 12 months = UGX 1,200,000 (\$320)
- UGX 1,200,000 (\$320) x 1.16 inflation rate = UGX 1,392,000 (\$371)

### Personnel Costs

- This data is from 2023
- Salary of UGX 27,001,700 (\$7,215) x 0.5 = UGX 13,500,850 (\$3,607)
- UGX 13,500,850 (\$3,607) x 1.02 inflation rate = UGX 13,770,867 (\$3,679)

### Total

- UGX 17,018,509 (\$4,547) + UGX 1,392,000 (\$371) + UGX 13,770,867 (\$3,679) = UGX 32,181,376 (\$8,599) per year

## Alternative 3: Material and Resource Support

### Curriculum Developer

- This data is from 2023
- Salary of UGX 1,330,000 (\$355) x 0.5 part-time = UGX 665,000 (\$177)
- UGX 665,000 (\$177) x 1.02 inflation rate = UGX 678,300 (\$181)

### Printer

- This data is from 2024
- UGX 220,000 (\$58) x 7 = UGX 1,540,000 (\$411)

### School Materials

- This data is from 2024
- UGX 14,970 (\$4) school materials x 500 students x 2 terms per year = UGX 14,970,540 (\$4000)

### Total

- UGX 7,980,000 (\$2,132) + UGX 1,540,000 (\$411) + 14,970,540 (\$4000) = UGX 24,490,540 (\$6,544) per year

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