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PROBLEMS OF CURRICULUM RELEVANCE IN ENHANCING CHILDREN'S COGNITIVE DEVELOPMENT IN ECE IN ETHIOPIA

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Abstract

The study aimed at assessing Problems of Curriculum Relevance in Enhancing Children's Cognitive Development in Early Childhood Education (ECE) in Ethiopia. An explanatory sequential research design was employed through a multistage random sampling technique to collect primary data from the participants (N_i=260) through questionnaires and observations. Descriptive and inferential statistics were used to analyze the collected data through questionnaires; thematic analysis was used for open-ended questionnaires and observation checklists. The first finding was that about 87% of the preprimary school teachers were not trained in ECE Curriculum. Secondly, the curricula under usage were poorly helped children daily to develop measuring units of the physical properties (length, weight, temperature, money, collecting & organizing information, and solving quantitative problems). Thirdly, teaching methodologies (discussion, categorization, explanation, and brainstorming) used by teachers contributed 79.21% to ECE Curriculum. Finally, lack of appropriate training, irrelevant curriculum resources, and teaching methods were the major identified problems in the ECE curriculum. In conclusion, the reasons for poor cognitive development identified in this study in Ethiopia's ECE Curriculum were poor teacher training and poor professional development, inconsistent and fragmented curriculum implementation, limited resources and learning material, inadequate implementation of play-based learning, cultural and language barriers, socioeconomic factors, and family support.

Keywords: Cognitive development, early childhood education, psychology.

INTRODUCTION

Laying its foundation on Church and Quran education, modern ECE was started at the end of the 19th century. Since then, several governmental and non-governmental organizations have done much work. Among the efforts, the national ECE policy framework, which was formulated in 2010, and the establishment of the Centre for ECE, in 2014, at Addis Ababa University can be mentioned as significant milestones in changing the landscape of ECE in Ethiopia. Because of the lack of coordinated efforts among stakeholders, ECE resources are fragmented and efforts are duplicated. To solve these problems, the Centre for ECE, Addis Ababa University, National Education Assessment and Examination Agency (NEAEA), USAID Ethiopia, Ethiopian School Readiness Initiative (ESRI), and Whiz Kids Workshop have initiated the establishment of this collaborative ECE knowledge Hub in 2020 intending to gather ECE-related resources from various organizations and make them available to researchers, educators, academics, students, policymakers, and anyone interested in ECE (Tirussew, Teka, Belay, Belay, & Demeke, 2009; Belay & Belay, 2016; Belay, 2018; MoE, 2020). Until 2020, ECE had no vision, mission, objectives, programs, or program coordinators as a nation, regionally, and nationally in Ethiopia.

Although early childhood education (ECE) has a lengthy history, major developments occurred about 1990 that led to ECE's international recognition as a separate area of study. On 20 November 1989, the UN General Assembly formally adopted the Convention on the Rights of the Child (CRC) while in fact, signing commenced on 26 January 1990, with 61 countries signing the document that very day. By September 1990, 20 more countries ratified the Convention, bringing it into international law. The Convention was "ratified more quickly and by more countries than any previous human rights

instrument" (UNICEF, 2001: P.1). In March 1990, the World Conference on Education for All (EFA) was held in Thailand, and the importance of ECE was emphasized as a crucial part of basic education in that Conference. Article 5 of the document provided ECE with a place at the table which stated that learning begins at birth. This calls for ECE initial education (UNESCO, 1990). In 1994, the Carnegie Institute's Task Force on Meeting the Need of Young Children paved another key front in an effort to better understand the needs and challenges of early development. Starting its report with "Meeting the Needs of Our Youngest Children", the Task Force's central focus of discussion was on the importance of the early years- as a key period for brain development. The World Bank (1994) took this report quickly and started to advocate the importance of healthy child development as a key to broader social and economic development.

In April 2000, "Education For All" follow-up conferences took place in Dakar, Senegal, and Early Childhood Care and Education were further enhanced in this Conference, as the delegates were committed to several goals, the first of which was "expanding and improving early childhood care and education, especially for the most vulnerable and disadvantaged children" (UNESCO, 2006: p.45). This being the case, the 2007 EFA Global Monitoring Report on Children Education and Care reported; however, that millions of children in Sub-Sahara Africa still lack access to ECE. Particularly, education and care for children under the age of 3 years are left to parents, private bodies, and non-governmental organizations. Participation in pre-primary education in this region remains low compared to the population of children it was supposed to have served. Some of the major reasons mentioned for lowering participation include poverty and cost. Due to these and other related problems, Ethiopia, Lesotho, Namibia, Rwanda, and Uganda, for example, are reported to have almost their pre-primary schools owned by the private sector. The role of the public sector is minimal or non-existent. Pre-primary education in Sub-Saharan Africa is actually still in poor condition, and the region's development pace is modest.. In addition to the small coverage, the existing services do suffer from poor quality, resulting in poor preparation of teachers and poor provision of facilities (UNESCO, 2006; Belay & Belay, 2016; Belay, 2018).

In Ethiopia, the gross enrollment rate of pre-primary education is only 2.7%. Even this small percentage accounts only for urban areas, and the largest children population in the rural areas do not have access to pre-primary education. Furthermore, the existing urban-based early childhood education establishments are also not open to children with disability. More importantly, information on early childhood care and education activities in this country is poorly documented, and whatever is available is sketchy (Tirusew *et al*, 2009). Children aged 0 to 6 years constitute a large section of the Ethiopian population according to the national census conducted by the Central Statistics Agency [CSA] (CSA, 2009). Over 16% percent of the then, 74 million populations, that is, about 12 million were under this age category, and above 10% were in the ages 3 to 6 years. However, ECE is one of the most neglected areas in Ethiopia. According to the Annual Educational Statistical Abstract of the Ministry of Education [MoE] (MoE, 2010; Belay and Belay, 2016; Belay, 2018), the gross enrollment rate of Kindergarten (KG, ages 3 to 6) was only 6.2% and mainly concentrated in urban areas. Besides, the need for children's development has been duly recognized in the country's education, health, and social welfare policies. The Ethiopian health policy has also proclaimed the need to facilitate children's and family health care to combat childhood diseases. Parallel to this, the Ethiopian Education and Training Policy [ETP] (1994) highlights the need for children's overall development during the preschool years. Likewise, the nation's social welfare policy (1996) outlines the country's commitment to fulfilling various social services targeting the care and security of children was under great question so far.

In tune with the international commitment, the Ethiopian Government has embarked on a continuous process of reengineering the issue in its education and training policy and the past four Education Sectors Development Plans (ESDPs). The first five-year plan of the ESDP-I was launched within the framework of the (ETP, 1994) and the following three-year ESDP-II did not consider ECE as necessary for the nation's children. Not until the third five-year ESDP-III, was ECE given the needed policy support by the government to create a conducive policy environment and support mechanisms

for the participation of various stakeholders which was not implemented as immediately as possible. ECE received much focus in ESDP-IV (2010 to 2014/15), which provided a useful analysis of lessons learned from ESDP-III (2005/06 to 2010/11). Tangible program outcomes and targets were set more than ever before the preceding ESDPs through different approaches to meet the objective of ECE as stipulated in (EFA, 2000) Dakar documents. It has placed mainly two key outcome targets: to increase the Gross Enrollment Rate (GER) from 6.9% in 2009/10 to 20% in 2014/15 and to establish a pre-primary class in all rural and urban primary school compounds (MoE, 2010; Belay & Belay, 2016; Belay, 2018). However, despite the presence of these statements in different sectors of governmental policy and the comprehensive inclusion of ECE in the ESDP-IV, ECE in Ethiopia was one of the most neglected areas.

Taking this into consideration, in 2010, as a result of a joint effort by the United Nations, the International Child Education Fund (UNICEF), and the concerned ministries in the area, a new ECE policy framework was developed that is relatively comprehensive and implemented since the past twelve years. It is the first of its kind in the country, and there is hope that it will bring a positive change. The policy focuses on enhancing the quality, accessibility, and equitable distribution of services for children through more efficient partnerships and capacity-building programs through the following five basic pillars: 1) parental education, 2) health and early stimulation program (birth to three years), 3) pre-school community-based kindergarten (4 to 6 years), and 5) community-based non-formal school readiness programs (MoE, 2010). Thus, it is now apparent that the policy frameworks for ECE and success in the education system seem to be in place but as to the knowledge of the researcher, the program was not implemented since 2022/23. Today, virtually every nation provides some early childhood education, sometimes financed by the government, sometimes privately (Pianta, Robert, Barnett, Steven, Margaret, & Thornburg, 2011). In some countries, most 3- to 6-year-olds are in school not only because of changing family and economic patterns but also because research has verified that young children can accomplish a great deal of cognitive advancement and language learning at this age.

One robust research conclusion about children's learning is that the quality of the learning context matters. If home education is poor, a good preschool program aids health, cognition, and social skills (Hindman, Annemarie, Skibbe, Miller, & Zimmerman, 2010). However, if a family provides extensive learning opportunities and encouragement, the quality of the preschool is less crucial, but for sure this cannot be true in Ethiopia where more than 80% of the family is illiterate. The young children should be at such a home rather than in a stressful and overcrowded preschool. It is difficult to judge the quality of homes and schools in Ethiopia because of the stunning variability and fragmentation of public and private schools (Pianta et al., 2009) and the changing configuration of home care. It is a mistake to conclude that care by the mother is better than care by another relative or non-relative or vice versa. Mother care varies: some mothers are fabulous, others disastrous. Many programs are called developmental or child-centered because they stress each child's development and growth. Teachers in such programs believe that children need to follow their interests rather than adult directions. For example, they agree that children should be allowed to select many of their activities from a variety of learning areas that the teacher has prepared (Hindman *et al.,* 2010; Blara-Cinisomo *et al.,* 2011). According to UNICEF (2020), Ethiopia has made remarkable progress towards pre-primary education with enrolment rates rising from just 9 percent in 2010 to a current 44.2 percent. However, with the rapid expansion of access comes the concern of corresponding quality. Many young children are now attending preschool, which is a great achievement, but they are in classes that are poorly equipped and where teachers are inadequately trained. At the national level, there are challenges in providing adequate resources for quality teaching and materials and a lack of satisfactory quality standards for pre-primary facilities. At the local level, ECE is a new concept for many rural families and the poor quality of classes can deter parents from supporting their children's enrolment (UNESCO, 2022a, 2022b).

In Ethiopia, the ECE curriculum has undergone several revisions over the years, especially since the implementation of the O-class (or Pre-Kindergarten) program in 2020 (MoE, 2020). Despite the positive strides made, there are still several challenges associated with the O-class in the ECE curriculum, particularly as the country focuses on improving access and quality. A significant challenge in the O-class curriculum is the lack of adequately trained teachers. Early childhood educators often do not have sufficient training in child development, play-based learning, and pedagogical skills specific to young learners. This impacts the quality of education provided in O-class settings. Many O-class centers struggle with a lack of proper learning materials, including toys, books, and teaching aids that are critical for the development of young children. This hampers the effectiveness of the curriculum, especially in fostering cognitive, social, and emotional development. Moreover, many schools face challenges in providing sufficient classroom space, leading to overcrowding. Large class sizes can reduce individual attention and hinder the learning process for young children, who require a nurturing and interactive environment (Belay, 2018). Ethiopia is a diverse country with over 80 ethnic groups and languages. This cultural and linguistic diversity can pose challenges in designing a curriculum that is inclusive and accessible for all children. Teachers may not always be proficient in the languages spoken by children, affecting communication and learning. In some areas, there is a lack of awareness and engagement from parents regarding the importance of early childhood education. This can lead to insufficient support for children's learning outside the classroom and a lack of cooperation with teachers (UNESCO, 2022a, 2022b).

The funding allocated to ECE remains limited. This financial constraint affects the construction and maintenance of ECE centers, as well as the ability to provide ongoing professional development for teachers (MoE, 2021). While the curriculum has been revised to be more child-centered, there are challenges in its effective implementation, especially in rural areas. Teachers may struggle to adapt the curriculum to local contexts or may not fully understand the innovative approaches outlined in the national policy. There is a lack of effective monitoring and evaluation mechanisms to assess the impact of the O-class curriculum on child development (MoE, 2021). Without robust systems to track progress, it is difficult to make adjustments or improvements based on evidence. Overall, while there have been advancements in ECE in Ethiopia, overcoming these challenges is crucial to ensuring that the O-class and the broader ECE system deliver quality education for all children, preparing them for future learning experiences. This program again failed to exist as a program because of these challenges as a result the government has sought other alternatives since 2023.

The physical space and the materials (such as dress-up clothing, art supplies, puzzles, blocks, and other toys) are arranged to allow self-paced exploration. Most child-centered programs encourage artistic expression. Hindman *et al. (*2010); Pianta *et al. (*2009); Blara-Cinisomo *et al. (*2011); UNESCO (2022a) argue that young children are all poets in that they are gifted to see the world more imaginatively than older people do. According to advocates of child-centered programs, this peak of creative vision should be encouraged; children are given many opportunities to tell stories, draw pictures, dance, and make music for their delight. That does not mean that academics are ignored. Advocates of math learning, for instance, believe that children have a natural interest in numbers and that child-centered schools can guide those interests as children grow (Stipek, 2013). Child-centered programs are often influenced by Piaget who emphasized that each child will discover new ideas, and by Vygotsky who thought that children learn from other children, with adult guidance (Bodrova & Leong, 2005). Trained teachers are crucial; a child-centered program requires appropriate activities for each child and teachers who guide and scaffold so that each child advances (Dominguez et al., 2010). Consistent with these ideas, Contemporary Maria Montessori schools still emphasize individual pride and achievement, presenting many literacy-related tasks (e.g., outlining letters and looking at books) to young children (Lillard, 2005). Specific materials differ from those that Montessori developed, but the underlying philosophy is the same. Children seek out learning tasks; they do not sit quietly in groups while a teacher instructs them. That makes Montessori programs child-centered (Lillard, 2013; UNESCO, 2022b). It was identified that the ECE curriculum in 2020 faced several challenges and issues that affected its implementation and effectiveness. These

challenges can be grouped into various categories, including curriculum content, pedagogical approaches, policy issues, and the broader socio-economic and health context (UNESCO, 2022a).

In many regions of Ethiopia, the ECE curriculum was fragmented, with varying standards and frameworks that created inconsistencies in educational quality across different regions and institutions. There was a need for more standardized and coherent curriculum structures. Some curricula were outdated and did not reflect modern educational theories or the evolving needs of children, particularly in areas like digital literacy, inclusivity, and social-emotional learning (UNICEF, 2020; UNESCO, 2022b). In some settings, there was a shift towards early academic achievement (such as reading and writing) at the expense of play-based learning, which is essential in ECE. This caused concerns that children were being pressured to perform academically before they were ready. Moreover, many early childhood educators lacked adequate training in implementing the curriculum effectively, particularly when it came to new approaches like play-based learning, inquiry-based learning, and socio-emotional development. Insufficient professional development opportunities were a significant barrier. The curriculum sometimes fails to cater to the diverse developmental needs of young children, especially those with disabilities or from marginalized communities. This lack of individualization made it difficult to meet the needs of all children. It was observed that the ECE curriculum in Ethiopia often lacked clear, developmentally appropriate methods for assessing young children's learning and growth, making it harder to tailor teaching strategies to individual needs (UNESCO, 2022a).

Furthermore, a previous study by the Mesfin, Dihel, and Zerihun (2018); Diale and Sewagegn (2021) identified that there were significant disparities in the availability of resources, quality facilities, and access to trained educators. Children in rural, low-income, and marginalized communities often had limited access to quality ECE, which was exacerbated by gaps in curriculum delivery. The rise of digital education during the COVID-19 pandemic highlighted a digital divide, where many children, particularly those from lower socio-economic backgrounds, lacked access to the technology necessary for remote learning. In many countries, the ECE curriculum did not adequately reflect the diverse cultural backgrounds of children whereas the Ethiopians have not yet been different from these countries (Mesfin, Dihel, & Zerihun, 2018). There was a growing need for a curriculum that was more inclusive and responsive to the varied cultures, languages, and family structures of children, which was observed as the significant contributing factor to low equity, access, and poor quality education in Ethiopia. The curriculum often struggled to address the language needs of children from non-dominant linguistic backgrounds, particularly in multilingual societies, which created challenges in language acquisition and communication development (UNICEF, 2020; Diale & Sewagegn, 2021).

Doing business as usual is not working at the 21st century! There must be a definite shift in thinking about how, when, and where resources for ECE should be invested. Until African leaders begin to step back, reflect, and make conscious policy decisions to invest in human resources to build human capabilities through specific targeting of 3-6-year-olds and their mothers, the vision of a developed and prosperous Africa will continue to remain a vision. Without transforming human resources into human capital, African countries in general and Ethiopians in particular will continue to struggle to provide the necessities for their citizens (UNESCO, 1990, 2010, 2022b). The different regions of Ethiopia have adopted the ESDPs prepared at the federal government level. Among these regions, Oromia is the one that is implementing the program to address the issue of preschool education in all zones of the region. The researcher believes that ECE is the cornerstone for the next stage of development (cognitive, psychosocial, physical, moral & personality) and learning. This is only possible where a child-centered curriculum has been in the position, but this is very thin and very shallow in Ethiopia. As an experienced teacher in Ethiopia, the researcher has critically observed that ECE has lacked attention from parents, government, non-government, private, and religious institutions.

In some regions of the country, there was a lack of cohesive national policies supporting ECE leading to difficulties in curriculum implementation. Government priorities often focused more on primary

and secondary education, while ECE was underfunded and overlooked. In this country, ECE continued to be underfunded in many regions, with insufficient resources allocated to ensure high-quality curriculum delivery, teacher training, and infrastructure. While the role of parents is crucial in early childhood education, many ECE programs lack effective strategies to engage parents in the learning process. This created gaps in reinforcing learning outside the classroom. Parents, particularly those who were economically disadvantaged, faced challenges in supporting their children's learning. Currently, the challenges facing ECE curricula are multi-faceted and complex, ranging from pedagogical and equity issues to the direct impact of the system in the country. Addressing these challenges required comprehensive policy changes, increased investment in the sector, and a shift towards more inclusive, flexible, and developmentally appropriate approaches to ECE. Based on these realities, pinpointing the problems of Curriculum Relevance in Enhancing Children's Cognitive in ECE was attempted at Harar, Chiro, and Dire Dawa Towns.

Purpose of the Study

The purpose of this study was to assess the problems of curriculum relevance to enhance children's development at ECE in three towns of Eastern Ethiopia. Specifically, this study was intended to:

- Stipulate the extent to which teachers were qualified to the required professional competence in ECE to deliver quality education.
- Assess the problems of curriculum relevance to children's cognitive development in Harar, Chiro, and Dire Dawa.
- Explain the extent to which curriculum relevance affects children's cognitive development in the study area.
- Compare whether there was statistically a significant mean difference existed among the three centers or not.

Review of Related Literature

This part of the paper mainly dealt with the theoretical framework of reviewing different literature to get pertinent evidence from previously conducted research products. It contains a developmentally appropriate curriculum (cognitive relevance) to ECE in the study area.

Developmentally appropriate curriculum

A developmentally appropriate curriculum in ECE aligns with the developmental stages, needs, and interests of young children, fostering their cognitive, social, emotional, and physical growth. However, creating and implementing such a curriculum presents several challenges that include cultural and socioeconomic differences, limited resources, meeting the needs of children with special needs, pressure to meet academic standards, teacher training and professional development, and assessment and documentation (Belay, 2018; and Belay & Belay, 2016). Assessing young children's development is complex, as standardized testing is often not suitable for capturing the nuances of early learning. Children come from diverse backgrounds, and what is considered developmentally appropriate may vary based on cultural, linguistic, or socioeconomic factors. Documenting progress in a way that supports individual growth can be challenging. Educators may lack training in how to implement a developmentally appropriate curriculum, or they may have competing priorities such as administrative duties or dealing with challenging behaviors. Many early childhood settings face resource limitations, such as insufficient materials, space, or funding, which can make it difficult to create a rich, varied curriculum. In some educational systems, there is increasing pressure to focus on early academic achievement, such as reading and math skills. This can conflict with developmentally appropriate practices that emphasize social-emotional development, motor skills, and creative play (Tirusew *et al.*, 2009). In summary, the challenges of developing a developmentally appropriate curriculum in ECE require thoughtful planning, flexibility, and a deep understanding of each child's needs. Educators must navigate diverse developmental stages, cultural differences, limited resources, and external pressures while ensuring that the curriculum remains engaging, inclusive, and responsive to all learners.

What is appropriate for one child might not be for another. ECE educators must be flexible and observe each child closely, tailoring learning experiences that address individual strengths and challenges. The ECE curriculum should contain goals for each child to achieve in areas of development that are appropriate for their age. This may look like their ability to self-soothe, make friends, or put themselves to sleep. Developmentally appropriate curriculum in ECE emphasizes the "how" of curriculum development as well as the "what and why" to help one create the best programs for young children ages 3 through 6. It's an all-in-one guide that brings together everything pre-service teachers need to implement an integrated, developmental approach to curriculum-based instruction. Sample activities and lesson plans are included for each curriculum domain (Mesfin, Dihel, & Zerihun, 2018). Practical research-based guidelines and a focus on teaching methods give us the tools we need to translate theory into age-appropriate practice that accommodates individual, social, and cultural differences (Gestwicki, 2017; Diale & Sewagegn, 2021). When one speaks about a developmentally appropriate curriculum, one speaks about a curriculum planned to be appropriate for the age span of children within the program. One also needs to be aware that once a teacher begins to work with a group of children and begins to learn more about individual children within the group, the curriculum might change drastically. The curriculum should be driven by the different needs, levels of functioning, and interests of the children in the group. When planning a developmentally appropriate curriculum, all aspects of development (cognitive, linguistic, social, emotional, and physical) need to be taken into consideration. A curriculum that focuses on cognitive development (number concepts, problem-solving strategies, concepts of time, spaces, order, patterns, and categories) at the expense of planning for and nurturing the development of the physical child does not take into consideration to develop the whole child (Tirusew *et al.*, 2009; Gestwicki, 2017; Diale & Sewagegn, 2021).

The developmentally appropriate curriculum focuses on integrating learning rather than departmentalizing learning. Children learn through interaction with children, materials, and adults. In a developmentally appropriate curriculum, children learn through direct experiences not by learning about persons, places, and things from someone always telling them about them. In a developmentally appropriate environment, children learn science, social studies, language arts, and math through reading books and listening to stories, engaging in sensory experiences, participating in cooking experiences, being involved with art activities, taking part in dramatic play, using manipulative, taking field trips, building, creating, and sharing all of these experiences with their peers and the adults in their classrooms (Gestwicki, 2017; Belay & Belay, 2016; Belay, 2018).

Cognitive Development: Thinking and problem-solving skills

The ECE curriculum in cognitive development plays a crucial role in shaping a child's intellectual and academic abilities. However, there are several challenges that educators and curriculum developers face in ensuring that the curriculum is effective in fostering cognitive growth. Children develop cognitive abilities at different rates due to a variety of factors, such as genetics, environment, and early experiences. This means that a one-size-fits-all approach in the curriculum may not meet the needs of all children. Cognitive development in early childhood is heavily influenced by play, which promotes problem-solving, creativity, and critical thinking. However, there can be pressure to incorporate more formal academic content (like literacy and numeracy) early on. Striking the right balance between structured learning and free play can be difficult, as an overly academic focus may stifle creativity and reduce opportunities for hands-on, experiential learning that fosters cognitive growth. In addition, children come from various cultural and socioeconomic backgrounds, which can affect their prior knowledge, language skills, and cognitive readiness for certain aspects of the curriculum. Therefore, the ECE curricula must be adaptable to account for these differences. Children from underprivileged or non-native backgrounds may need additional support in areas such as language development or social-emotional learning, which can be difficult to provide in a diverse classroom (Belay & Belay, 2016; Belay, 2018; MoE, 2020, 2021).

Cognitive development in early childhood means how children think, explore, and figure things out. It is the development of knowledge, skills, problem-solving, and dispositions, which help children think about and understand the world around them. Brain development is part of cognitive development. In

the early childhood years, young children are expanding their knowledge about the world around them. This knowledge comes from observation of events, hands-on experience with concrete experiences, listening to peers and adults, and other encounters with the world. Children need exposure to concepts in math and science, social studies, and the arts to broaden their horizons. They learn from looking at and listening to books being read to them and stories being told to them. Goldhaber (1994) challenges the early childhood educator to be serious about play. She points out that there is a resurgence of interest in science education that should allow educators to use the vocabulary of developmentally appropriate practice to explain the open-ended, cognitively challenging learning experiences that characterize their play-based programs. Goldhaber suggests that by calling it science teachers might be able to let children play (Diale & Sewagegn, 2021).

An early focus on cognitive skills is crucial because some young children may have developmental delays or challenges that can be identified and addressed if caught early. Because of this, parents, teachers, and caretakers should keenly observe each child's development and address any issues as early as possible. This can prevent the child from struggling later on in life. In a fast-developing, competitive world, cognitive skill development from an early age is very crucial for a child. Young children grow physically during their early childhood, and they also grow mentally by observing and interacting with the world around them (Gestwicki, 2017). Parents need to foster cognitive development in their child as soon as the child is born because it is the foundation for the child's success later on in life. For example, research shows that children who can distinguish sounds at six months of age are better at acquiring the skills for learning to read at four and five years of age. Another way that one can foster his/her child's cognitive development is to provide them with choices and prompt them to make thoughtful decisions. One should also allow his / her child to explore different ways of solving problems (Diale & Sewagegn, 2021). While one may want to provide some gentle guidance and encouragement, allow one's child some time to figure out things, like a new puzzle. This may require some patience on one's part, but it will ultimately help them to learn.

Research has shown that there is a strong link between the cognitive development a child undergoes in early childhood and the level of success they experience later in life (Kostelnik et al., 2019). The brain is the most incredible network of information processing, and both interpretation and thinking skills improve as children learn. Parents, teachers, and caretakers should help children develop their cognitive skills at an early age so that they can grow up with confidence and the skills to succeed. If a child does seem to have a learning disability, it is important to seek help from a qualified professional. Today, there are various methods to assess and train children who have learning disabilities. Not all children are born with the same cognitive abilities, but they all have the potential to develop into able and efficient individuals. With the help of caring, nurturing parents and teachers, children can utilize their potential to a maximum extent and grow up to be well-rounded and successful individuals (Kostelnik et al., 2019; Diale & Sewagegn, 2021; Belay & Belay, 2016; Belay, 2018).

Teaching Methodologies of ECE Curricula

The ECE curriculum plays a critical role in shaping children's cognitive, social, and emotional development. However, challenges such as limited resources, large class sizes, and varying socio-economic backgrounds must be addressed. In this context, teaching methodologies that are adaptable, inclusive, and resource-efficient are essential. Some appropriate teaching methodologies for ECE in include play-based learning, a child-centered approach, storytelling and oral traditions, community-based learning, inquiry-based learning, collaborative learning (peer learning), multisensory learning, and scaffolded learning (Belay and Belay, 2018). Play-based learning focuses on the idea that children learn best through play, exploration, and hands-on experiences. Activities are designed to be engaging, fun, and meaningful while promoting cognitive, social, emotional, and physical development. Resources may be scarce, but play-based learning requires minimal material resources, and it fosters creativity, problem-solving, and language development. It also helps children develop social skills, emotional resilience, and critical thinking (Belay, 2016). For example, pretend play (e.g., playing house, running a shop) to develop social roles and communication whereas problem-solving games using everyday materials can foster children in learning and cultivation.

The child-centered approach focuses on the needs, interests, and developmental stages of the children. It encourages active participation and emphasizes learning through discovery and exploration. This approach respects the individual pace of development, allowing children from diverse backgrounds to learn at their own level. It also supports self-esteem and fosters a love for learning. For instance, teachers facilitate learning through guided discovery, asking open-ended questions, and allowing children to explore topics that interest them. Activities that encourage independent thinking, such as group projects or self-directed tasks can further expand children's learning (Chan & Chan, 2003). On the other hand, storytelling is an effective way of transmitting knowledge, values, and cultural traditions. In many countries, oral traditions are a significant part of the cultural heritage. It helps develop language skills, enhances creativity, and connects children to their cultural roots. It can also be done with minimal resources (e.g., without books or technology), making it cost-effective. For example, teachers can tell traditional folktales or create stories together with the children. Incorporating songs, rhymes, and verbal games to reinforce language and memory skills is where most of the Ethiopian ECE is bare of this method. This methodology involves using the local community and environment as educational resources.

Children can learn from their surroundings, including local people, customs, and experiences. In many countries, communities are often rich in resources, and community-based learning can provide real-world contexts for children to understand the world around them. This method helps children make connections between classroom learning and life outside of school—for example, field trips to local farms, markets, or traditional workshops. Inviting local community members (e.g., artisans, farmers, elders) to share their knowledge with the children is critical to fostering children's learning. Still, these methods were too broad in Ethiopian ECE. Active learning focuses on engaging children in the learning process by involving them directly in meaningful tasks. Children are encouraged to think critically, solve problems, and reflect on their learning. In resource-constrained environments, hands-on activities are an effective way to promote cognitive development and build skills like problem-solving, collaboration, and critical thinking. For instance, building models with recycled materials to learn about shapes, sizes, and structures is extremely significant for children's learning and creativity in their lives in the future. Collaborative group tasks, such as sorting, counting, or classifying objects, to practice numeracy and logical thinking are too significant in the educational lives of children (Fantahun, 2016).

Moreover, inquiry-based learning encourages children to ask questions and explore answers. Teachers act as facilitators who guide children's exploration, support their curiosity, and provide opportunities for problem-solving. Inquiry-based learning fosters curiosity, independent thinking, and a sense of responsibility for one's learning. It can be done with limited resources by using everyday objects and natural phenomena. For example, encouraging children to ask questions about nature (e.g., the growth of plants or the weather) and explore answers through observation or simple experiments. Using local objects or materials to investigate concepts like water flow, gravity, or colors will make children active learners and creators in their future academic lives. Collaborative learning involves children working together in small groups to accomplish tasks, solve problems, or create projects. This methodology fosters teamwork, communication, and social skills. Peer learning helps children develop social bonds and problem-solving skills. It is especially useful in overcrowded classrooms, as children can learn from each other and provide support to their peers. For instance, group activities such as creating murals, group storytelling, or working together to solve a puzzle make children active and engaged in their academic lives. Older children mentoring younger children in basic skills also significant in learning (Tiresew *et al.*, 2009; Fantahun, 2016, Belay & Belay, 2018).

Furthermore, multisensory learning approach engages multiple senses (visual, auditory, tactile, etc.) to enhance learning. Activities are designed to appeal to various sensory modalities to cater to different learning styles and developmental stages. Children may have limited access to formal education resources (Chan & Chan, 2003). Multisensory learning leverages what is available in the environment to engage children in meaningful ways, fostering better retention and understanding. For, instance, sensory activities like sorting materials by texture or color, and using local fruits and plants for

counting or measuring physical quantities are durable learning styles. Storytelling with actions, music, or props that appeal to different senses (Fantahun, 2016; Belay, 2018). The other teaching method in ECE is scaffolding which involves supporting children during the learning process, gradually removing assistance as the child becomes more capable. Teachers and caregivers provide the right amount of help at the right time. This approach is particularly useful in environments where children may have gaps in their knowledge due to limited access to education. Scaffolding ensures that children progress at their own pace with the necessary guidance. For example, a teacher might model how to solve a problem and then guide the children through it until they can do it independently; using visual aids, props, or gestures to help children understand complex concepts (Belay & Belay, 2016; MoE, 2021). It can be summarized from what has been said so far, appropriate ECE teaching methodologies must be adaptable, resource-conscious, and responsive to the diverse needs of children. By focusing on play, inquiry, community, and inclusivity, educators can create effective learning environments that support cognitive and social-emotional development, even in the face of limited resources. These methodologies foster a holistic approach to early childhood learning, ensuring that children are prepared for future academic success and lifelong learning.

METHOD

This study adopted explanatory sequential research designs to assess problems of curriculum relevance in enhancing children's cognitive development in ECE at Chiro, Dire Dawa, and Harar Towns of Eastern Ethiopia. The researcher selected this design because it helped him follow the procedures to collect quantitative data through close-ended questionnaires and qualitative data through observation which he used to administer the study to the participants to describe the attitudes, opinions, behaviors, or characteristics of the population. In this procedure, an explanatory sequential design researcher can collect quantitative and qualitative data using questionnaires and observational (Creswell, 2012). Explanatory sequential research designs also interpret the meaning of the data by relating the results of the statistical test to past research studies. The target population for this study consisted of pre-primary school teachers at Chiro, Dire Dawa, and Harar Towns in Eastern Ethiopia. The sample used for this study consisted of these three towns' pre-primary school teachers from 18 preprimary schools (private, religious, public, and government). 260 pre-primary school teachers were taken from 400 populations. Out of 260, 229 (88.08%) of them were females whereas 31 (11.92%) of them were males. A stratified random sampling technique was employed because firstly, there were different subdivisions in the targeted population which are important to be considered. Secondly, there were also variations in population sizes of different strata in this case (sex, schools, and towns) of the populations which were not equal in size. A three-section questionnaire was used to collect relevant data. Section I consisted of information about socio-demographic data; section II consisted of cognitive development; and section III the extent to which teachers were qualified to the required professional competence in the ECE curriculum to provide developmentally appropriate practice to children. A pilot study was conducted on thirty pre-primary school teachers (14 males and 20 females) who represented the population character but not the sample to check the reliability of the items by using Cronbach Alpha.

Table 1. Reliability test

No	Variables	Number of items	Cronbach's alpha
1	Cognitive development dimension	20	.84
2	The extent to which ECE teachers are qualified	10	.81
	Overall reliability	31	.85

Accordingly, the researchers were able to decide the characteristics of the questionnaire that needed to be adjusted or remained or to be changed in some technical words or phrases that seemed to be technical for these participants. The reliability of the questionnaire was, therefore calculated as .84 and .81 in the 2nd and 3rd sections and .85 is an overall reliability of the questionnaire which were highly reliable respectively. Therefore, it was safe to use them with a little modification. The validity was tested by expert and well-experienced teachers over the area. The questionnaire was administered

on a face-to-face basis so that the distributed questionnaires were collected from these participants after they were completed filling them. For proper understanding and evaluation of the purpose of the research questions raised and to ultimately achieve the research objectives, different techniques of data analysis were employed. Descriptive statistics such as frequency, percentages, means, grand mean, and standard deviation were used to summarize the socio-demographic variables of the participants and participants' response to the problems of curriculum relevance in enhancing children's cognitive development in ECE in Eastern Ethiopia while inferential statistics (one-way ANOVA and stepwise multiple regression) were used to show the mean differences among groups, and average relationship among variable respectively. The level of significance was set to be $\alpha = .05$. Moreover, the data collected from observational checklists were narrated thematically to substantiate the quantitative findings.

RESULTS

This chapter has two parts: the first part deals with the characteristics of the participants, and the second part presents the analysis and interpretation of the main findings. The data gathered through observational checklists were supposed to supplement the quantitative data. A questionnaire was distributed to 276 preprimary school teachers from 18 schools; 260 (94.20%) copies were returned. The respective quantitative data were analyzed quantitatively using frequency, percentage, mean, standard deviation, one-way ANOVA, and stepwise multiple regression. On the other hand, the triangulations were made to check the consistencies and variations of the results obtained from both instruments. The analyzed data were compiled and organized in a way that suits the interpretations of the results in addressing the specific objectives of the study. In this way, 5 tables were constructed to categorize the objectives of the study in thematic groups in detail to deal with the responses of the participants. The quantitative data obtained from participants were analyzed using the Statistical Package for the Social Sciences (SPSS version 22).

Table 2. Sex versus pre-primary school teachers' cross-tabulation.

Sex	**Pre-primary school teachers**				**Percentage (%)**
	Dire Dawa Center	Chiro Center	Harar Center	**Total**	
Female	102	27	100	229	88.08
Male	18	8	5	31	11.92
Total	120	35	105	260	100
Percentage (%)	46.16	13.46	40.38	100	

Table 2 shows that the majority, 229 (88.08%) of the sampled pre-primary school teachers were female whereas 31 (11.92%) of them were male teachers. From this data, one can understand that female teachers are more employed than their counterparts' males. On the other hand, the majority, 120 (46.16%) of the participants were from Dire Dawa Center; 105 (40.38%) of them were from Harar Center whereas 35 (13.46%) of them were from Chiro Center.

Table 3. Qualifications versus pre-primary school teachers' cross-tabulation.

Qualification	**Pre-primary school teachers**				**Percentage (%)**
	Dire Dawa	Chiro	Harar	**Total**	
Grade ten Complete	23	3	2	28	10.77
Grade twelve Complete	10	12	12	34	13.08
CEC education certificate	34	10	39	83	31.92
(TTC) Diploma	37	6	41	84	32.31
10 + 3 graduate	4	0	1	5	1.54
Others if there are any	8	4	10	22	8.46
12 Grade Complete and CEC	2	0	0	2	.77
12 Grade Complete and TTCC	2	0	0	2	.77
Total	120	35	105	260	100

Table 3 shows that the majority, 84 (32.31%) of the pre-primary school teachers had a college Diploma from Teachers' Training College (TTC); 83 (31.92%) of them had a Certificate in Early Childhood Care and Education (ECCE); 34 (13.08%) of them had no training on early child education but they only completed grade 12; 28 (10.77%) of them had no any certificate in early child education but they only completed grade ten; 22 (8.46%) of them had unknown of their qualifications. They had neither a college diploma from Teachers' Training College nor a certificate in early childhood education. 5 (1.54%) of them were 10 +3 graduates of unspecified fields of study whereas both grade 12 complete plus CEC and grade 12 complete plus TTCC were accounted for, 2 (.77%) each. Generally, 86.92 % of preprimary school teachers were not trained in early childhood education. This may indicate that it seemed that no special attention has been given to early childhood education in Ethiopia in general and the study area in particular. This showed that for preservice teacher preparation, the 2014/15 ESDP-IV defined the optimal qualification of a university degree, but accepted the minimum educational qualification of secondary level at a teacher training school (licensure). Data for 2015 show that about 86 % of preschool teachers and 92% of daycare center workers did not even have the minimum preparation required. Another problem involves the curricula of the teacher preparation courses, which do not always deal adequately with the specificities of ECE. Regarding in-service training, there is no national regulation, this being up to the educational systems and the school institutions to provide it to its teachers.

Table 4. Curriculum relevance content to children's cognitive development (n_i = 260, p <.05)

Descriptive Statistics			ANOVA Summary Table					
Items	Mean	SD	SV	SS	df	MS	F	*Sig.*
Measuring length, weight, temperature, and use of money	1.93	.81	Between Groups	4.41	2	2.21	3.39	.03*
			Within Groups	167.20	257	.65		
			Total	171.61	259			
Collecting and organizing information	2.04	.85	Between Groups	8.91	2	4.46	6.45	.02*
			Within Groups	177.62	257	.69		
			Total	186.53	259			
Solving quantitative problems	2.26	.81	Between Groups	8.81	2	4.40	7.01	.01*
			Within Groups	161.41	257	.63		
			Total	170.22	259			
Understanding their environment	2.93	1.28	Between Groups	54.01	2	27.01	18.62	.00*
			Within Groups	372.74	257	1.45		
			Total	426.75	259			
Developing their logical thinking and reasoning skills	3.42	1.23	Between Groups	21.16	2	10.59	7.35	.01*
			Within Groups	370.29	257	1.44		
			Total	391.45	259			

*The mean difference is significant at the .05 level

Table 4 indicates that the computed mean scores (1.93, 2.04, and 2.26) of the participants indicated that the curriculum under usage helped children develop measuring length, weight, temperature, and use of money, collecting and organizing information, and solving quantitative problems respectively were low. Moreover, the computed standard deviations (.81, .84, and .81) respectively showed that there were little variations of scores from the mean value among the three sampled towns' pre-primary schools teachers in measuring length, weight, temperature & use of money, collecting & organizing information and solving quantitative problems. However, the computed F-ratio at $\alpha = .05$, $F_{(2, 257)} = 3.39$, $F_{(2, 257)} = 6.45$, and $F_{(2, 257)} = 7.01$ which exceeded the critical region at $F_{(2, 259)} = 3.09$. Therefore, it could be concluded that there were statistically significant mean differences among these participants in helping children measure length, weight, temperature & use of money, collecting & organizing information, and solving quantitative problems, $F_{(2, 257)} = 3.39$, $F_{(2, 257)} = 6.45$, and $F_{(2, 257)} = 7.01$, $p<.05$. Moreover, the open-ended questionnaires also validated that there were differences among pre-primary schools in the three sampled towns in services related to curriculum relevance content in general and among private, public, government, and religious schools in particular.

On the other hand, the computed mean scores (2.93 and 3.42) of the same table indicated that the curriculum relevance content under usage helped children understand their environment and develop their logical thinking and reasoning skills respectively were moderate. Moreover, the computed standard deviations (1.28 and 1.23) of the participants showed that there was little variation in scores from the mean value among the participants. Furthermore, the computed F-ratio at $\alpha = .05$, $F_{(2, 257)} = 18.62$, and $F_{(2, 257)} = 7.35$, which exceeds the critical region at $F_{(2, 259)} = 3.09$. Therefore, it could be concluded that there were statistically significant mean differences among these participants in curriculum relevance content in helping children understand their environment, and developing their logical thinking & reasoning skills, $F_{(2, 257)} = 18.62$, and $F_{(2, 257)} = 7.35$, $p<.05$, respectively. Moreover, the open-ended questionnaires also validated that there were differences among pre-primary schools in the three sampled towns in services related to curriculum relevance in general and among private, public, government, and religious schools in particular.

Table 5. The most commonly used methods of teaching in the ECE curriculum ($n_i = 260$, $p<.05$)

Descriptive summary		**Coefficients**							
Items		**Model Summary**			**USDC**		**STDC**	**t**	**Sig.**
		Mean	R	R^2	B	SE	Beta		
No	(Constant)				6.99	.44		15.77	.00
1	Discussions	2.67			-.50	.10	-.34	-5.07	.00
2	Categorizing substances according to their color, shape, length, and size as a method of teaching in ECE	3.35	.89	.7921	-.36	.10	-.33	-3.58	.00
3	Explanation	3.61			-.53	.08	-.37	-6.47	.00
4	Brainstorming	4.30			-.15	.08	-.20	-2.01	.05

a. Dependent Variable: Pre-primary school curriculum

Table 5 indicates that the computed mean scores (2.67 and 3.35) of the participants indicated that they occasionally used discussions and categorizing substances according to their color, shape, length, and size as a method of teaching in ECE respectively; however, from the same table, the computed mean scores (3.61 and 4.30) of the participants were indicated that they were frequently used explanation and brainstorming as a method of teaching in ECE respectively. Moreover, the stepwise multiple regression analysis coefficients (R, R^2) = (.89, 79.21%) showed us that there was a solid positive relationship among the dependent variable (pre-primary schools) and independent variables (method of teaching specifically discussion, categorizing, explanation, and brainstorming) in ascending order. It was found that out of the ten most commonly used methods of teaching in ECE, four of them (discussion, categorization, explanation, and brainstorming) respectively were statistically significant average relationships among pre-primary schools in the three sampled towns. In contrast, the rest six commonly used methods of teaching (play-based instruction, questions and answer, cooperative learning, learning through experience, field trips, and role-play) in ECE were not statistically significant average relationship.

The t-value is statistically significant for the four commonly used methods of teaching discussion, categorization, explanation, and brainstorming in Table 6 given above. These indicated that discussion, categorization, explanation, and brainstorming contributed 79.21% to ECE's methods of teaching whereas the rest 20.79 % ($1-R^2$) *100 contributed to ECE's methods of teaching by unexplained variables. This result means that 79.21% of the variation in the dependent variable is accounted for by the variations in these independent variables. The accompanying SPSS computer printout shows that a regression equation that predicts pre-primary schools in the three sampled towns' and the most commonly used methods of teaching from ten types of independent variables, only four of them were statistically significant: discussion ($\mathbf{x_1}$), categorizations ($\mathbf{x_2}$), explanation ($\mathbf{x_3}$) and brainstorming ($\mathbf{x_4}$). Therefore, the multiple regression equation for the dependent variable- pre-primary schools learning- (**y**) could be expressed in terms of these statistically significant independent variables- was: $\mathbf{y = 6.99 - .50x_1 - .36x_2 - .53x_3 - .15x_4}$ where 6.99 is constant. The negative sign in the

slope (**-.79**, **-.36, .53, -.15**) showed us that they tend to have a decrement of an average of one point in each pre-primary school learning as those methods increase in one unit of the frequency of the usage of these methods.

DISCUSSION, CONCLUSION, and SUGGESTIONS

The present study was aimed at assessing the Problems of Curriculum Relevance in Enhancing Children's Cognitive Development in ECE in Ethiopia. The results highlighted that about 88% of the sampled pre-primary school teachers were females. The most impressive finding of this study was that about 87% of ECE teachers were not trained in ECE. The previous finding indicates that early childhood programs that are developmentally appropriate should allow for a wider range of developmental interests and abilities than the chronological age range of the group in which preprimary school teachers have to be trained so as fit to this objective. "The preprimary school teachers should be prepared to meet the needs of children who exhibit unusual interests and skills outside the normal developmental range" (Kitano, 1982, p.16). The teacher should also try to increase the difficulty of the activities, to challenge the children as they develop understanding and skills. Teachers need to listen, observe, and interpret children's behavior; asking questions, making suggestions, and adding more complexity and new ideas are important to the success of these objectives; however, most preprimary school teachers lack these fundamental skills to deliver the curricula as it was expected to be delivered. This is because they did not take any courses about the ECE. No in-service training has been given so the program is almost dead and meaningless. The environment is truly not child-centered, and the adult is not somewhat of a guide or facilitator (Elkind, 1986, p.37). This indicated that preprimary school teachers should be trained in these programs to fit the purpose of the ECE curricula. Otherwise, business as usual does not work in the 21st century.

Providing ongoing training and professional development opportunities for early childhood educators is crucial for ensuring quality education. However, many educators (87%) in the study area lack access to comprehensive training programs that equip them with the knowledge and skills to teach young children effectively. Investing in professional development for early childhood educators is essential to keep them abreast of the latest research, teaching methodologies, and best practices (Kostelnik *et al.*, 2019). Continuous learning opportunities will empower educators to provide high-quality and developmentally appropriate instruction. Collaboration between educational institutions and early childhood education programs can facilitate the exchange of knowledge and expertise (Gestwicki, 2017). This partnership can create opportunities for educators to receive specialized training and gain insights from experienced professionals in the field (Kostelnik *et al.*, 2019). Incorporating technology into professional development programs can enhance accessibility and provide educators with innovative teaching strategies. Online courses, webinars, and virtual conferences can offer flexibility and convenience, allowing educators to grow professionally at their own pace. While ECE faces various challenges, addressing these issues is crucial for providing every child with a solid foundation for lifelong learning. By investing in adequate funding, attracting & retaining skilled educators, and providing comprehensive training and professional development opportunities, we can overcome these obstacles and ensure high-quality ECE (Gestwicki, 2017; Kostelnik et al., 2019).

These challenges (unqualified and not well-trained ECE teachers) facing the ECE in Ethiopia have significant implications for children's development. Among these challenges was inadequate access to quality ECE which can hinder children's cognitive development. These results in the ECE program illustrate how children without early exposure to enriching learning experiences may enter primary school unprepared, lagging behind their peers in essential skills such as language acquisition, problem-solving, and logical thinking. They may be unable to engage in activities stimulating their cognitive abilities, such as hands-on experiments, interactive storytelling, or educational games. As a result, their cognitive development may be stunted, making it challenging for them to grasp complex concepts and keep up with their classmates.

The second impressive finding of the current study was that measuring the physical quantities (like length, weight, temperature, use of money, collecting & organizing information, and solving quantitative problems that related to numeracy skills) among children daily was significantly different among the three towns' private, public, government, and religious schools even if the finding indicated that the numeracy skills mean scores were low. An accumulating body of research suggests that early numeracy skills are critical to developing long-term success in school (Byrnes & Wasik, 2009; Claessens & Engel, 2013; Geary, Hoard, Nugent, & Bailey, 2013; Jordan, Kaplan, Ramineni, & Locuniak, 2009; Stevenson & Newman, 1986; Watts, Duncan, Siegler & Davis-Kean, 2014). Developmental and cognitive theories predict that early numeracy knowledge is associated with later achievement because early numerical skills facilitate students' future mathematical skill acquisition (Entwisle & Alexander, 1990; Gersten et al., 2009; Jordan et al., 2009). Furthermore, a previous study by the Mesfin, Dihel, and Zerihun (2018); Diale and Sewagegn (2021) identified that there were significant disparities in the availability of resources, quality facilities, and access to trained educators. Children in rural, low-income, and marginalized communities often had limited access to quality ECE, which was exacerbated by gaps in curriculum delivery. The rise of digital education during the COVID-19 pandemic highlighted a digital divide, where many children, particularly those from lower socio-economic backgrounds, lacked access to the technology necessary for remote learning. In many countries, the ECE curriculum did not adequately reflect the diverse cultural backgrounds of children whereas the Ethiopians have not yet been different from these countries (Mesfin, Dihel, & Zerihun, 2018). There was a growing need for a curriculum that was more inclusive and responsive to the varied cultures, languages, and family structures of children, which was observed as the significant contributing factor to low equity, access, and poor quality education in Ethiopia. The curriculum often struggled to address the language needs of children from non-dominant linguistic backgrounds, particularly in multilingual societies, which created challenges in language acquisition and communication development (UNICEF, 2020; Diale & Sewagegn, 2021).

This skill-building framework rests on the idea that numerical skills are a particularly hierarchical subject, in which mastery of simple concepts and procedures is required for understanding more difficult mathematics. For example, solving even a simple algebraic equation would be impossible without knowledge of operations such as division and multiplication, and this operational knowledge depends on understanding the basic principles of counting. Relatedly, Siegler, Thompson, and Schneider (2011) describe how children gradually broaden the class of numbers they understand as they progress through mathematics, with successful children moving from mastery of whole numbers in early grades to fractions in later elementary and middle school. Indeed, a well-developed body of empirical work documents children's carefully sequenced cognitive steps as they expand their understanding of numbers and mathematics (Sarama & Clements, 2009; Belay and Belay, 2016; Belay, 2018). Beyond the cognitive skill-building framework lie other developmental reasons to expect that early success in numerical skills would set children on a successful trajectory throughout school. Complex interactions between the child and her/ his environment in the early schooling years are likely to leave long-lasting influences on the child's developmental trajectory (Bronfenbrenner & Morris, 2006). For example, high-achieving children in kindergarten are more likely to receive positive feedback regarding their academic proficiency from teachers, parents, and peers, which in turn may boost their perception of their numeric competence (Bong & Skaalvik, 2003). Relatedly, early mathematics achievement could be a gateway to higher-ability tracking in school, which would also support further academic development. Indeed, these pathways from early to later mathematics achievement have received empirical support, as evidence suggests that self-concepts and placement into gifted and talented programs both mediate the association between early and later mathematics (Watts et al., 2015).

The development of counting skills and its impact on arithmetic skill development has been well studied. Sequential counting refers to the ability to recite the number word sequence (e.g., 1, 2, 3, 4, 5…10) and acknowledge the position of a number word in this sequence (e.g., 1, 2, 3…what comes next? 4; or 4 comes after 3 and before 5) without explicitly understanding the cardinal meaning (how

many are there?). Gradually, children apply their knowledge of the counting sequence to enumerate sets of objects. This serial quantification process is referred to as cardinal counting and involves mapping each number word onto each item in a set (one-to-one correspondence) to acknowledge the exact number of items in a collection (Fuson, 1988; Belay and Belay, 2016; Belay, 2018). Ultimately, children demonstrate an understanding of the numerical meaning of number words with the acquisition of the cardinality principle (Gelman, Meck, & Merkin, 1986). In the research literature, counting skills in preschool and kindergarten children have commonly been assessed by asking young children to watch a hand puppet point to and count objects or dots on a page, and to tell the puppet whether or not s/he counted correctly. Incorrect counts typically violate one of three counting principles: one-to-one correspondence (one counting tag is applied to each object); stable order/ordinarily (number tags must be applied in an invariant order); and cardinality (the last number counted refers to the total quantity). Early studies demonstrated that typically developing preschool-aged children are sensitive to violations of the one-to-one and cardinal principles, correcting the puppet when s/he double counted, skipped an item, or repeated an incorrect cardinal value (Gelman *et al.*, 1986).

Why an early focus on cognitive skills is crucial is that some young children may have developmental delays or challenges that can be identified and addressed if caught early. Because of this, parents, teachers, and caretakers should keenly observe each child's development and address any issues as early as possible. This can prevent the child from struggling later on in life. In a fast-developing, competitive world, cognitive skill development from an early age is very crucial for a child. Young children grow physically during their early childhood, and they also grow mentally by observing and interacting with the world around them (Belay & Belay, 2016; Gestwicki, 2017; Belay, 2018). Parents need to foster cognitive development in their child as soon as the child is born because it is the foundation for the child's success later on in life. For example, research shows that children who can distinguish sounds at six months of age are better at acquiring the skills for learning to read at four and five years of age. Another way that one can foster his/her child's cognitive development is to provide them with choices and prompt them to make thoughtful decisions. One should also allow his / her child to explore different ways of solving problems (Gestwicki, 2017). While one may want to provide some gentle guidance and encouragement, allow one's child some time to figure out things, like a new puzzle. This may require some patience on one's part, but it will ultimately help them learn.

One of the benefits of cognitive development in ECE is to (i) promote long-term learning where learning, as we all know, is a lifelong process. Cognitive learning encourages students to take a hands-on approach to learning which will help them make important decisions later in life by studying all the pros and cons; (ii) develop problem-solving skills that are essential later in life, both for career-building and for managing a family; (iii) improve comprehension because cognitive learning helps children comprehend things clearly and develop a deeper understanding of situations and circumstances; (iv) improve confidence to deal with deeper comprehension skills and more knowledge where children can approach life with greater enthusiasm and confidence, helping them be successful in all their endeavor's; (v) improve memory for a deeper understanding of the subject makes the children retain the knowledge gained for a longer time, thus improving their memory; (vi) instill a love of learning such as concept-based education instills a lifelong love of learning in the children, pushing them to continue gaining knowledge and developing new skills. Both of these things are important for career success; and (vii) emphasize innovation where cognitive learning helps children reflect on problems, explore different ideas, and come up with new solutions. Children should be able to improve their ability to focus, remember information, and think more critically as they age. Cognitive skills allow children to understand the relationships between ideas, grasp the process of cause and effect, and improve their analytical skills (Watt, 2013; Belay and Belay, 2016; Belay, 2018); Soderman *et al.*, 2019). These all will happen if the ECE program has well-trained teachers, well-informed parents, administrators, and a developmentally appropriate curriculum for the program.

In conclusion, poor cognitive development in the ECE curriculum in Ethiopia has been a concern due to various challenges that hinder the effectiveness of the curriculum in promoting optimal cognitive development for young children. The key conclusions on the reasons for poor cognitive development identified in this study were poor teacher training and professional development, limited resources and learning material, inconsistent and fragmented curriculum implementation, inadequate implementation of play-based learning, cultural and language barriers, socioeconomic factors and family support, physical and emotional stressors, and lack of early intervention for developmental delays. Therefore, poor cognitive development in Ethiopia's ECE system can be attributed to a combination of factors, including insufficient teacher training, limited resources, large class sizes, socioeconomic disparities, and challenges in curriculum implementation. These barriers prevent children from engaging fully with the learning process, hindering their cognitive development. Addressing these challenges requires a multifaceted approach, including better resource allocation, enhanced teacher professional development, and more effective community and family engagement in the education process. Only by addressing these systemic issues can the cognitive development of young children in Ethiopia be meaningfully improved.

Moreover, a lack of understanding about the developmentally appropriate curriculum on the part of many parents, teachers, and administrators is largely the result of early childhood professionals' failure to clearly articulate what they do, and how they do it. Setting up an environment conducive to learning at all developmental levels and having well-qualified preprimary school teachers is not an easy task in the Ethiopian context because there are no well-organized preprimary teachers' training institutions, and well-designed, and developmentally appropriate curricula. Operating professionally, from a knowledge base of early childhood research and theory will enable success to prevail for the children only if the teacher is well-trained and allowed to become autonomous in the teaching, and decision-making process concerning a given classroom of children. The teacher, the parent, and the administration are vital as a cooperative unit in educating a child; however, each teaching situation is different, and there needs to be compromise when facing the unique challenges of ECE. There does not appear to be one single exact prescription for the best approach. Some middle ground must be found, with the teacher using his/her instincts about what is best for the child. Parents and early childhood educators are both responsible for introducing and teaching early numeracy skills and academic language along with skills both formally and informally. Learning can take place through daily interactions with numeracy activities and games, casual conversations about math concepts, and formal instruction time. Play is a necessary part of early math learning as it gives students opportunities to use and practice their academic language alongside a skill. Based on the research found, integrating numeracy skills into the early childhood curricula would be a beneficial change for future math courses and STEM occupations. Early numeracy skills not only pave the way for success in future math classes but also help children form a positive attitude toward math and learn basic executive functioning and problem-solving skills. The knowledge of early numeracy skills, the development of math skills, and the best practices for teaching these skills will help parents, early childhood educators, and administrators best prepare young children for a strong academic career. Early numeracy skills indeed have a strong impact on academic achievement throughout elementary school and therefore should be a main component of early childhood education curricula.

This study concluded that ECE is critical in shaping children's cognitive development. However, it faces various challenges, including inadequate funding, teacher shortages, and training limitations on behalf of the teachers. Only, one ECE teacher training college exists in Ethiopia where more than 120 million people live. These challenges can significantly affect children's overall well-being and future success. Investing in ECE, enhancing teacher training and retention strategies, and advocating for policy changes can overcome these challenges and ensure all children have access to quality ECE. The future of ECE lies in embracing emerging trends, leveraging technology, and fostering continued research and discussion. Only through collective efforts can the country provide every child with the strong foundation they deserve for a lifetime of learning and success. The methodology (discussion, categorization, explanation, and brainstorming) of teaching children in ECE under this study was

much denied by the previous research findings. This indicated that the ECE curricula in the area under study are developmentally inappropriate. The ECE curriculum in Ethiopia has contributed a significant step in promoting cognitive development by introducing foundational literacy and numeracy skills early on. However, challenges such as insufficient teacher training, resource constraints, limited play-based learning, and multilingual hurdles need to be addressed for children's cognitive development to reach its full potential. There is a growing recognition that for effective cognitive growth, the curriculum must be more balanced, focusing not only on academic skills but also on fostering.

Ethics and Conflict of Interest

The author of the study acted in accordance with ethical rules in all processes of the research.

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