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Impacts of Socioeconomic Factors on Cognitive Development Among Young Learners: A Case Study of A Selected Primary School in Luanshya District, Zambia.

Luke Chilambwe

Student, DMI-St. Eugene University, Zambia
Supervisor, Dr. Pelekelo P. Kabundula
HOD, Dr. T. Velmurugan

ABSTRACT

This study explores the impact of socioeconomic factors on cognitive development among young learners at a primary school in Luanshya District, Zambia. Using a qualitative approach, data were collected via interviews, observations, and document analysis involving teachers, parents, and learners. The research addressed four central questions: the socioeconomic factors affecting cognitive development, the specific cognitive domains impacted, the influence of school resources and parental involvement, and evidence-based interventions to support learners across diverse socioeconomic backgrounds.

A qualitative design explored how socioeconomic variables, namely income, parental education, and occupation, shape cognitive domains such as memory, focused attention, and problem-solving. Findings indicate that learners from lower socioeconomic backgrounds exhibit pronounced cognitive deficits, exacerbated by malnutrition and inadequate educational resources. Memory and information processing were particularly affected, with children struggling to retain and recall information effectively. Focused attention, or the ability to concentrate on tasks and filter out distractions, was also compromised. Problem-solving skills, essential for identifying challenges and generating solutions, were notably weaker among these learners.

Environmental factors, including school resources and community support, were found to be key in shaping cognitive abilities. Teachers noted a clear association between socioeconomic status and academic performance, suggesting that targeted interventions could enhance cognitive outcomes. Limited income, limited parental education, and unemployment were strongly linked to reduced cognition, with low socioeconomic status predicting poorer cognitive and academic achievement, carrying long-term educational and lifelong effects.

This research enriches the understanding of socioeconomic disparities in educational outcomes in Zambia, offering valuable insights for policymakers and educators. The findings underscore the urgent need for tailored interventions, such as feeding programs, skilled personalized teacher training initiatives, and optimized parental workshops on cognitive development, to promote equitable educational opportunities and bolster cognitive development among young learners in Luanshya District. Emphasizing the importance of addressing factors like malnutrition, inadequate school infrastructure, and insufficient

parental involvement, the study calls for comprehensive efforts to support cognitive growth and academic success.

Keywords: Socioeconomic factors, Cognitive Development

CHAPTER ONE
INTRODUCTION
1.0 INTRODUCTION

Cognitive development is a pivotal determinant of the attainment of educational success and the overall future well-being of children. It includes perceiving, remembering, concept formation, problem-solving, imagining, language acquisition, and reasoning, which are foundational for learning and socio-emotional flourishment (APA Dictionary, 2018; Langensee et al., 2024). However, disparities in cognitive outcomes, such as education, persist, especially among children from socioeconomically unfavorable conditions (Langensee et al., 2024). Several studies indicate that children with well-modeled cognitive development perform exceedingly well in educational activities, while children with compromised cognitive development tend to struggle alarmingly in educational activities (Garces et al., 2018; Arnold, 2021; Mwanza-Kabaghe, 2022).

Given the intricacies of the process, cognitive development is affected by numerous factors, including teacher factors, learner factors, school factors, community factors, political factors, and parental income, education, and occupation. Most studies (Sirin, 2005; Li & Qiu, 2018; Brown & Putwain, 2022; Liu et al., 2022; Von Stumm, 2022) have documented that socioeconomic factors impact cognitive development, leading to inequalities in accessing educational resources, balanced nutrition, and parental availability. In Luanshya District, Zambia, where socioeconomic challenges are endemic, exploring the relationship between socioeconomic factors and cognitive development provides a unique and crucial context. The selected primary school in Luanshya District serves a diverse student population, making it an ideal example where young learners face a myriad of socioeconomic conditions that shape their cognitive abilities.

The aim of this study is to investigate the impacts of socioeconomic factors on cognitive development among young learners at the selected primary school in Luanshya District, with a focus on grades 1-3. By examining the interplay between socioeconomic factors and cognitive development, the study seeks to contribute to the establishment of effective social work interventions and other related support remedies. At the time of this study, there was very limited research (McCoy et al., 2015; Mwanza-Kabaghe, 2022) on the interplay between socioeconomic factors and cognitive development among young learners in Zambia and Luanshya District in particular. Hence, this study will address measured variables to provide knowledge for future studies on the relationship between socioeconomic factors and cognitive development and how this interplay impacts educational attainment.

Ultimately, the goal of the study is to inform policy and practice reforms that will mediate opportunities for all children in Zambia to realize their full cognitive potential, regardless of their socioeconomic position.

1.1 Background of study

1.1.1 Significance of Early Cognitive Development

Early childhood, typically defined as the period from birth to eight years old, is a critical period for cognitive development (Zamora et al., 2024). Odyssey Education (2025) relates that this phase is characterized by rapid growth in language, memory, problem-solving skills, and perception. Owing to this, children develop essential cognitive abilities, encompassing a wide range of mental processes that enable them to perceive, process, store, and utilize information (Zamora et al., 2024). These abilities are crucial for children to understand the world around them and form the foundation for higher-level cognitive functions such as thinking, reasoning, creating, problem-solving, paying attention, and remembering (Siegler, 2025). Cognitive development is a dynamic and complex process that continues to evolve throughout childhood.

As it were, cognitive development is a complex and multifaceted construct (Gauvain & Richert, 2016). In a broader view, Benda et al. (2019) relates that cognitive development refers to changes that occur in the functions of the mind across the lifespan, including basic processes such as attention and memory and more complex processes such as decision-making and moral reasoning. Several studies have explored and found that cognitive abilities are strong predictors of academic performance (Peng & Kievit, 2020; Shi & Qu, 2021; Luciana et al., 2018). In fact, some studies contend that cognitive abilities are foundational constructs which act as determinants of academic influence (Sternberg et al., 2008). It follows that the acquisition, organization, and use of knowledge are crucial for educational success since these processes of cognition provide frameworks for learning (Gauvain & Richert, 2016). For this reason, cognitive abilities have been linked to supporting various educational skills. For instance, reasoning ability is credited with helping achieve academic performance because it facilitates the use of analogies and abstraction of concepts which are good for organizing and recalling knowledge (Peng & Kievit, 2020). Further, cognitive executive functions such as working memory have been linked to aiding mathematical skills (Langensee et al., 2024). Also, linguistic abilities mediated through maternal stimulation are associated with reading and writing skills (Mwanza-Kabaghe, 2022).

Ultimately cognitive development in early years is crucial for achieving desired outcomes in later years.

The famous theory associated with cognitive development is Piaget's theory of cognitive development. In his theory, Piaget proposed four stages of cognitive development in children: sensorimotor, preoperational, concrete operational, and formal operational (Piaget, 1964).

Jean Piaget, who is widely credited for his influence on cognitive development studies, explained how cognitive development evolved and the factors that influence it. He largely attributed internal influences as contributing to cognitive development when he formulated the four stages of cognitive development. However, Piaget admitted that cognitive development is an interplay between innate capabilities and environmental influences (McLeod, 2024).

In the first stage, sensorimotor, which occurs from birth to 2 years, cognitive development is characterized by sensory and motor activities that are reflexive, such as putting objects in the mouth. Mainly at the beginning of this stage, children are only aware of their proximate environments, but at the end of the stage, they acquire object permanence, where they learn that objects still exist even if they do not see them. In this stage, their cognitive abilities are mediated by parental stimulation, such as parents talking to their children.

In the second stage, preoperational, which runs from 2 to 7 years, cognitive development is dominated using symbols and signs to represent reality. The major trait acquired at this stage is self-centeredness, where children only understand reality from their own perspective.
In the third stage, concrete operational, which spans from 7 to 11 years, cognitive development is characterized by the beginning of the use of logical operations when solving concrete problems done through inductive judgment. In addition, children start to be aware of what others might be thinking of them.
In the last stage, formal operational, cognitive development is achieved through deductive reasoning, where children start to use abstraction in solving problems. This stage runs from 12 years and above.

1.1.2 Early childhood Education in fostering Cognitive Development

The argument for supporting investment in early childhood education and program interventions stems from the truism that 'later attainments build on foundations that are laid down earlier' (CESE, 2025). Various research studies indicate that early childhood education has positive short- to medium- and long-term effects on cognitive development in children (CESE, 2025; Burger, 2010; Fink, 2012; Nzayisenga, Mugo, & Andala, 2020).
Early childhood education provides an effective curriculum that lays a foundation for developing cognitive skills. For instance, Nzayisenga, Mugo, & Andala (2020) report that in Rwanda, the standard level of preschool education helps children improve information processing, language development, and intelligence. Odyssey Education (2025) notes that several school activities enhance cognitive development. Puzzle solving encourages children to strategize, enhance spatial awareness, and hone problem-solving skills. Storytelling, through narrating and listening to stories, improves language skills, vocabulary, and narrative comprehension. Furthermore, memory cards help children develop memory retention and concentration (Odyssey Education, 2025).
There is also statistical evidence supporting the positive impact of early childhood education on cognitive development (Zuilkowski et al., 2012; McCoy et al., 2015; Nzayisenga, Mugo, & Andala, 2020; UNICEF, 2024; CESE, 2025). For example, a study by Woldehanna (2011) titled 'The Effects of Early Childhood Education Attendance on Cognitive Development: Evidence from Urban Ethiopia' found that children who attended preschool scored 31.2% higher on vocabulary tests and 23.1% higher on quantitative tests than those who did not attend preschool. Additionally, evidence from Ghana indicates that attending ECE has a positive and statistically significant impact on children's early development (Bago et al., 2020).

1.1.3 Global Perspective on Socioeconomic Factors and Cognitive Development

Socioeconomic factors encompass a wide range of variables that influence an individual's or a community's well-being and opportunities. These factors include income, education, occupation, wealth, health, community safety, political stability, and neighborhood characteristics. However, income, education, and occupation are widely regarded as the primary indicators of socioeconomic status (Rahman et al., 2023; American Psychological Association [APA], 2025).

1.1.3.1 Income

Income represents the money earned from various sources, including salaries, investments, business ventures, pensions, social security benefits, and other avenues. Individuals and households rely on income to meet their daily expenses and achieve their financial goals. Kuhn (2019) highlights the importance of

income as a proxy measure for socioeconomic status and living standards, emphasizing its role in understanding human decision-making processes. Income serves as an indicator of an individual's or household's ability to acquire desired resources and participate in society (Oakes & Rossi, 2003).

Globally, income can be categorized into two main components: national income and private income. National income represents the total income generated by all economic activities within a country's borders each year (Vedantu, 2025). It reflects the overall economic performance and development of a nation. The World Bank (2025) classifies countries into income groups (low, lower-middle, upper-middle, and high) based on their Gross National Income (GNI) per capita. GNI is the aggregate income earned by a country's businesses and residents. For example, in 2023, low-income countries were defined as those with a GNI per capita of $1,145 or less. Zambia was classified as a low-income country in 2021 because its GNI fell below this threshold (Ministry of Finance and National Planning, 2022). Low GNI per capita often indicates lower living standards and limited access to essential resources for a significant portion of the population. In such countries, children may face challenges such as malnutrition, limited access to quality education, and inadequate healthcare, all of which can negatively impact their cognitive development (Walker et al., 2011).

On the other hand, private income refers to the income earned by individuals or households from engaging in occupational activities (Vedantu, 2025). It reflects the economic well-being of individuals and families within a society. Private income levels significantly influence a family's ability to provide for their children's needs, including access to nutritious food, quality healthcare, enriching learning materials, and stimulating experiences. Children from higher-income households tend to have better cognitive outcomes due to greater access to these resources and opportunities (Duncan & Brooks-Gunn, 2003).

1.1.3.2 Education

Education plays a crucial role in cognitive development, both at the individual and societal levels. On the one hand, individual education which allows access to quality education, particularly in early childhood, is essential for cognitive development. Early childhood education provides children with the foundational skills and knowledge necessary for future learning and success. It also helps develop critical thinking, problem-solving, and social-emotional skills, which are essential for navigating the complexities of life. Research has consistently shown a strong correlation between educational attainment and cognitive abilities. Individuals with higher levels of education tend to have better cognitive outcomes, including improved memory, attention, language skills, and critical thinking abilities (Ceci, 1991).

Meanwhile, societal education entails a well-educated population which is crucial for a country's economic growth and social development. Education equips individuals with the skills and knowledge necessary to participate in the workforce, contribute to society, and make informed decisions. Countries with higher levels of education tend to have stronger economies, better health outcomes, and greater social cohesion (Hanushek & Woessmann, 2010). Investing in education, particularly early childhood education, is therefore a critical strategy for promoting cognitive development and improving overall well-being at both the individual and societal levels.

1.1.3.3 Occupation

Occupation, or the type of work an individual engages in, can also influence cognitive development. Different occupations place varying cognitive demands on individuals. Jobs that require complex problem-solving, critical thinking, and decision-making can stimulate cognitive growth and enhance cognitive

abilities. Conversely, jobs that involve repetitive tasks and limited mental stimulation may not provide the same level of cognitive benefits (Kohn & Schooler, 1983).

It follows that Socioeconomic status can significantly influence occupational opportunities. Individuals from lower socioeconomic backgrounds may have limited access to education and training, restricting their career options and potentially limiting their cognitive development. Conversely, individuals from higher socioeconomic backgrounds often have greater access to educational and career opportunities, which can lead to more cognitively demanding and stimulating occupations, further enhancing their cognitive abilities.

1.1.4 The Interplay of Socioeconomic Factors

It is important to recognize that income, education, and occupation are interconnected and influence each other. For example, higher levels of education often lead to better job opportunities and higher incomes. Similarly, higher incomes can provide greater access to quality education and enriching experiences that promote cognitive development. These factors also interact with other socioeconomic variables, such as health, community safety, and political stability, to create a complex web of influences on cognitive development.

1.1.5 Global Disparities and Interventions

Socioeconomic disparities exist across the globe, and their impact on cognitive development is a significant concern. Children in low-income countries and disadvantaged communities often face multiple challenges that can hinder their cognitive growth, including poverty, malnutrition, limited access to quality education, and exposure to violence and instability. Addressing these disparities requires comprehensive interventions that target multiple levels of influence.

Investing in early childhood education is crucial for promoting cognitive development, particularly in disadvantaged communities. Early childhood education programs can provide children with the foundational skills and knowledge necessary for future learning and success, as well as opportunities for social-emotional development and cognitive stimulation (Heckman, 2006). Furthermore, addressing health and nutrition challenges is essential for supporting cognitive development. Programs that provide access to nutritious food, healthcare, and safe and nurturing environments can help mitigate the negative impacts of poverty and adversity on children's cognitive growth (Walker et al., 2007). In addition, empowering parents to actively engage in their children's learning is crucial. Parental support programs and educational initiatives can provide parents with the knowledge and resources they need to create stimulating home learning environments and support their children's cognitive development (Epstein, 2018). It is also crucial to note that investing in community development initiatives can create safer, healthier, and more supportive environments for children and families. This can include initiatives to improve housing, access to healthcare, and community safety, as well as programs that promote social cohesion and reduce inequality. By addressing these socioeconomic factors at multiple levels, we can create a more equitable and supportive environment for all children to thrive and reach their full cognitive potential.

1.1.6 The context of Luanshya District

As of January 2024, statistics from the District Education Board Office show that Luanshya District has 48 public primary schools. Currently, schools with primary school status run from Early Childhood Level

(ECE) to Grade 9. In general, the present Zambian system of education is a 4-tier structure organized as 4-7-5-4 (Ministry of Education, MOE, 2022). This means 4 years at Early Childhood Education with learners aged 3-6 years, 7 years of primary education, with 4 years of lower primary and 3 years of upper primary (MOE, 2022). Further, secondary education consists of 5 years, with 2 years of junior secondary and 3 years of senior secondary school respectively (MOE, 2022). University education typically takes 4 years for most undergraduate degrees (MOE, 2022).

Figure 1. Age Range

No.	Class/Grade	Age
1.	ECE baby	3-4 years
2.	ECE reception	5-6 years
3.	Grade 1	7 years
4.	Grade 2	8 years
5.	Grade 3	9 years

The early stages of learning are crucial for future educational outcomes for children. It is for this reason that the government has implemented policy strategies such as training early childhood teachers who resonate with the needs of young learners. This emphasizes the importance of shaping the cognitive processes of young learners, contributing to their success in education. Additionally, the government canceled tuition fees for primary and secondary education, including early childhood learners in 2021. Furthermore, the Ministry of Education has divided the early childhood class into two sections as mentioned earlier. This is to smoothen the learning processes of young learners by considering the stages of their learning abilities, as argued by various theories of cognitive development such as Piaget's Theory of Cognitive Development (1954), Vygotsky's Sociocultural Theory (1978), and Bronfenbrenner's Ecological System Theory (1992).

Despite such policy strategies, young learners in Luanshya face high levels of poverty, inadequate school desks, a lack of teachers, high levels of unemployment among their parents and guardians, and poor medical care. For instance, to stress the dire conditions of medical care, Luanshya has only two public hospitals, Thompson and Roan, to cater to a population of over 200,000 people (Luanshya Council, 2024). Against this backdrop, it is the aim of several primary schools in Luanshya District to optimize the academic performance of all young learners to be rated as schools of excellence by public education inspectors and to contribute to the overall educational priorities of Zambia. Nevertheless, some schools lack the necessary resources to desirably increase pupils' educational performance. To achieve this academic growth, schools need data that describe the typical factors that shape the overarching educational success of young learners. Beyond basic class interventions, schools need to understand the social and economic factors that impact the cognitive experiences of young learners. Research that investigates the factors influencing cognitive development will contribute to expanding knowledge on improving academic performance and offer valuable social work interventions for enhancing educational standards.

1.1.7 Selected Primary School Under Study

The selected primary school is located in Luanshya District and serves students from a range of socioeconomic backgrounds, including medium SES, low SES, and very low SES. This diversity reflects the socioeconomic variety of Luanshya District. The school provides a case study for exploring how different socioeconomic backgrounds impact cognitive development among young learners. The study

aims to offer insights that may be applicable to other similar contexts in Luanshya, Zambia, and other locations.

1.2 Statement of the problem

The cognitive development of children is a critical area of study, as it influences their academic performance, social skills, and overall well-being. However, numerous socioeconomic factors such as family income, parental education, occupation, access to healthcare, and community resources can significantly impact this development. In Luanshya District, there are significant disparities in cognitive development among learners at the selected primary school who come from varying socioeconomic situations. Indigenous children at this school face numerous challenges that hinder their cognitive development. These challenges include socioeconomic factors such as low family income, low parental educational achievement, parental unemployment, limited political influence, and restricted access to economic opportunities. Despite the recognized significance of cognitive development, there are very limited studies on how specific socioeconomic factors affect young learners' cognitive development in Zambia, particularly in Luanshya.

The lack of localized studies on the impact of socioeconomic factors on the cognitive development of early primary school learners results in inadequacies in implementing effective interventions in educational and social programs. This situation further widens achievement gaps among children from different socioeconomic backgrounds in cognitive and academic performance, perpetuating inequalities and poverty. Moreover, opportunities to actualize the potential of young learners from disadvantaged socioeconomic statuses may be compromised, leading to challenges in cultivating a representative human resource in various sectors of the country. Similarly, the absence of empirical data on the effects of socioeconomic factors on cognitive development limits effective policy guidance aimed at promoting equilibrium in educational goals and cognitive skills across the early primary education domain.

Therefore, it is critical to investigate how socioeconomic factors influence the cognitive development of learners at the selected primary school in Luanshya District. The problem that this study aims to address is the lack of comprehensive understanding of how specific socioeconomic factors impact young learners' cognitive development at the selected primary school.

1.3 Objectives of the study

1.3.1 Main objective

The primary objective of this research was to explore the impacts of socioeconomic factors on the cognitive development of young learners enrolled at a selected primary school within the specific context of Luanshya District, Zambia.

1.3.2 Specific objectives

1. To investigate the influence of socioeconomic factors on cognitive development among learners from grades 1 to 3.
2. To establish how these socioeconomic factors influence cognitive development outcomes such as memory, attention, and problem-solving skills.
3. To describe the role of school resources and parents in influencing cognitive development.
4. To identify and evaluate evidence-based interventions and strategies aimed at supporting cognitive development in young learners.

1.4 Research Question

1.4.1 Central research question

What is the impact of socioeconomic factors on the cognitive development of young learners enrolled at the selected primary school in Luanshya District, Zambia?

1.4.2 Sub-research questions

1. What are the socioeconomic factors that influence cognitive development among learners at the selected primary school in Luanshya District?
2. What are the specific cognitive development domains, which are influenced by socioeconomics factors among learners in Luanshya District?
3. What is the influence of school resources and parents on cognitive development?
4. What evidence-based interventions and strategies can support cognitive development in young learners from varying socioeconomic backgrounds in Luanshya District

1.5 Characteristics of the Phenomenon

1.5.1 Nature of Cognitive Development

Cognitive development generally encompasses ability to think, learn, reason, and problem-solving (Quality Start, 2025). Rao et. al. (2014) argues similarly that cognitive development is broadly defined as expected gains in language, thinking and understanding. In a particular sense, Gauvain and Richert (2016) cite that cognitive development is the process by which human beings acquire, organize, and learn to use knowledge. Similarly, Langensee et al. (2024) present that cognitive functioning refers to mentally storing, retrieving, and processing information and includes a range of skills, for example, abstract reasoning, memory, executive function, attention, language, and processing speed.

It follows that cognitive development manifests an intellectual way of a child's ability to analyze the world, connect with it and make sense of its experiences (Quality start, 2025). For this reason, cognitive development provides a crucial foundation for achieving success in many pathways in the life of the child in the early years of its growth (Post University, 2022). This is because cognitive development influences crucial domains in the early first five years of the child. Several researchers agree that the first five years provide framework for development of significant domains and their related functions in the life of the child (Tierney & Nelson, 2009; Ministry of Community Development and Social Services, Mcdss (2021); Post University, 2022; Kids Central Pediatrics, 2025). The Ministry of Community Development and Social Services (2021) of Zambia contends that the period below 5 years of life is the period of child growth that has the greatest impact on the future development of the child and future as 90 percent of brain synapses are being formed during this stage. Thus, some critical domains that are formed during these early childhood ages such as memory skills, attentions skills and problem-solving skills are highly structured through cognitive development. Through cognitive development, a child gains the ability to process thoughts, pay attention develop memories understand their surroundings express creativity make, implement, and accomplish plans (Fraser-Thill, 2024). These skills are equally fundamental to educational outcomes of the child (Lang, et. al. 2022). For instance, as the child gains intellectual curiosity in analyzing its environments, it learns the ability to count which is foundational to numeracy.

1.5.2 Key Characteristics of Cognitive Development

Cognitive development is a continuous process that shapes our thinking, learning, and interactions throughout life, beginning in infancy and extending far beyond adolescence and into adulthood. Our capacity to process information, solve problems, and empathize evolves because of both genetic factors

and environmental experiences. This dynamic interplay between our innate predispositions and the world around us is a defining characteristic of cognitive development.

While Jean Piaget (1952) proposed a stage-based model of cognitive development, progressing from sensory exploration in infancy to abstract thought in adolescence, contemporary perspectives, such as Lev Vygotsky's (1978) sociocultural theory, emphasize the fluid and interactive nature of cognitive growth. Vygotsky argued that cognitive development arises not just from within, but from the dynamic interplay between our innate abilities and our social and cultural environment.

This interplay of nature and nurture is crucial. Genetic predispositions provide a foundation, but experiences, including education, social interactions, and cultural contexts, are essential for shaping our cognitive processes (Bronfenbrenner, 1986). We actively construct knowledge through engagement with our world, rather than passively absorbing information (Bruner, 1966). This active engagement leads to a gradual shift from concrete to more abstract and nuanced thinking (Flavell, 1992).

Key components of cognitive development include memory and information processing. The ability to store, retrieve, and manipulate information is central to cognitive development. As we grow, we develop more sophisticated strategies for encoding, storing, and retrieving information, leading to improved memory and recall (Baddeley, 2000). This includes developing working memory, which allows us to hold and process information in our minds, and long-term memory, which stores information for later retrieval. Focused attention is another crucial component, allowing us to concentrate on relevant information and filter out distractions. As children develop, their attention spans increase, and they become better able to sustain focus on tasks (Ruff & Rothbart, 1996). This improvement in attention is essential for complex cognitive processes like problem-solving and decision-making.

Language acquisition is intricately linked to cognitive development. Language provides the tools for articulating thoughts, organizing ideas, and engaging in meaningful communication (Vygotsky, 1978). As children acquire language, they also develop the ability to think symbolically and categorize information, which are essential for higher-level cognitive functions. The ability to solve problems and reason logically also develops gradually throughout childhood and adolescence. Children progress from using trial-and-error approaches to more systematic and strategic problem-solving methods (Siegler, 1996). This development is supported by improvements in other cognitive abilities, such as memory, attention, and language.

As we mature, the ability to understand diverse perspectives becomes increasingly important. This involves recognizing that others may have different thoughts, feelings, and beliefs than our own, and it is crucial for developing social competence and navigating complex social situations (Selman, 1980). This awareness fosters empathy and improves our ability to navigate social dynamics.

Metacognition, the awareness of our own thought processes, is a crucial aspect of cognitive development. This self-awareness allows us to monitor our understanding, adjust our learning strategies, and ultimately take control of our learning journey (Flavell, 1979). Metacognition is essential for becoming a self-regulated learner and successfully navigating academic and real-world challenges.

In essence, cognitive development is an ongoing journey, not a destination. It is a dynamic process that continuously shapes how we perceive, interpret, and interact with the world around us.

1.6 Factors related to the Phenomenon

1.6.1 Socioeconomic Factors' Impact on Cognitive Development

Socioeconomic factors have a profound impact on cognitive development in young learners. Children from disadvantaged backgrounds face a higher risk of experiencing cognitive delays due to limited access to essential resources and opportunities (Naudeau et al., 2011). This is consistent with the findings of Evans (2004), which highlighted the negative impact of poverty on children's cognitive development and academic achievement. These factors encompass various interconnected domains, with parental income, education, and occupation being particularly influential (Merz et al., 2018).

Parental income and education play a crucial role in determining a child's access to educational resources, both at home and in school. Children from higher socioeconomic backgrounds often benefit from a richer learning environment, including books, educational toys, technology, and enriching experiences. They may also attend better-resourced schools with advantages like smaller class sizes and more qualified teachers. In contrast, children from lower socioeconomic backgrounds may have limited access to these resources, hindering their cognitive development. This disparity in access to educational resources can create a significant disadvantage for children from low-income families, as highlighted by Bradley and Corwyn (2002).

Adequate nutrition is essential for brain development and cognitive function. Socioeconomic factors can significantly affect a child's access to nutritious food. Children from disadvantaged backgrounds are more likely to experience food insecurity and malnutrition, which can lead to developmental delays and difficulties with learning and concentration. The relationship between malnutrition and cognitive development is well-established, with studies like those by Grantham-McGregor et al. (2007) demonstrating the adverse effects of poor nutrition on children's cognitive abilities.

Furthermore, socioeconomic factors influence a child's access to opportunities, healthcare, and social standing. Children from higher socioeconomic backgrounds often have greater access to extracurricular activities, enrichment programs, and social networks that can support their cognitive development. They may also benefit from better healthcare, preventing and addressing health issues that can negatively impact cognitive function. This broader access to opportunities can contribute to a "Matthew effect," where children from advantaged backgrounds accumulate further advantages over time, as described by Walberg and Tsai (1983). The "Matthew effect" is a social science concept coined by Walberg and Tsai (1983), drawing inspiration from the parable of the talents in the Gospel of Matthew. This concept describes the phenomenon where individuals who already possess advantages, such as socioeconomic privilege, tend to accumulate further advantages over time, while those who lack these advantages may fall further behind (Hempenstall, 2025)

"For to everyone who has will more be given, and he will have an abundance. But from the one who has not, even what he has will be taken away -Mathew 25:29"

Parental occupation can also significantly impact a child's cognitive development. Occupations that require complex problem-solving, critical thinking, and decision-making can stimulate parents' cognitive abilities, which can then positively influence their interactions with their children and the home learning environment they create (Kohn & Schooler, 1983). For example, parents with cognitively demanding jobs may be more likely to engage their children in intellectually stimulating conversations and activities, fostering their cognitive growth. Conversely, parents with occupations that involve repetitive tasks and limited mental stimulation may not provide the same level of cognitive enrichment for their children.

Additionally, parental occupation can influence a child's aspirations and expectations for the future. Children who see their parents engaged in fulfilling and intellectually stimulating careers may be more motivated to pursue higher education and challenging careers themselves, further contributing to their cognitive development. However, children whose parents have limited occupational opportunities may face lower expectations and fewer opportunities for advancement, potentially hindering their cognitive growth.

The impact of socioeconomic factors on cognitive development extends beyond academic performance, affecting a child's overall well-being, including their moral, social, and emotional development. Children who experience cognitive delays may struggle with learning, forming relationships, and navigating various challenges in life. Addressing socioeconomic disparities is crucial to ensure that all children have the opportunity to reach their full cognitive potential and thrive in all aspects of their lives. Therefore, addressing socioeconomic disparities is essential to ensure all children have the opportunity to reach their full cognitive potential and thrive in all aspects of their lives, which aligns with the World Health Organization's (WHO, 2008) emphasis on the social determinants of health as crucial factors in mitigating cognitive development disparities

1.7 Global Statistical Scenario

Cognitive development in early primary school students is profoundly shaped by socioeconomic factors, including household income, parental education, occupation, access to quality nutrition, healthcare, and the overall school environment. Disparities in these areas contribute to significant learning gaps, which ultimately impact academic performance and long-term cognitive abilities. Global data illustrates the extent of these influences and emphasizes the urgent need for policy interventions to address developmental inequalities.

1.7.1 Educational Access and Learning Outcomes

Approximately 244 million children and adolescents worldwide are deprived of education, with poverty identified as the primary barrier (UNESCO, 2023). This alarming statistic highlights the significant inequities in access to education, particularly in low- and middle-income countries, where the World Bank (2023) indicates that 56% of 10-year-olds cannot read or comprehend a simple text, indicating a critical delay in cognitive development. These findings underscore the urgent need to address the educational needs of children and adolescents globally, especially those from disadvantaged backgrounds. Even in high-income nations, disparities persist, with students from the lowest socioeconomic quartile scoring an average of 100 points lower in literacy and numeracy assessments compared to their wealthier counterparts (OECD, 2022). This achievement gap reflects the persistent influence of socioeconomic factors on educational outcomes, even in developed countries. Children from low-income households often experience poorer cognitive and language development due to limited access to books, educational toys, and structured learning environments (UNICEF, 2022). These findings emphasize the importance of providing equitable access to quality education and resources for all children, regardless of their socioeconomic background.

The educational level of parents significantly affects children's cognitive abilities. In developing countries, children whose mothers have attained secondary education or higher are twice as likely to achieve minimum reading proficiency compared to those whose mothers lack formal education (UNESCO, 2021). This underscores the intergenerational impact of education and the importance of investing in maternal education to improve children's cognitive development and learning outcomes.

Malnutrition has devastating consequences for cognitive development. A staggering 149 million children under five suffer from stunting due to malnutrition, which adversely affects brain development and readiness for school (WHO, 2021). Furthermore, iron deficiency is a significant challenge, with 40% of children in low-income countries affected by iron-deficiency anemia, which is associated with impaired cognitive function and diminished academic performance (Lancet Global Health, 2022). These findings highlight the urgent need to address malnutrition and improve children's health to support their cognitive development and learning.

The quality of the school environment is also critical. Over 30% of schools in low-income countries lack adequate infrastructure, qualified teachers, and essential learning materials, which are crucial for cognitive stimulation (UNICEF, 2023). This lack of resources can significantly hinder children's learning and development, emphasizing the need to invest in improving school infrastructure and providing quality education for all children.

Beyond the school environment, children exposed to chronic poverty-related stress exhibit elevated cortisol levels, which are linked to memory issues, attention deficits, and emotional regulation challenges (Harvard Center on the Developing Child, 2022). Additionally, children from low-income backgrounds are twice as likely to experience Adverse Childhood Experiences (ACEs), such as violence or neglect, which are associated with long-term cognitive and emotional difficulties (WHO, 2022). These findings highlight the importance of addressing poverty and creating safe and supportive environments for children to mitigate the negative impacts of stress and ACEs on their cognitive development.

1.8 Regional Statistical Scenario

Cognitive development in early primary school students across Africa is significantly affected by socioeconomic conditions. Although the continent has made strides in improving educational access, numerous challenges persist, particularly for children from low-income families. Factors such as poverty, malnutrition, inadequate school infrastructure, and limited access to quality early childhood education continue to hinder cognitive growth and academic achievement.

Approximately 98 million children in sub-Saharan Africa are not enrolled in school, making it the region with the highest number of out-of-school children globally (UNESCO, 2023). The World Bank (2023) reports that 89% of 10-year-olds in sub-Saharan Africa cannot read or comprehend a simple sentence, compared to a global average of 56%. Children from low-income households are three times more likely to drop out of school before completing primary education than their wealthier peers (UNICEF, 2022).

In Africa, children from the wealthiest 20% of households are twice as likely to participate in early childhood education programs compared to those from the poorest 20% (UNESCO, 2021). Pre-primary enrollment statistics indicate that only 35% of children in sub-Saharan Africa are enrolled in pre-primary education, contrasting sharply with 85% enrollment in wealthier regions like North America and Europe (World Bank, 2023). Furthermore, maternal education influence shows that a mother's education level significantly impacts her child's cognitive skills. Research indicates that children whose mothers have at least secondary education score 30–50% higher on literacy and numeracy assessments than those whose mothers have no formal schooling (UNICEF, 2022).

Further, over 60 million African children under five suffer from stunting due to malnutrition, which negatively affects brain development and school readiness (WHO, 2021). In West and Central Africa, chronic malnutrition affects 35% of children under five, leading to lower IQ levels and delayed cognitive skills (FAO, 2022). More than 50% of children in low-income African countries are affected by iron-

deficiency anemia, which is linked to poor concentration, memory problems, and decreased academic performance (Lancet Global Health, 2022). Additionally, more than 70% of schools in rural Africa lack adequate infrastructure such as electricity, clean water, and learning materials (UNICEF, 2023).

Furthermore, the average student-teacher ratio in sub-Saharan Africa is about 56:1, significantly higher than the global average of 26:1 (World Bank, 2022). Over 40% of primary school teachers in Africa lack formal training, which negatively impacts on the quality of education and cognitive stimulation provided to students (UNESCO, 2023).

Children living in extreme poverty often experience toxic stress that can impede cognitive development and emotional well-being (Harvard Center on the Developing Child, 2022). Further, over 12 million children in Africa have been affected by school closures due to conflict and instability (UNHCR, 2023). Studies show that children in high-stress environments, such as informal settlements, score 20–30% lower on cognitive tests compared to their peers in more stable conditions (WHO, 2022).

These statistics underscore the significant influence of socioeconomic factors on cognitive development among early primary school students in Africa. Challenges such as poverty, malnutrition, lack of parental education, and inadequate school infrastructure contribute to persistent learning disparities that can affect individuals throughout their lives. However, targeted interventions such as enhancing access to early childhood education, expanding nutrition programs, and improving teacher training, can help close the cognitive development gap. Investing in these areas will ensure that all children can reach their full potential regardless of their socioeconomic background.

1.9 Local Statistical Scenario

In Zambia, socioeconomic factors play a critical role in the cognitive development of young children, particularly those in early primary school. Despite advancements in educational access, significant challenges persist for children from low-income households. Key issues such as limited access to early childhood education, malnutrition, inadequate school infrastructure, and a scarcity of resources significantly impact cognitive development outcomes.

Access to ECE is essential for cognitive growth. However, many children in Zambia still lack access to quality ECE programs. Research indicates that children who participate in ECE tend to perform better academically and are more likely to stay in school without repeating grades (PMRC, 2017). Unfortunately, enrollment rates in pre-primary education remain low, with fewer than 35% of children entering Grade 1 having experienced formal pre-primary education (UNICEF, 2023). Additionally, only 11.2% of children are enrolled in ECE programs (UNICEF, 2023). This low enrollment rate prevents many children from reaping the cognitive and social benefits associated with early learning.

Income levels and parental education are also major determinants of academic success. Children from low-income households are at a disadvantage due to insufficient exposure to educational materials and resources (Scirp, 2017). According to a study by the Ministry of General Education, only 12% of children from low-income families have access to educational materials at home (Ministry of General Education, 2019).

Malnutrition poses a significant challenge in Zambia and has profound implications for cognitive development. The World Health Organization (2021) reports that 35% of Zambian children under five years old suffer from stunting due to malnutrition, affecting their learning, memory, and concentration. The prevalence of stunting among Zambia's under-five population is linked to long-term cognitive

impairments. Adequate nutrition during early childhood is vital for healthy brain development and improved academic performance.

School infrastructure is another crucial factor affecting cognitive outcomes. Many schools in Zambia, especially in rural areas, face challenges such as overcrowded classrooms, insufficient teaching materials, and a lack of trained educators. In some regions, basic amenities like electricity and clean water are unavailable, further complicating the learning environment. A study conducted in Kabompo District highlighted that 68% of schools lack adequate teaching materials, and 42% lack trained educators, negatively impacting children's cognitive growth (UNZA, 2017).

Despite advancements in educational access, such as the free education policy introduced in 2021 and the recruitment of 30,496 teachers in 2022 (Ministry of Education 2022), significant challenges remain. Literacy rates are also a concerning factor. A 2018 study by the World Development Report found that 55% of grade 2 children in Zambia could not read a single word of a text (World Vision, 2023). By 2021, only 26% of children in Zambia could read and write (World Vision, 2023), indicating a significant gap in foundational literacy skills.

On the policy front, the Zambian government acknowledges the importance of early childhood education and has made efforts to integrate it into the national education system. However, implementing these policies is challenging due to financial constraints, inadequate infrastructure, and a shortage of skilled educators. Despite these obstacles, there are ongoing initiatives aimed at addressing gaps and enhancing the overall quality of education for young learners (PMRC, 2017). The 2022 national budget allocated 15.3% of the total budget to the education sector, emphasizing the government's commitment to improving educational outcomes (Ministry of Finance, 2022).

1.10 Significance of the study

1.10.1 Education

Understanding how socioeconomic factors affect cognitive development among young learners at the selected primary school will inform strategies to improve educational outcomes, particularly in disadvantaged schools. There are significant challenges in the education sector of Zambia related to disproportionate pupil-teacher ratios, shortages of school equipment, poor curriculum implementation, inconsistent policy formulations, and infrastructure development. However, how these impact the cognitive development of young learners is yet to receive a consummate study. This study entrenches itself by unraveling how these variables contribute to the learning formation of young children.

By generating data, especially from primary research sample units, this study will add valuable resources to improve the spectrum of the education system for young learners at the selected school and beyond. More specifically, the benefits will extend to the home environment from which young learners hail, particularly those from low socioeconomic status. By doing so, the study will foster enhanced parental or guardian involvement in the education of young learners and will forge improved parent-teacher relationships.

1.10.2 Social Work

The study's findings will guide social work interventions aimed at supporting vulnerable children, enhancing their cognitive development, and mitigating the impact of socioeconomic disparities. The overall aim of social work activities is to bring benefits that enhance the living standards of people by helping them meet their basic needs. The Department of Social Welfare under the Ministry of Community Development and Social Services (2024) describes itself as a department responsible for the provision and

promotion of quality social welfare services aimed at alleviating poverty, reducing destitution, promoting family values, and reducing juvenile delinquency. The department has cooperating partners involved in rendering services to the community, such as the Catholic Relief Services. These stakeholders are typically involved in providing services such as food and shelter. However, social work cannot be limited to the Department of Social Welfare and a handful of development organizations. Being a helping profession and given the latitude of societal crises, social work needs an enormous number of stakeholders to take part in spreading community solutions to human challenges.

As it were, the solutions include the need to integrate primary education of learners into community solutions. This cannot be done if there is not a study that investigates how social ills affect children's capacity to learn, memorize ideas, perform executive duties, and solve problems. Hence, this study will explore the tools that social workers can use to support solutions related to improving the education of young learners at the selected school and related schools, with a focus on understanding how societal crises impact their education. For instance, the study will examine whether the commonest solution used in community-based social work programs, which is the feeding program, is an effective tool in improving the cognitive processes of young learners. Meanwhile, the study will socially increase awareness of the focus on the cognitive functions of young learners. The study will augment the efforts of the Department of Social Welfare in promoting child development, considering that the department claims to be acutely involved in promoting child development. The department states on its website:

> Observing and monitoring child development is an important tool to ensure that children meet their 'developmental milestones'. Developmental milestones (a 'loose' list of developmental skills that are believed to be mastered at roughly the same time for all children but that are far from exact) act as a useful guideline of ideal development.
>
> By checking a child's developmental progress at particular age markers against these arbitrary time frames, it allows a 'check in' to ensure that the child is roughly 'on track' for their age. If not, this checking of developmental milestones can be helpful in the early detection of any delays in development.
>
> This 'check' is usually carried out through child/mother health and under-five services as infants and toddlers, and later through preschool, early childhood education and school term skills assessments.
>
> The earliest possible detection (and early intervention treatment if appropriate) of developmental challenges can be helpful in minimizing the impact these developmental delays can have on a child's skill development and subsequently their confidence or serve as an indicator of a possible future diagnosis.

1.10.3 Policy Formulation

The research will contribute to policy decisions addressing educational and socioeconomic inequalities, ultimately influencing resource allocation and program development. Policy creation is ultimately the key driver of educational success in the country. Moreover, policies that are consistent and relevant to the rapidly changing circumstances of the world achieve substantial benefits for all stakeholders. For instance, the inclusion of Early Childhood Education in public schools is a fundamental step to promoting child development. However, sustaining policies in Zambia's education system is a typical challenge. There have been numerous policy formulations and pronouncements in recent decades, some of which have been publicly repealed and others quietly abandoned. One of the reasons for the failure to sustain many educational policies is that they are formulated within the ambience of political rhetoric and expediency.

Thus, this study aims to explicate the fundamental relevance of creating reliable policies for early childhood learners that align with the prospects of enhanced cognitive functionalities.

1.10.4 Child Development

The study will shed light on the critical role of socioeconomic factors in shaping cognitive development, informing initiatives that promote healthy growth and development in young children. One of the components of this study is the exploration of the early stages of child development from Grade 1 to Grade 3 (about 7 to 9 years of age), describing the nature of this stage and the corresponding responses of parents/guardians and educators. By doing so, the research will contribute to the knowledge base on the formative years of life.

1.10.5 Global Perspective

By focusing on the selected primary school in Luanshya District of Zambia, the research will address global concerns about education and socioeconomic disparities in low-resource settings, contributing to international development goals such as Sustainable Development Goal number 4, 'Quality Education.' The phrase "the world is now a global village" is an understatement given the immense interplay of trends linking the entire world today. The emergence of ICT, geopolitics, human rights, improved international trade, and enhanced international transportation systems means every part of the world is essential in contributing to the progress of humanity. Every piece of knowledge generated from one corner of the world may be useful in another part of the world. For this reason, the study on the impact of socioeconomic factors on the cognitive development of young learners in Luanshya District will add to the global knowledge base. Most importantly, the study will highlight the social and cultural dynamics of the selected school, which will inform decisions in other societies around the globe.

1.11 Scope of the Study

The geographical location is Luanshya District in Zambia. The target population are young learners of ages between 7 and 9 corresponding to grades 1 to 3 under primary education. These will be sampled on account of having the critical age for understanding the formation of cognitive skills. The Ministry of Community Development and Social Services (2024) explains this age group in the following terms.

> Early Childhood – (6 – 13 years) – during this age the child is transitioning from early childhood education to primary education. The overall goal is to create a conducive environment for the holistic development of the child. The programs offered are intended to allow children to thrive and achieve their potential. The child is learning to become more independent and to socialize with other children and adults beyond their immediate families to make decisions for themselves, to build literacy, numeracy and life skills to engage in community life.

Further, the study will examine the following socioeconomic factors: household income, parental education, and occupation access. Similarly, the study will measure cognitive development through observation and examination of school assessment results in literacy, problem-solving, memory, physical education, and other useful tools. Finally, the study will integrate social work interventions, such as focusing on support programs, resources, and services aimed at mitigating the impact of socioeconomic factors on cognitive development.

1.6.1 Limitations of the Study

1.11.1 Geography

The study is confined to Luanshya district which may not be a consummate representation of the variables of other districts in Zambia.

1.11.2 Cross-sectional Design

The study will be limited to cross-sectional research that will collect data from the above subset at a specific point without repeating the observation.

1.11.3 Socioeconomic Factor

The study will confine itself to home and school socioeconomic factors particularly, income, education and occupation. These are factors that impact the households and schools where the population hail and learn from.

1.11.4 Cognitive Development Measurement

The study will measure cognitive development outcomes that include memory, attention, problem-solving skills, and overall academic performance. The study will also collect existing cognitive tests from school assessments using observation and interviews.

1.11.5 Social Work Intervention

The study will be limited to specific social work support programs such as establishment of volunteer financial committees of the Parent Teacher Associations and establishment of revolving distress funds at the school level.

1.11.6 Sample Size

The study will specifically observe the selected primary school out of more than 48 public schools and private schools in Luanshya District. This may affect generalizability and reliability of the findings.

1.11.7 Data Collection

The researcher will collect data through qualitative methods, including interviews with parents and teachers, and observational assessments.

1.11.8 Ethical Considerations

The study may face difficulties in obtaining informed consents of the parents or guardians of the participants.

1.12 Definition of key terms

1.12.1 Socioeconomic Factors

These are variables related to economic and social status, such as household income, parental education, access to resources, community support, social support, and occupation (University of Wisconsin, 2024). These factors affect how well a person lives and, in some instances, how long a person lives. They also determine educational pathways for children. For instance, the income of parents or guardians may determine the school that parents can afford for their children. If they have a decent income, parents may choose private schools. Otherwise, a low-income parent may only afford public schools where there are no user fees or affordable private schools that are similar to public schools in many respects. From this perspective, socioeconomic factors contribute to and are predictors of educational, health, occupational, and social status disparities (Tarver, 2024).

1.12.2 Cognitive development

Oakley (2004) defines cognitive from its etymological standpoint, observing that cognitive comes from the Latin term *cognoscere*, which means “to know”. Hence, cognitive development encompasses all the psychological processes and activities involved in thinking and knowing (Oakley, 2004). These processes

include how data is acquired, manipulated, and stored. Thus, cognitive development is the process by which children acquire mental skills and abilities, including problem-solving, memory, language, and thinking (Study.com, 2023). Oakley (2004) notes that cognitive development is the study of how these processes develop in children and young people, and how they become more efficient and effective in their understanding of the world and in their mental processes.

Cognitive development is influenced by various factors, including culture, genetics, and education (Study.com, 2023).

1.12.3 Young Learners

These are children in the age range of 7-9 years, enrolled at the selected primary school according to the prevailing age system in the education system of Zambia. Principally, children begin Grade 1 at the age of 7, although some authorities do allow 6-year-olds to start Grade 1.

1.12.4 Luanshya District

This is the specific geographic location in Zambia where the study will be conducted. Luanshya District is situated in the Copperbelt Province, about 35 km from Ndola, the provincial headquarters of the Copperbelt Province. The population of Luanshya, as of the 2022 census, is 211,966 (Zambia Statistics Agency, 2022).

1.12.5 Social work Interventions

These are programs, services, or activities designed to support children's cognitive development and mitigate the impact of socioeconomic factors on young learners in Luanshya District.

1.12.6 Disparities

These are differences in cognitive development outcomes among children from varying socioeconomic backgrounds at the selected school.

1.12.7 Mitigating

This means reducing or lessening the impact of socioeconomic factors on cognitive development.

1.12.8 Cognitive skills

This refers to abilities such as problem-solving, critical thinking, and memory.

1.12.9 Early childhood education

Educational programs and services for children from birth to age 6 according to the education system of Zambia.

1.12.10 Vulnerable populations

Children from low-income households, marginalized communities, or those at risk of cognitive developmental delays.

1.13 Chaptalization & Chapter Summary

Chapter One: Introduction

This chapter will provide an overview of the study, including the background, problem statement, objectives, research questions, significance, and scope.

Chapter Two: Literature Review

This chapter will provide reviews of existing literature on the impact of socioeconomic factors on cognitive development, including theoretical and conceptual frameworks.

Chapter Three: Research Methodology

This chapter will describe the research design, population, sampling procedure, data collection methods, data analysis tools, limitations, ethical considerations, and organization of the chapters.

Chapter Four: Data Analysis and Findings

This chapter will present the results of the data analysis.

Chapter Five: Summary, Conclusion and Recommendations

This chapter discusses key findings and their implications, compares them with existing literature, and addresses study limitations. It concludes with practical recommendations for policymakers, future research directions, and interventions to support cognitive development among young learners.

CHAPTER TWO
LITERATURE REVIEW

2.0 Introduction

This literature review examines the impact of socioeconomic factors on cognitive development in young learners, specifically focusing on children in grades 1 to 3 (ages 7 to 9) at the selected primary school in Luanshya District, Zambia. The review synthesizes existing research, theoretical frameworks, and conceptual models to provide a comprehensive understanding of the topic in relation to how it lays the foundation for future academic success and overall well-being of children. It also identifies gaps in the current literature, emphasizing the need for the present study.

To achieve this end, the chapter will first examine existing scholarly sources, delineating the background and context of the scholarly works and discussing the existing research while noting common themes and debates related to how socioeconomic factors impact cognitive development in young learners. Second, the chapter will discuss theories associated with the thesis topic, analyzing relevant theoretical frameworks and how they relate to the research topic at hand, describing the strengths and limitations of these theories. Third, the chapter will explore key concepts, defining the key concepts of the research work and presenting the dependencies among them. Finally, the chapter will identify gaps and limitations in existing literature, highlighting the areas that require further research and investigation, proposing new directions to address the limitations of existing studies.

By following this structure, the chapter will provide a thorough review of the current state of knowledge on the impact of socioeconomic factors on cognitive development, setting the stage for the present study's contributions.

2.1 Main and Empirical Literature Review

Socioeconomic factors play a crucial role in shaping a child's development, affecting their physical, emotional, intellectual, and social growth throughout all critical stages (Bradly & Corwyn, 2002). Extensive research supports this understanding, emphasizing the interconnectedness between a child's socioeconomic environment and their overall well-being (Bradly & Corwyn, 2002; Duncan & Brooks-Gunn, 1997; McLoyd, 1998). Consequently, it is imperative to review the literature that endeavors to relate how socioeconomic factors impact cognitive development for several pertinent reasons.

First, child development is a holistic process encompassing physical, social, emotional, and intellectual growth that is crucial in forming an individual (Integrative Psych, 2024). Therefore, it is critical to review literature that explains the social and economic influences affecting these developments, especially in relation to educational outcomes. Moreover, such literature reveals the positive influences that increase the achievement of personal growth and productive contribution of the child to the well-being of society in their adult life.

Secondly, reviewing literature on socioeconomic factors and cognitive development is essential in identifying influences that may adversely impact individual development. Upon identification and

measurement of these influences, it becomes possible to formulate interventions aimed at mitigating the effects of such limitations (Integrative Psych, 2024; Thomas, 2017).

2.1.1 Background and Context

Generally, studies report a strong association between socioeconomic status (SES) and cognitive development among children (Naudeau et al., 2011; Christensen et al., 2014; Ahmed et al., 2023). Specific aspects of SES, such as family income, maternal education, nutrition, poverty, healthcare, and wealth, are linked to cognitive development and educational performance of children (Bradly and Corwyn, 2002; Greenfield & Moorman, 2019). This association has far-reaching consequences on the future of the child, including their educational outcomes (Naudeau et al., 2011). The study by Naudeau et al. (2011) on "cognitive development among young children in low-income countries" reports that cognitive development is associated with SES as proxied by wealth and caregiver education, nutrition, and parenting. Consequently, evidence shows that the lack of these factors delays cognitive skills, and children who are not exposed to these factors in early childhood are more likely to drop out of school than those whose cognitive skills and overall school readiness were higher upon primary school entry. A study in Turkey, Ecuador, Nicaragua, and Madagascar shows that children from wealthier backgrounds score much higher than those from lower SES in the areas of short-term memory and language comprehension as measured by Test de Vocabulario en Imagenes Peabody (TVIP) (Naudeau et al., 2011).

Another longitudinal study carried out in rural Uganda by Ahmed et al. (2023) indicates that inadequate nutrition and insufficient stimulation in early childhood can lead to long-term deficits in cognitive and social development. For instance, a study by Mwanza-Kabaghe (2022) in schools in Lusaka indicates that SES, measured in terms of home possessions such as owning a television set, accounts for improved literacy skills in young children. As a result, there is a strong linkage between compromised educational outcomes and low SES (Greenfield & Moorman, 2019; Gupta, 2024). For this reason, Bradly and Corwyn (2002) posit that SES is a consistent predictor of educational success in higher stages of education.

There are more consequences brought about by unfavorable childhood SES in the education prospects of children (Drago et al., 2020). Drago et al. (2020) observes that these educational disadvantages can have lasting effects and are associated with adverse outcomes in adult life, such as lower incomes, high fertility rates, and suboptimal care for their own children. Consequently, Drago et al. (2020) adds that delayed cognitive development, because of its lifelong ramifications, contributes to the intergenerational transmission of poverty and can thus have broader consequences for the economic development of low- and middle-income countries. This research is supported by a study by Greenfield and Moorman (2019) that found that SES is a life course antecedent to later life cognition, specifically in terms of initial levels of cognition in later life, especially for the domain of language/executive function, with particularly large and robust associations involving parents' education.

2.1.2 The Zambian Context

As of 2022, Zambia's population has increased from approximately 13 million in 2010 to 19 million, posting a rapid growth rate of 2.7% per year, reflecting the relatively high fertility rate (Zambia Statistics Agency, 2024; World Bank, 2024). Among other factors, this has put extra socioeconomic demands on governance and investments, resulting in poverty reaching 60% of the population in 2022, up from 54.4% in 2015, worsened by limited job creation and declining labor earnings (World Bank, 2024). The GDP growth rate stands at 5.2%, the annual inflation rate at 15.4%, and the employment rate at 31.5% (Zambia Statistics Agency, 2024). There is additional pressure on the demand for jobs, healthcare, and other social

services (World Bank, 2024). As a result, living standards in Zambia have drastically dropped, especially for average earners (JCTR, 2024).

The Jesuit Centre for Theological Reflection (JCTR) reported in August 2024 that the cost of living in Zambia has increased, as indicated by the rise in the Basic Needs and Nutrition Basket (BNNB) to K10,575.93. Price increases in essential items such as roller meal, kapenta, and vegetables, along with a decrease in the price of charcoal, have affected average and low-income households (JCTR, 2024). This situation impacts parental involvement in their children's education and cognitive development, as many parents spend time farming, engaging in small businesses, or working average jobs to provide for their families (McCoy et al., 2015).

The Zambian government increased the budgetary allocation to the Ministry of Education in the 2024 budget planning from K23 billion in 2023 to K27 billion in 2024, accounting for 15.4% of the total budget compared to 13.9% in 2023 (UNICEF, 2024). In recent years, Zambia has achieved near-universal primary school completion levels and national statistics indicate a completion rate of 91.8% at Grade 7 (UNICEF, 2024). The introduction of free education in early education has increased prospects of improving literacy levels, although it has come at the significant expense of the quality of education (UNICEF, 2024).

Despite the primary education enrollment standing at 87.9% (UNICEF, 2024) for children in the early years, the coverage of care, learning, and education services remains persistently low. For instance, as of 2023, the pupil-to-teacher ratio, which previously averaged 1 to 45, was about 1 to 80, and in some remote areas, it was as high as 1 to 120 (Africa Reports, 2023).

2.1.3 Research Problem and Objectives

Many of the studies on the impact of socioeconomic status (SES) on cognitive development and resulting educational attainment have been conducted in high-income countries (HICs) (McCoy et al., 2015; Drago et al., 2020). However, these studies in the Western world have provided methodologies and insights that highlight the need for expanded research on child development in sub-Saharan Africa (Ribe et al., 2018). The limited contextual research on the relationship between socioeconomic factors and cognitive development in Zambian schools, particularly at the selected primary school, has blurred mitigative and interventional solutions to maximizing the cognitive potentials of young learners in Zambia through the dismantling of inequalities in education and social settings (McCoy et al., 2015).

Understanding the effect of socioeconomic factors on cognitive development and the educational performance of young children is essential (Greenfield & Moorman, 2019) for advancing promising policies that will mitigate educational inequalities and programs that will optimize cognition for children and adults of diverse socioeconomic backgrounds.

Given the above background and context, the following literature review will discuss key findings and results of studies on socioeconomic factors and cognitive development in young learners. It will also explore the methodological approaches and limitations of these studies, analyzing themes, patterns, and trends in literature. The study will aim to identify key socioeconomic factors affecting cognitive development in young learners at the selected primary school in Luanshya District. It will further analyze how these socioeconomic factors influence cognitive development outcomes such as memory, attention, and problem-solving skills. Additionally, the study will explore potential interventions, including social work strategies that can mitigate the negative impacts of low socioeconomic status on cognitive development. The role of school resources and their interaction with socioeconomic factors in influencing cognitive development will also be scrutinized. Furthermore, the study will examine the extent and impact

of parental involvement on the cognitive development of young learners from different socioeconomic backgrounds. To ensure that the educational outcome variable is considered, the study will assess the impact of socioeconomic factors on educational achievements and learning outcomes, including literacy and numeracy skills in young learners.

2.1.4 Socioeconomic Factors and Cognitive Development

The studies on the association between socioeconomic factors and cognitive development are substantially documented globally, though there is less documentation in sub-Saharan Africa (Naudeau et al., 2011; Fernald et al., 2011; Christensen et al., 2014; Boo, 2014; Dickerson & Popli, 2015; Garces et al., 2018; Ribe et al., 2018; Ahmed et al., 2023; Drago et al., 2020; Mwanza-Kabaghe, 2022; Na'amnih et al., 2023). The study by Naudeau et al. (2011) reviewed evidence of how cognitive development can be delayed in early childhood and how indicators of cognitive development in early childhood are strongly correlated with socioeconomic status in low-income countries. Comparatively, evidence from Ecuador, Nicaragua, and Madagascar shows a close association between socioeconomic status and cognitive development in third-world countries when tested for receptive language abilities using the Test de Vocabulario en Imagenes Peabody (TVIP) (Naudeau et al., 2011). The review of the findings indicates that children from wealthy and high parental education backgrounds, like in Ecuador, obtained higher scores on a test of receptive language compared to children from low socioeconomic status, who scored less (Naudeau et al., 2011). This is attributed to the fact that children from low socioeconomic status tend to receive less speech directed at them, and the speech they do hear tends to have reduced lexical richness and sentence complexity (Naudeau et al., 2011).

This is like the findings by Mwanza-Kabaghe (2022), who conducted a study in Lusaka, Zambia, to investigate if socioeconomic status and home literacy are associated with the reading achievement of first graders. This study also sought to identify the specific pathways through which socioeconomic status and home environment mediate grade one emergent reading skills. In the study, 216 pupils were selected from 18 different schools through non-random criteria to take part in the quasi-experimental design (Mwanza-Kabaghe, 2022). The pupils were tested using the Basic Skills Assessment Tool (BASAT) and general intelligence tools to assess their abilities in emergent reading skills in a longitudinal study over seven months.

The findings illustrated that home literacy environment and socioeconomic status (SES) are associated with improvements in children's emergent reading skills. Children who came from homes where they possessed reading materials and received basic reading instructions, such as alphabetic instructions from parents, performed better than those who had not. Similarly, SES, which was measured in terms of home circumstances such as possession of a TV, sofas, and radios, was strongly associated with the reading skills of grade one pupils (Mwanza-Kabaghe, 2022). For instance, those who reported more possessions scored 12, whereas those who did not possess home possessions scored 0 (Mwanza-Kabaghe, 2022).

This evidence was earlier proposed by McCoy et al. (2015) in Zambia, which found that material resources in children's homes and levels of caregiver education were directly predictive of the number of years children spent enrolled in an early childhood education program and home-based reading materials and activities in the full sample using cross-sectional data. Meanwhile, preschool attendance and mother's occupation, especially the latter, stood as strong predictors of children's reading skills (Mwanza-Kabaghe, 2022). However, Mwanza-Kabaghe (2015) did not specify the mother's occupation or degree of occupation to demonstrate the occupational variables that influenced children's reading skills, unlike

Cermakova et al. (2023), who specified occupational categories. In the study by Cermakova et al. (2023), categories of parents' education were specified as follows: primary, vocational without high school graduation, vocational with high school graduation, specialized high school with graduation, general high school with graduation, post-high school graduation study, university education, and postgraduate education. This was done to investigate the specific effects of the occupational and educational variables on the cognitive abilities of children (Cermakova et al., 2023).

Nonetheless, what stands out from Mwanza-Kabaghe's (2022) study is that preschool attendance and mother's occupation have positive effects on the concurrent and longitudinal effects on children's school achievement in emergent reading skills. This is corroborated by a study by McCoy et al. (2015) in several towns in Zambia involving 2,711 six-year-old children, where the findings indicated that maternal education may relate more strongly and directly with children's language.

Another study by Fernald et al. (2011) in a very low-income population in Madagascar illustrates how socioeconomic position is associated with child development. In this study, socioeconomic status (SES) was measured by maternal educational attainment and household wealth index. The participants, comprising 1,332 children aged between 3 and 6 years, were sampled through randomization and tested in various domains of cognitive skills such as working memory, fluid reasoning, sustained attention, memory of phrases, and receptive language. These tests are comprehensive, contrary to an earlier study by Naudeau et al. (2011) in a similar low-income population that only concentrated on receptive language. The findings by Fernald et al. (2011) showed that the wealth index accounted for substantial variances in receptive vocabulary compared to maternal education. In the same vein, wealth influenced the largest performance of children in executive functions, while maternal education accounted for better performance in working memory and sustained attention. In contrast, a later study by Mwanza-Kabaghe (2022) showed that the mother's influence through maternal occupation explained grade one pupils' high scores in emergent language skills. However, in this study by Fernald et al. (2011), the wealth index in terms of poverty is attributed to poor performance in language, as the brain region for language, the Perisylvian region, undergoes long maturation, which would be affected by environmental influences like poverty (Perkins et al., 2013).

Furthermore, socioeconomic factors showed an association with cognitive performance in a longitudinal study of children aged 4.5 years in the USA, born at public and private hospitals (Christensen et al., 2014). In this study, the objective was to assess the association of SES and child enrichment with cognitive performance of a cohort with a vast range of SES. In particular, the study sought to determine whether enrichment attenuates the influence of socioeconomic factors on the cognitive performance of preschool-age children from advantaged (private hospital) and disadvantaged (public hospital) environments. In this case-controlled study, SES was measured by maternal education, perinatal factors such as smoking and drinking, and cognitive enrichment was measured by books at home, preschool attendance, and the quality of the neighborhood.

The study revealed that children born at public hospitals had considerably lower mean cognitive test scores, known as Differential Ability Scales (DAS), than those born at private hospitals. Even though Christensen et al. (2014) admitted that the study did not investigate causal relationships, a wide range of socioeconomic factors affected performance beyond the specific factors. However, the study established that cognitive enrichment attenuated or reduced the influence of these socioeconomic factors on cognitive performance. Such a finding is crucial for policymakers to be proactive in providing adequate social

amenities that would improve living standards for families and, consequently, cognitive development, as admitted by a study in Zambia by Mwanza-Kabaghe (2022) that demonstrated that home possessions accounted for higher scores in alphabetical skills by grade one pupils. The possession of household items is indicative of wealth (Ribe et al., 2018) and would help children improve their language-related cognitive skills (Mwanza-Kabaghe, 2022).

Like the studies that researched cognitive development measured by receptive languages (Naudeau et al., 2011; Mwanza-Kabaghe, 2022), a study by Boo (2014) documented variances in cognitive development tests in receptive vocabulary skills. Where the two studies (Naudeau et al., 2011; Mwanza-Kabaghe, 2022) established that the cognitive development of children is mediated by nutrition, parenting, income, and preschool, Boo (2014) emphasized that preschool and nutrition are cardinal mediators of cognitive achievement in Ethiopia and nutrition in Vietnam, respectively. Meanwhile, Boo (2014) found that differences in cognitive development in receptive languages between richer and poorer children persist before they enter early education and after they leave early childhood education. This is corroborated by a later study by Dickerson and Popli (2015) that investigated the consequences of persistent poverty on the cognitive ability of children in their early years of life. In this longitudinal study, comprising 19,000 participants aged 7 years, results on cognitive development tests done using the British Ability Scales (BAS) showed that non-poor children scored higher across all years of tests than children who lived below the 60% poverty income level in the United Kingdom (Dickerson & Popli, 2015). The findings are similar to the earlier reviewed study by Boo (2014) on the persistence of cognitive differences mediated by socioeconomic factors such as poverty and other related constructs like nutrition. In fact, Dickerson and Popli (2015) contribute that persistent poverty has far-reaching negative consequences on the cognitive development of children, including educational outcomes. This study by Dickerson & Popli (2015) is unique as it examines poverty's effect on children's development in a first-world country.

In relation to the study by Dickerson & Popli (2015), a study by Garces et al. (2018) examined the neuropsychological and neurocognitive performance of children aged 7, 9, and 11 years whose parents live in extreme low socioeconomic status in Ecuador. The study sought to find an interaction between SES and cognitive development of children and investigate whether the effects of SES on cognitive development differ according to the function of age (Garces et al., 2018). The study included 274 children from public, subsidized, and private schools categorized as medium or low SES, sampled through random sampling, and tested on cognitive domains: processing speed, visual-motor coordination, sustained attention, memory, language, and executive functions using the BENCI battery, a computerized battery for children's assessment (Garces et al., 2018). Data was analyzed using descriptive analysis and ANOVA test, and the findings showed that low socioeconomic status is a predictor of extremely poor neurocognitive skills such as memory and attention in children under 5 years of age and over 6 years of age (Garces et al., 2018). Poverty was a major determinant of low cognitive performance such as language, memory, and executive functions (Garces et al., 2018). This is confirmed by a later study by Na'amnih et al. (2023) that argued that the environment of poverty influences neurodevelopment by depriving the brain of key stimuli and increasing its exposure to negative input. In the same vein, maternal education level, housing, and social class influenced neuropsychological performance scores (Garces et al., 2018; Na'amnih et al., 2023).

Further, data in the study by Garces et al. (2018) indicated that 'age' is a critical pathway of SES's effect on cognitive performance in verbal memory and some executive functions, namely abstract reasoning and

inhibitory control. According to the study, 11-year-olds performed better than 7- and 9-year-olds in verbal memory and visual memory. This is interesting because there is limited research on the relationship between SES and cognitive performance and the effects of this interaction on the function of age. Indeed, age appeared to be a factor in this study because 11-year-olds also recorded faster reaction times on simple time reactions than 7- and 9-year-olds. However, the study does not specify the categories of SES of 11-year-olds in which age functions appeared to be a factor, that is, which class of 11-year-olds (medium or low SES) performed better in correlation with age. Meanwhile, a study by Drago et al. (2020) and Mwanza-Kabaghe (2022) corroborates the study by Garces et al. (2018) that maternal influence in terms of occupation and education is a pathway of SES on cognitive performance in the domains of language, such as phonetic fluency. Expanding the effects of maternal education and occupational influences on cognitive development of children, a randomized control study by Ahmed et al. (2023) found that the mother's education on nutrition and cognitive stimulation was related to improved child health, survival, and cognitive development of children at 20 and 24 months after the initial intervention at 6 and 8 months of age in rural Uganda. A similar study in rural Tanzania (Drago et al., 2020) found that among the psychosocial and environmental determinants of child cognitive development, maternal education accounted for a strong influence on cognitive performance of children.

2.1.5 Cognitive Outcomes and Educational Attainment

Several studies indicate that cognitive development is an important factor influencing the academic performance of children (McCoy et al., 2015; Sternberg et al., 2009; Peng & Kievit, 2020; Shi & Qu, 2021; Von Stumm et al., 2022). For instance, in a study carried out in China on the interaction between cognitive ability and academic performance, Shi & Qu (2021) found that cognitive ability has a significant effect on whether young people can achieve academic success. Shi & Qu (2021) conceive cognitive ability as the human brain's ability to process, store, and extract information, including attention, memory, and reasoning ability. They cite a study of 4,749 junior high school students in China, which found that selective attention, short-term memory, and reasoning ability are significant predictors of language and mathematics performance. Reasoning ability directly affects academic performance, while selective attention and short-term temporal memory indirectly affect academic performance through reasoning ability (Shi & Qu, 2021).

A recent study in 2021 in China comprising 572 high school students corroborates these findings, showing that representational ability (RA) and thinking conversion ability (TCA) were associated with the learning of spatial knowledge in subjects such as mathematics and with the speed and accuracy of thought transformation. However, a limitation of this study is that it is cross-sectional and could have overlooked other variables affecting academic performance apart from cognitive development factors (Shi & Qu, 2021).

Other studies have strongly indicated that cognitive development abilities are a foundational framework for academic performance (Peng & Kievit, 2020). Among these are working memory, which is manifested in simultaneous information storage and manipulation (Peng & Kievit, 2020); reasoning, which refers to the capacity to solve novel and complex problems (Peng & Kievit, 2020); and executive function, which is signified by cognitive and social-emotional processes that underlie goal-directed behavior such as flexible thinking, self-control, and self-regulation (Peng & Kievit, 2020).

2.1.6 Interventions and Mitigation Strategies

Literature on Zambia confirms evidence from international studies that early childhood education, parental involvement, improved income, and school-based initiatives largely contribute to increased cognitive abilities and eventual school performance attainment (Zuilkowski et al., 2012; McCoy et al., 2015; Mwanza-Kabaghe, 2022). The study by Zuilkowski et al. (2012) on early childhood education found that attendance at early childhood education is associated with better physical and cognitive development and a greater likelihood of on-time transition to primary school. Mwanza-Kabaghe (2022) corroborated this evidence by finding that preschool education had a strong effect on children's literacy skills.

As in other international studies (Garces et al., 2018; Na'amnih et al., 2023), parental involvement, especially maternal stimulation, accounted for children's improved cognitive skills and school performance (McCoy et al., 2015). In terms of wealth index, strong evidence indicates that children who live in homes with material items such as a fan score better in reading skills (Mwanza-Kabaghe, 2022). In the study in Zambia, McCoy et al. (2015) found that household wealth may be a particularly strong predictor of non-verbal dimensions of cognition (i.e., reasoning and executive function) both directly and indirectly through home-based stimulation.

Lastly, school-based initiatives that emphasize quality education are essential for improving cognitive abilities and educational attainment of children (Zuilkowski et al., 2012). Zuilkowski et al. (2012) cite key qualities of an Early Childhood Education (ECE) center, such as curriculum, trained teachers, nutrition, and availability of teaching and learning materials, as cardinal socioeconomic factors that account for improved cognitive abilities and educational attainment of children.

2.2 Theoretical Framework

Under this section, the following theories, which are critical to the applicability of the thesis topic, will be reviewed: Piaget's Theory of Cognitive Development (1954), Vygotsky's Sociocultural Theory (1978), and Bronfenbrenner's Ecological Systems Theory (1992).

2.2.1 Piaget's Theory of Cognitive Development (1954)

Cognitive development entails the capability of knowing and comprehending (Rabindran, 2020). Additionally, it involves thinking processes intended to reason logically and solve problems (Kazi & Galanaki, 2020). One of the pioneers to venture into studying children's thinking, consciousness, intelligence, and scientific reasoning in sequential steps is Jean Piaget (Rabindran, 2020). Jean Piaget, who is widely credited for his influence on cognitive development studies, explained how cognitive development evolves and the factors that influence it (Zana et al., 2019).

Jean Piaget proposed one of the most famous theories regarding cognitive development in children by devising four cognitive developmental stages: sensorimotor, preoperational, concrete operational, and formal operational stages (Zana et al., 2019; Rabindran, 2020). He largely attributed internal influences as contributing to cognitive development when formulating these four stages (Rabindran, 2020; Oxford Reference, 2024). However, Piaget admitted that cognitive development is an interplay between innate capabilities and environmental influences (Rabindran, 2020; Mcleod, 2024).

Figure 2. The four stages are (University of Saskatchewan, 2024):

Stage	Age	Goal
1.Sensorimotor	Birth to 18-24 months	Object permanence
2. Preoperational	2 to 7 years old	Symbolic thought
3. Concrete operational	Ages 7 to 11 years	Logical thought
4. Formal operational	Adolescence to adulthood	Scientific reasoning

2.2.1.1 Sensorimotor

This is the stage where children learn about the world through their interaction with the environment using their senses and physical objects (Zana et al., 2019). At this stage, they achieve object permanence, which denotes that children learn that objects still exist even when they are not seen (University of Saskatchewan, 2024). For example, if a child was playing with a toy and the parent takes it away, the child will begin to search for it, signifying the child's understanding that the toy still exists even though it is not in their sight (University of Saskatchewan, 2024). This stage requires that parents talk to children to stimulate their sensory abilities (Cherry, 2024).

2.2.1.2 Preoperational

The major traits of this stage are that children begin to think symbolically and learn to use words and pictures to represent objects (Bjorklund & Blasi, 2012). Additionally, children become egocentric, meaning their own perspective is much more important than that of others (Cherry, 2024)

2.2.1.3 Concrete operational

At this stage children achieve thinking logically and have organized thoughts (Rabindran, 2020). Additionally, children begin to think about what other people might feel and think (Cherry, 2024).

2.2.1.4 Formal Operational

At this stage, children develop more abstract capabilities and can view life situations from multiple perspectives, seeking various solutions to problems (Cherry, 2024). One of the key contributions of Piaget's cognitive development theory is that children are not passive recipients of information but are actively engaged in exploring the world around them (Rabindran, 2020). The theory is also credited for proposing developmental cognitive stages, correlating with the idea that age, connected to maturation, is fundamental in children's cognitive and educational performance, as researched by Garces et al. (2018). Vygotsky (1978) criticized the view that maturation is only a precondition for learning, arguing instead that learning drives maturation. Additionally, researchers highlight Piaget's cognitive development theory's failure to consider cultural and social influences, as emphasized by Bronfenbrenner and Vygotsky (Zana et al., 2019).

2.2.2 Vygotsky's Sociocultural Theory (1978)

Lev Vygotsky made a unique contribution to the cognitive development of children through his sociocultural theory (McLeod, 2024). Vygotsky's sociocultural theory explains that cognitive development in children is influenced by social and cultural domains (Cherry, 2024). According to Vygotsky, cognitive development is a socially mediated process in which children acquire cultural values, beliefs, and problem-solving strategies through collaborative dialogues with more knowledgeable

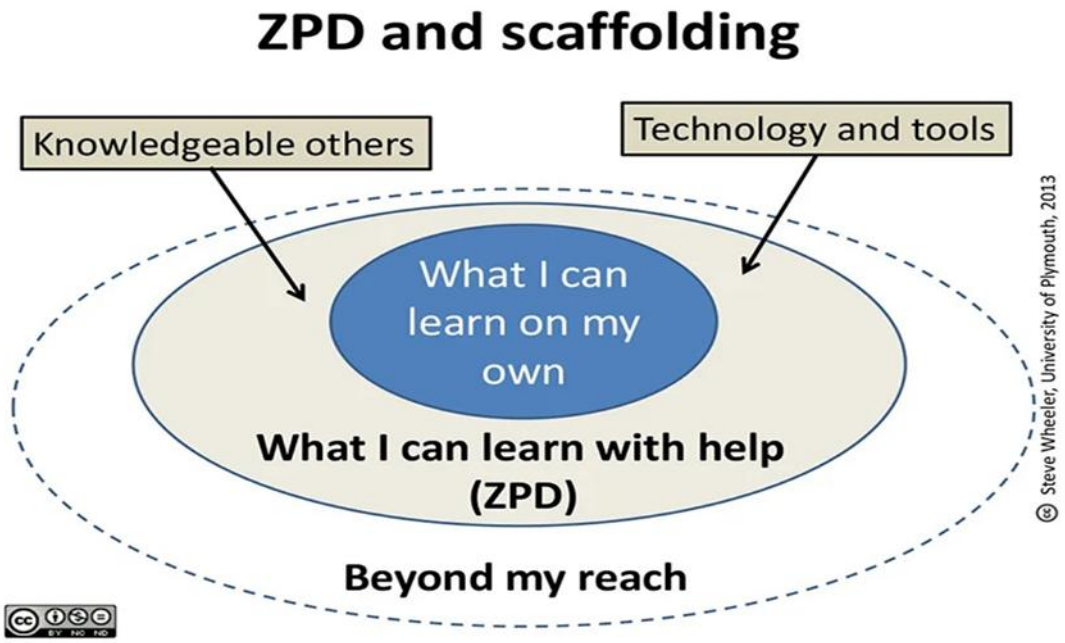
members of society (McLeod, 2024). Therefore, parents, caregivers, friends, teachers, and other related structures are critical in impacting the cognitive capabilities of children for learning (Pathan et al., 2018). Vygotsky's conceptual model argues that learning takes place at two levels: interactions with others and the integration of data into the child's mental structures (McLeod, 2024). According to Vygotsky (1978), every function in a child's cultural development appears twice: first on the social level, and later on the individual level; first between people (interpsychological) and then inside the child (intrapsychological). This applies equally to voluntary attention, logical memory, and the formation of concepts. All higher functions originate as actual relationships between individuals (Vygotsky, 1978).

Unlike Piaget, who argued that cognitive development precedes learning and that learning is an independent process through which a child actively explores external environments to obtain meaning, Vygotsky (1978) asserted that learning is a socially mediated process that takes place before development and is collaboratively integrated between the individual and more knowledgeable persons (Shabani & Frances, 2016; Medical College of Wisconsin, 2022). Given that learning is a process that takes place before cognitive development and is culturally mediated, Vygotsky (1978) developed key educational concepts: More Knowledgeable Others (MKO), the zone of proximal development (ZPD), mediation, scaffolding, internalization, and private speech (Pathan et al., 2018).

MKO, as proposed by Vygotsky (1978), signifies individuals such as teachers, parents, or peers who have a higher level of ability or understanding about a particular task (McLeod, 2024). However, Piaget criticized MKO, arguing that it suggests participation in an activity for which a child is not ready with a more knowledgeable other, leading mainly to imposing the partner's views and not affecting the child's actions (Pathan et al., 2018). According to Vygotsky (1978), MKO facilitates learning in the structure known as the Zone of Proximal Development (Scott & Palincsar, 2024).

Vygotsky (1978) defines ZPD as the distance between the actual developmental level, as determined by independent problem-solving, and the level of potential development, as determined through problem-solving under adult guidance or in collaboration with more capable peers. Cherry (2024) explains that ZPD essentially includes all the knowledge and skills that a person cannot yet understand or perform independently but can learn with guidance. In simple terms, ZPD indicates a variety of cognitive performances children learn in the presence of other people, which they cannot perform on their own (Abtahi, 2017; Main, 2022).

Figure. 3 Adapted from Simply Psychology (2024) illustrates this concept.



Zhou (2024) notes that the Zone of Proximal Development (ZPD) shows what the child can do alone and what they require adults or older peers to help with. As a result, children's development depends on ZPD, which incorporates ideal learning and growth environments (Zhou, 2024).

Meanwhile, an effective ZPD is defined through mediation, scaffolding, internalization, and language (Pathan et al., 2018; McLeod, 2024). Mediation in Vygotsky's theory explicates the representation of tools and artifacts that are both physical and psychological (Marginson & Anh, 2016; Shabani & Ewing, 2016; Pathan et al., 2018). Shabani & Ewing (2016) contend that a fundamental assumption underpinning sociocultural theory is the fact that human mental activity is a mediated process in which symbolic and socio-culturally constructed artifacts, the most significant of which is language, play an essential role in the individual's mental life. It is through language that major influences are communicated to the child through means of scaffolding (Pathan et al., 2018).

Modern scholars describe scaffolding in the context of Vygotsky as the support rendered to the child so that they can achieve cognitive potential (Pathan et al., 2018). Even though the term was never used by Vygotsky but was introduced by Wood, Bruner, and Ross (1976), as cited by McLeod (2024), the term is synonymous with ZPD. It entails activities by an expert intended to aid the transfer of knowledge to a novice, such as in the context of an interaction between a teacher and a pupil. Scaffolding facilitates the internalization of knowledge in the mental structures of the child. Internalization is the process through which children imitate and observe the behavior of adults in learning structures, allowing them to appropriate the knowledge that is being transmitted as their own (Main, 2022). Internalization in Vygotsky's theory is aided by scaffolding (Pathan et al., 2018).

While Vygotsky's theory is resourceful in the cognitive development of children, it has been criticized for overemphasizing social and cultural influences while neglecting biological or genetic factors in cognitive development studies (McLeod, 2024).

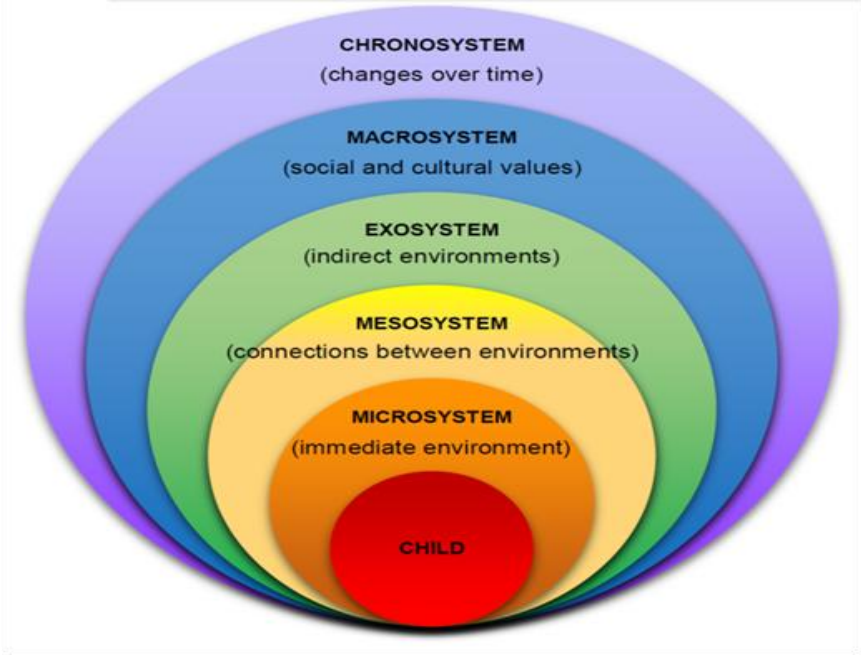
2.2.3 Bronfenbrenner's Ecological System Theory (1992)

The ecological systems theory by Urie Bronfenbrenner defines the interaction of the child with its environments (Cherry, 2023). The model emphasizes environmental and social influences in the

development of children (Cherry, 2023). The child's development is impacted by a layer of relationships divided into five systems: microsystem, mesosystem, exosystem, macrosystem, and chronosystem (Guy-Evans, 2024).

Jugessur (2022) argues that Bronfenbrenner's ecological model depicts a lifelong progressive accommodation that individuals make regarding the changing environments they encounter. This is deduced from Bronfenbrenner's (1979) conception of human ecological development, which he defined as a scientific study of the progressive, mutual accommodation between an active, growing human being and the changing properties of the immediate settings in which the developing person lives. This process is affected by the relations between these settings and the larger contexts in which the settings are embedded. This entails that the five environmental systems are interrelated and are arranged in the format of how much influence they exert on the child's life (Guy-Evans, 2024).

Figure 4. Adapted from (Budzyna & Buckley, 2023) shows the illustration of the five systems.



Paquette and Ryan (2001), relates the conceptions of the environmental systems according to Bronfenbrenner:

2.2.3.1 Microsystem

This is the inner layer in the life of the child, involving the child's direct and regular interactions with structures such as family, teachers, school friends, neighbors, and daycare environments. The interactions of microsystem structures with the child might have a strong impact on their development (Guy-Evans, 2024). Paquette and Ryan (2001) explain that at this level, relationships have impacts in two directions - both away from the child and toward the child. For example, a child's parents may affect their beliefs and behavior; however, the child also affects the behavior and beliefs of the parents (Paquette & Ryan, 2001).

Another example of this interaction is when the parents read to the child at home, and the child learns how to read (Guy-Evans, 2024). In Bronfenbrenner's terms, these influences are known as bi-directional influences, and he demonstrates how they occur at all levels of the environment (Paquette & Ryan, 2001).

2.2.3.2 Mesosystem

According to Bronfenbrenner (1979), the mesosystem is a pattern of activities, roles, and interpersonal relations experienced by the developing person in each setting with physical and material characteristics. The mesosystem, as a web of activities, signifies interactions among the microsystems that create an influence on the development of the child (Budzyna & Buckley, 2023). For example, the parents of children who attend school meetings and programs might influence their children to perform better in educational outcomes (Guy-Evans, 2024).

2.2.3.3 Exosystem

This environment system is described as an interaction between informal and formal structures such as the government, church, and workplaces (Guy-Evans, 2024). For instance, parents of children whose employment contracts are terminated may lose certain basic amenities, which can affect their children's development (Budzyna & Buckley, 2023).

2.2.3.4 Macrosystem

Budzyna and Buckley (2023) contend that the macrosystem setting represents the actual culture of an individual. These cultural contexts include the socioeconomic status of a child, their ethnicity or race, and the specific society in which the child lives. For instance, through the cultural settings of the child, they may learn hard work if that culture promotes hard work (Guy-Evans, 2024).

2.2.3.5 Chronosystem

The last layer of the environmental systems is the chronosystem, which, according to Paquette & Ryan (2001), encompasses the dimension of time as it relates to a child's environments. Guy-Evans (2024) adds that the chronosystem is related to shifts and transitions over the child's lifetime. For instance, the first entry of the child into school will greatly influence their cognitive abilities (Guy-Evans, 2024).

The ecological system has many applications in various disciplines or studies (Egbert & Roe, 2024), such as health and psychology, and especially in child development studies related to this thesis topic regarding the relationship between socioeconomic factors and cognitive development of young learners. In the field of education, a study by Zaatari & Maalouf (2022) establishes that parental involvement, at home or school, plays a significant role in student development and can offset the negative effects of victimization. For instance, the quality of life provided by the microsystem, such as having parental stimulation, will affect the cognitive abilities and eventual school achievements of the child (Jugessur, 2022).

Further, Jugessur's (2022) research demonstrates the applicability of the ecological model to educational research. The study highlights the interconnectedness between a child's overall development and their academic performance, suggesting that factors influencing a child's development also affect their educational outcomes.

Even though the theory is suitable in many fields and has achieved worldwide influence, one of its key limitations is the lack of empirical support and measurement of its variables, such as testing the influence of the chronosystem on the child's poor academic performance (Guy-Evans, 2024).

2.3 Conceptual Framework

2.3.1 Socioeconomic status and Socioeconomic Factors

Socioeconomic status (SES) is a complex theory that various studies operationalize from different vantage points (Broer et al., 2019). Several studies indicate that there is no ultimate consensus on understanding and measuring SES (Bradly & Corwyn, 2002; Broer et al., 2019). However, Jednoróg et al. (2012) posit that SES is a multidimensional construct that includes not only measures of material wealth but also education and social prestige. Gupta (2024) broadens the concept, contending that SES serves as a multifaceted indicator of an individual's or family's economic and social standing within society.

As can be seen, the existing consensus on SES is that it is a complex construct with various aspects (Bradly & Corwyn, 2002; Broer et al., 2019). However, what it particularly represents as a construct remains fragmented (Bradly & Corwyn, 2002). Gupta (2024) contends that SES encompasses various dimensions, including income, education level, occupation, and wealth, which collectively shape access to resources, opportunities, and social networks. This is corroborated by Merz et al. (2018), who explain that SES is characterized by family income, parental education, and occupational attainment.

The only different attribute that Merz et al. (2018) includes in the conceptualization of SES, differing from the explanation by Gupta (2024), is 'prestige'. Jednoróg et al. (2012) refer to this as 'social prestige'. Liew and Tan (2021) relay that social prestige refers to authority status conferred on people recognized and appreciated for their expertise, competence, and knowledge in their domains. As an attribute of SES, prestige is strongly linked with occupational roles (Liew & Tan, 2021). For instance, the prestige of an engineer is associated with competence, while that of a psychologist is correlated with warmth (Liew & Tan, 2021).

Given the above, what is apparent is that authors agree that SES is a composite term, meaning it is made up of many different parts (Bradly & Corwyn, 2002; Jednoróg et al., 2012; American Association of Psychologists, 2017; Baker, 2014; Gupta, 2024). The list of variables or factors of SES is inexhaustible, but it includes the aforementioned factors: education, income, parental occupation, wealth, health, and prestige (APA, 2018; Gupta, 2024).

There is a salient distinction between socioeconomic status and socioeconomic factors among several studies (Jednoróg et al., 2012; Garcés et al., 2018; Merz et al., 2018). Taylor et al. (2023) explicates that SES is an index of an individual's educational, financial, and social resources. Others agree that SES is an umbrella term composed of distinct aspects (Garces et al., 2018). But SES is often used as a single construct to summarize an individual's or group's overall social and economic position (APA, 2018). What SES represents or how it is measured remains a point of contention among researchers (Bradly & Corwyn, 2002; Bornstein & Bradley, 2014; Broer et al., 2019).

Historically, there have been two sides of the debate on what SES represents (Bradly & Corwyn, 2002). According to Bradly & Corwyn (2002), there has been a tug-of-war between proponents of SES as representing class (or economic position) and proponents of SES as representing social status (or prestige). Current research favors the economic position of SES (Bradly & Corwyn, 2002; Broer et al., 2019). The economic position signifies capital or family investment, which gives active access to various resources. The summarized resources are income, education, and occupation (Bradly & Corwyn, 2002; Baker, 2014; Linberg et al., 2019).

These three factors have become the salient measurements of socioeconomic factors among researchers (Baker, 2014; Linberg et al., 2019; Gupta, 2024). Linberg et al. (2019) corroborate this, contending that

socioeconomic status (SES) is usually indicated by income, education, occupation, or some combination thereof. However, in a study titled "Socioeconomic Status, Child Enrichment Factors, and Cognitive Performance Among Preschool-Age Children", Christensen et al. (2014) agree that SES is influenced by factors at the individual level, such as household income, parental education, and parental occupation. Additionally, Christensen et al. (2014) argue that SES is influenced at a broader level by factors such as neighborhood of residence. Consequently, both internal (home) and external (community) determinants impact the cognitive abilities of young children and their eventual school achievement (Na'amnih et al., 2023).

Although related, socioeconomic status and socioeconomic factors are distinct concepts (APA, 2020). Socioeconomic status is a composite term referring to an individual's or group's position within a social hierarchy based on economic and social characteristics such as income, education, occupation, wealth, and social class (APA, 2018). Socioeconomic factors, on the other hand, encompass a broader range of social and economic elements that influence an individual's or group's life outcomes and opportunities, including income, poverty, education, literacy, employment, occupation, housing, and access to health (Guo et al., 2020). The distinction between them lies in that socioeconomic status offers a broad measure of an individual's or group's rank within a social hierarchy, while socioeconomic factors are the specific components, such as income, education, and occupation, that constitute this overall status (APA, 2020; CDC, 2023).

To illustrate, socioeconomic status is the final dish, whereas socioeconomic factors are the individual ingredients that go into making that dish (Ghosh et al., 2014; Oakes & Andrade, 2017; Gupta, 2024).

In this study, income, education, occupation, and their contrasts, such as poverty, unemployment, and lack of education, will be discussed to investigate their impact on the cognitive development of young learners and subsequent educational attainment.

2.3.2 Cognitive Development and Socioeconomic Factors: Income, Education and Occupation

As explained above, current measurements of socioeconomic status (SES) include income, education, and occupation (Bradley & Corwyn, 2002; Linberg, 2019). Researchers document that SES is categorically measured as high, middle, and low (Garces et al., 2018; Greenfield & Moorman, 2019; Na'amnih et al., 2023). Consequently, the three ascribed measurements of SES—income, education, and occupation—are equally rated as high, middle, and low in the socioeconomic status index (Broer et al., 2019). However, Broer et al. (2019) argue that there is no one best measure of SES because the choice of SES measure depends on conceptual relevance, the role of social class in the study, the applicability of the measure to the specific populations being studied, the relevance of a measure at the time of study, the reliability and validity of the measure, the number of indicators included, the level of measurement, the simplicity of the measure, and comparability with measures used in other studies.

Despite Broer et al.'s (2019) argument, the use of income, education, and occupation and their related constructs to measure SES is based on how these three socioeconomic factors collectively influence access to resources, opportunities, and social networks (APA, 2020; Gupta, 2024). Among these common indicators of socioeconomic factors, income is particularly prominent (Bradley & Corwyn, 2002). The argument for income as the prominent variable of SES is viable because its presence or absence can respectively enhance or decrease other variables, such as educational attainment and occupation (Arnold, 2021). For instance, Wright et al. (2017) suggest that a lack of income leads to poverty, which subsequently results in failure to achieve educational outcomes. Similarly, a lack of income creates

poverty that will affect families' investments and lead to occupational challenges (Dickerson & Popli, 2015).

Gupta (2024) presents an in-depth conception of the three socioeconomic factors and how they function as determinants of various life outcomes. For Gupta (2024), income, as a component of SES, directly impacts individuals' purchasing power, standard of living, and access to basic necessities. Further, Gupta (2024) adds that educational attainment, another dimension of SES, not only reflects individuals' academic achievements but also correlates with their access to knowledge, skills, and opportunities for upward mobility. Additionally, Gupta (2024) proposes that occupational status reflects the type of work individuals engage in and the prestige associated with their profession, influencing their socioeconomic standing and social mobility.

While Gupta (2024) discusses the impact of income, education, and occupation primarily in adulthood, Noble et al. (2004) include the influence of socioeconomic factors on families during childhood. It is at this stage of life that cognitive development is crucially formed, and socioeconomic factors play a paramount role in either enhancing or delaying it (Naudeau et al., 2011). How socioeconomic factors impact cognitive development in children does not have a standardized measurement framework among authors (Garces et al., 2018). However, Boo (2014) highlights the common notion that parents' or families' income, education, occupation, and their counterparts, such as poverty, strongly influence the cognitive development of young children. Jednoróg et al. (2012) stress that children's cognitive abilities and school achievements are deeply affected by parental SES. Numerous studies have reported lower cognitive performance in relation to unfavorable environments.

For instance, Boo (2014) found that poor nutritional status and low levels of cognitive development in early childhood are important determinants of outcomes such as fewer years of schooling, less learning while in school, lower cognitive skills, worse health in adolescence (including mental health), and in adulthood, a lower probability of employment, lower earnings, lower wage rates, and more criminal activity. Though there is limited research on how socioeconomic factors in general affect the cognitive development of young learners, especially in low-income countries of rural sub-Saharan Africa (Ribe et al., 2018), researchers have explained how particular factors affect cognitive development in children (Garces et al., 2018; Ahmed et al., 2023).

Before reviewing these influences of socioeconomic factors, it is essential to review the literature on the conception of cognitive development in young children. Studies on cognitive development in young children are well documented (Naudeau et al., 2011; Garces et al., 2018; Ahmed et al., 2023). Cognitive development is an aspect of child development (Brodowicz, 2024). According to Brodowicz (2024), child development refers to the biological, psychological, and emotional changes that occur in human beings between birth and the end of adolescence, as the individual progresses from dependence to increasing independence. Engle & Black (2008) conceive child development broadly by defining it as the ordered emergence of interdependent skills of sensorimotor, cognitive–language, and social–emotional functioning, which depend on the child's physical well-being, family context, and larger social network. A key element deduced from this conception of child development is independence (Engle & Black, 2008; Brodowicz, 2024), which helps children achieve a high degree of confidence, self-esteem, and motivation in their growth (Cerino, 2021).

As an aspect of child development, cognitive development encompasses genetic, cerebral, cognitive, emotional, and behavioral processes (Garces et al., 2018). More specifically, Gauvain & Richert (2016)

contend that cognitive development is how humans acquire, organize, and learn to use knowledge. Patel, Pratt & Greydanus (2002) introduce key terms in their conception of cognitive development: problem-solving, critical thinking, and memory. According to Patel, Pratt & Greydanus (2002), cognitive development refers to the level of the child's or adolescent's ability to perform simple to complex mental tasks, including attention, mental processing speed or alertness, thinking skills, problem-solving skills, and judgment. These attributes, problem-solving, critical thinking, and memory are key to the long-term impact on academic attainment at school age and in adulthood (Na'amnih et al., 2023).

Therefore, factors that can enhance or delay cognitive performance include income, education, and occupation (Naudeau et al., 2011). For instance, Garces et al. (2018) argue that a larger family income is associated with a higher level of parental education, superior housing conditions, greater cognitive stimulation at home, and improved cognitive performance in children.

2.4 Research Gap

The main gaps in the literature are due to geographical focus on high-income Western countries, which do not consider cultural and environmental factors of Sub-Saharan Africa. Other limitations include non-representative sampling, and cross-sectional research that prevents causal attribution. Key gaps identified are listed below:

1. McCoy, C. D., Zuilkowski, S. S., & Fink, G. (2015). "Poverty, Physical Stature, and Cognitive Skills: Mechanisms Underlying Children's School Enrollment in Zambia." Developmental Psychology 51(5): 600–614.

- The gap identified is a longitudinal limitation where data was collected concurrently, thus affecting causal attribution.

2. Naudeau, S., Martinez, S., Premand, P., & Filmer, D. (2011). *Cognitive development among young children in low-income countries. No Small Matter.*

- The gap identified is a measurement gap manifested in limited assessment of developmental domains. The study primarily focused on language abilities, representing only one aspect of children's cognitive development.

3. Mwanza-Kabaghe, S. (2022). *Home Literacy Environment and Social-Economic Status as Predictors of Initial Literacy in the first Grade in Lusaka-Zambia.* Multidisciplinary Journal of Language and Social Sciences Education, 5(2).

- The limitation identified is the deployment of a quasi-experimental design that excluded randomization, which could affect validity. Not all groups were compared, and participants were recruited by teachers who had knowledge of the characteristics being measured.

4. Fernald, C. H. L., Weber, A., Galasso, E., & Ratsifandrihamanana, L. (2011). *Socioeconomic gradients and child development in a very low-income population: evidence from Madagascar.* Developmental Science, 1–16.

- Limited distribution of socioeconomic factors gap. The study considered fewer mediating variables apart from wealth and maternal education.

5. Christensen, D., Schieve, L., Devine, O., & Botch, C. (2014). *Socioeconomic status, child enrichment factors, and cognitive performance among preschool-age children: Results from the follow-up of growth and development experience study.* Research in Developmental Disabilities, 35(7), 1789-1801.

- Data collection limitation anchored on interview-dependent data, which could introduce social desirability bias and limited recall bias.

6. Dickerson, A. & Popli, G. K. (2015). *Persistent poverty and children's cognitive development: evidence from the UK Millennium Cohort Study.* J. R. Statist. Soc., 179(2), 535–558.

- Data collection limitation anchored on interview-dependent data, which could introduce social desirability bias and limited recall bias.

7. Boo, F. L. (2014). *Socio-economic Status and Early Childhood Cognitive Skills: Is Latin America Different?* Oxford: Young Lives.

- Measurement gap relating to the limited validity of translated standardized language tests. Translated tests may not accurately capture language abilities in diverse cultural contexts.

8. Garcés, B. C., Quintana, C. F., García, M. P., Alcántara, F. M., Fasfous, A., & Marfil, N. M. P. (2018). *Interaction between socioeconomic status and cognitive development in children aged 7, 9, and 11 years: a cross-sectional study.* Developmental Neuropsychology.

- Analytical limitation where the study failed to disentangle effects of variables such as poverty from other low SES factors.

9. Ribe, G. I., Svensen, E., Lyngmo, A. B., Mduma, E., & Hinderaker, G. S. (2018). *Determinants of early child development in rural Tanzania.* Child Adolescent Psychiatry Ment Health, 12(18).

- Analytical limitation with a lack of causal pathway investigation. The study established correlations but did not prove causation.

10. Shi, Y. & Qu, S. (2021). *Cognitive ability and self-control's influence on high school students' comprehensive academic performance.* Educational Psychology, 12.

- Cross-sectional limitation. The study collected data at one point with less attention to causal relationships of other variables.

11. Ahmed, M., Muhoozi, G. K. M., Atukunda, P., Westerberg, A. C., Iversen, P. O., & Wangen, K. R. (2023). *Cognitive development among children in a low-income setting: Cost-effectiveness analysis of a maternal nutrition education intervention in rural Uganda.* PLoS ONE, 18(8), e0290379.

- Methodological gap or proxy data collection. Data collectors (field workers) acted as intermediaries, potentially introducing biases.

12. Drago, F., Scharf, J. R., Maphula, A., Nyathi, E., Mahopo, T. C., Svensen, E., Mduma, E., Bessong, P., & McQuade, E. T. R. (2020). *Psychosocial and environmental determinants of child cognitive development in rural South Africa and Tanzania: findings from the MAL-ED cohort.* BMC Public Health, 20(505).

- Conceptual gap with cultural neglect in the theoretical framework.

This means that the theory or study failed to adequately consider the influence of culture.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter outlines the research methodology that was used to investigate the impact of socioeconomic factors on cognitive development in young learners at the selected primary school in Luanshya, Zambia. It includes a description of the study area, research design, population, sampling procedure, sample size, sources and methods of data collection, tools for data analysis, limitations of the study, ethical considerations, and the organization of the chapters.

3.1 Description of the Study Area

3.1.1 Luanshya District

The study area is situated in Luanshya District. Luanshya Town is in the Copperbelt Province of Zambia. The population of Luanshya Town is 211,966 (Zambia Statistics Agency, 2024). Luanshya is known for its mining activities, which have created a diverse socioeconomic landscape (Mining for Zambia, 2016). Like most Zambian towns, Luanshya is largely poor, with residents living below the poverty line (World Bank, 2024). The socioeconomic challenges of Luanshya have chiefly been attributed to the collapse of the mines in the late 2000s (Mining for Zambia, 2016). Since the collapse of the mines, the town has experienced substantial economic woes, including the loss of thousands of direct and indirect jobs, closure of businesses and shops, and the departure of many residents, turning Luanshya into the proverbial "ghost town" (Mining for Zambia, 2016; Aurélien et. al., 2022). Several social inequalities have resulted from the misfortunes surrounding the fall of the mining operations. Prostitution of underage girls emerged at a distressing pace. Consequently, HIV and teenage pregnancies arose at an unprecedented rate. Crime and alcoholism among the youth and adults also increased rapidly.

Over the years, the mining investors, who are the largest employers in Luanshya, have been blamed for the limited application of Corporate Social Responsibility. The current owners of the Luanshya mine have been credited for supporting tertiary education by operating a college known as Sino-Zam Vocational College of Science and Technology (ZNBC Today, 2024). Even though it is not the core responsibility of the mine owners, primary education has largely been excluded from their corporate social obligations. Essential school equipment is inadequate in most schools in Luanshya District. For instance, several schools across the district face an alarming shortage of desks (Siyanga, 2022). To address this, the government increased the budgetary allocation to the Ministry of Education in the 2024 budget planning from K23 billion in 2023 to K27 billion in 2024, accounting for 15.4% of the total budget compared to 13.9% in 2023 (UNICEF, 2024). Besides the increased budgetary allocation, the government has expanded the Constituency Development Fund (CDF) from K27 million in 2021 to K30.8 million in 2024 (Presidential Delivery Unit, 2024). CDF is a monetary resource allocation to each constituency for development projects, including school requisites such as desks and the construction of classroom blocks and toilets. However, the CDF resource allocation has been criticized for its bureaucratic administrative bottlenecks. The rigid processes set by the government in accessing the funds have sometimes resulted in the money remaining unused in bank accounts in some constituencies due to stringent procedures. Despite the good intentions behind these processes and regulations, the allocation has affected needy schools with pressing challenges of shortages of essential educational items. For instance, the selected primary school under study has had a critical shortage of desks since 2021, with several pupils sitting on the floor or on broken or congested desks. The school made an application in 2021, but approval was received in 2024, when only 60 desks were delivered against the required number of 300 desks (based on the researcher's interview with the school management).

Furthermore, since 2021, schools have been allocated a compulsory grant that has substituted tuition or user fees. The grant is given to all public schools, including quasi-public schools. This is part of the fulfillment of the campaign promises of the UPND government, which pledged to implement a free education policy once elected. However, the grant's abolishment of other income streams such as PTA fees and user fees means that most schools receiving small amounts struggle to meet their financial needs each term. For instance, the selected primary school under study, which has received between K25,000

and K37,000 for the past three years, with more than 600 pupils and a budget exceeding K50,000, faces financial challenges once the fund is depleted. The school must wait for the next allocation (based on the

Grade	Boys	Girls	Total
1.	41	43	84
2.	36	46	82
3.	35	43	78
Grand total	112	132	244

researcher's interview with school management).

3.1.2 The Selected Primary School Under Study

The school was founded in 1986 by a Catholic missionary priest as a community school. It is situated in the Luanshya district at the Catholic Church. The school has since evolved from being a community school with volunteer teachers to a primary school with a population of 732 pupils taught by government teachers. The teaching staff consists of 22 teachers and 1 auxiliary staff member. The classes range from ECE 1 to Grade 9. The population of the subset is as follows:

Figure 5. Grade 1 to 3 student population

The infrastructure of the school is limited by the small size of the plot, which has a total area of 800 m², making it too small for major construction. However, the school has a science laboratory, a computer/library, and a classroom for each class from ECE to Grade 9. Other infrastructure includes offices for the head, deputy, senior teachers, and accountant/procurement officers. Overall, the school has medium SES infrastructure.

Figure 6. Showing google map of the school under study

The school under study is in Mikomfwa township in Luanshya district. Mikomfwa township is a relatively low-income community, with most of the population consisting of very poor peasant farmers and small-scale business owners. Large sections of Mikomfwa township are disadvantaged in terms of employment and social amenities. However, there are working-class sections with medium socioeconomic status (SES) in the township, including Levy Chito Police Camp, Mikomfwa Teachers' Compound, Ndeke Extension, and ZAMEFA/Kaoma Compound.

Levy Chito Police Camp is occupied by police officers, most of whom are on the government payroll. Mikomfwa Teachers' Compound consists of teachers, retirees, and other income earners. ZAMEFA/Kaoma Compound is named after Zambia Metal Fabricators, a company that manufactures cables. This compound is occupied by ZAMEFA workers, retirees, and other working people. By observation, the place is decent and characterized by wall fences. Ndeke Extension is the latest compound, housing a cosmopolitan community primarily composed of the working class. It is worth noting that children from all these sections attend the school under study.

The school is a grant-aided institution that has been receiving government grants since 2022 and has government-employed teachers. However, due to the meager grants, it lacks essential teaching aids such as teachers' guides, laboratory equipment, physical exercise kits, and student textbooks. Additionally, the school does not have a car. The average grant given to the school is K30,000 quarterly, against a budget of K50,000. Consequently, there are critical shortages of essential items for managing the school.

In terms of academic performance, the school has a few high-performing pupils, but most underperform in academic affairs. For example, the school was ranked number 26 out of 48 public schools in Luanshya in the Grade 8 ranking of the 2024 examination, with a collective pass rate of 75.36% (District Education Board Luanshya, 2024). Similarly, the school was ranked number 27 with a 37.78% pass rate in the Grade 9 examination of 2024 (District Education Board Luanshya, 2024). The performance is equally dismal for many Grades 1, 2, and 3 pupils, with only a handful achieving high performance. Despite these challenges, the school serves a diverse student population, reflecting the socioeconomic diversity of the region. This

setting provides a relevant context for examining the impact of socioeconomic factors on cognitive development.

3.2 Research Design and Approach

The study utilized a qualitative research methodology employing a case study research design. This design allows for a comprehensive, in-depth understanding of the problem and is best suited for examining complex social processes and behaviors that cannot be easily quantified. Additionally, it is adaptable, enabling the researcher to modify questions and approaches based on emerging findings during data collection.

3.3 Population of the study

The population of the study included all students in grades 1 to 3 (ages 7 to 9) at the selected primary school, as well as parents and teachers.

i. Grade 1: Boys - 41, Girls - 43, Total - 84
ii. Grade 2: Boys - 36, Girls - 46, Total - 82
iii. Grade 3: Boys - 35, Girls - 43, Total - 78
iv. Teachers: 3
v. Parents: 50

The grand total population is 297.

3.4 Sampling Procedure

To ensure that the data collected was rich and relevant to the research question, the study utilized purposive sampling techniques, specifically employing homogeneous sampling of the respondents. Homogeneous sampling focuses on specific subgroups to gain in-depth insights.

3.5 Sample size

The determination of a sample size involves several considerations. However, as the focus of this study was depth rather than breadth, the study will utilize a sample of 50 participants who will be purposively selected from grades 1 to 3.

3.6 Sources of Data Collection (Primary and Secondary)

Data was collected from multiple sources to provide a comprehensive understanding of the impact of socioeconomic factors on cognitive development. These sources include:

a. Students: observations and interviews
b. Parents: Interviews to gather information on socioeconomic status and parental involvement.
c. Teachers: Observations and interviews to assess cognitive development and educational attainment.
d. School Records: Academic performance data and attendance records.

3.7 Methods of data collection

a. Interviews: Semi-structured interviews were conducted with parents and teachers to gather qualitative data on the impact of socioeconomic factors.
b. Observations: Classroom observations were carried out to assess the learning environment and student engagement.
c. Document analysis: Schools records were analyzed.

3.8 Tools for Data Collection

a. Interview Guides: Semi-structured interview guides were developed to facilitate interviews with parents and teachers.

b. Observation Checklists: Checklists were used to systematically record observations in the classroom.

3.9 Tools for Data Analysis

The data was analyzed using thematic analysis. Transcripts from interviews and observations were coded and categorized to identify key themes and patterns.

3.10 Research Ethical Consideration

a. Informed Consent: Informed consent was obtained from parents and guardians before involving their children in the study.

b. Confidentiality: All data collected was kept confidential and used solely for research purposes. Participants' identities were anonymized.

c. Voluntary Participation: Participation in the study was voluntary, and participants will have the right to withdraw at any time without any consequences.

d. Minimizing Harm: The study was designed to minimize any potential harm or discomfort to the participants.

e. Permission from DEBS: Permission to conduct this study was obtained from the District Education Board Secretary.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

Cognitive development during early education is foundational for a child's future academic success and overall personal growth. In these formative years, children are developing crucial cognitive skills, including the ability to solve problems, maintain focus, and retain information. These abilities are shaped by a complex interplay of factors, and unfortunately, not all children have equal access to supportive environments that nurture optimal cognitive development. Socioeconomic disparities, encompassing factors such as family income, parental education levels, and access to essential resources like nutritious food and stable housing, can create significant disadvantages for young learners.

In Luanshya District, Zambia, some students have access to abundant resources while others struggle with poverty, unstable homes, and poor nutrition. These factors can have a profound impact on their cognitive development and overall well-being. To truly address these challenges, it is essential to understand the intricate ways in which socioeconomic factors influence cognitive outcomes in young learners. This study, therefore, employed a qualitative research methodology to delve deeper into these nuanced relationships and provide meaningful suggestions for promoting equitable learning experiences for all children in Luanshya District. This chapter focuses on the presentation and interpretation of data gathered from various sources, including interviews, observations, and document analysis.

By adopting a qualitative framework, this study aimed to gain rich, in-depth insights into the factors affecting cognitive development in young learners. Data collection involved conducting semi-structured interviews with teachers and parents, enabling the researchers to gather diverse perspectives on the challenges and opportunities within the educational landscape. Classroom observations provided firsthand insights into the learning environment and student experiences, while document analysis allowed for the examination of relevant policies and school records. These varied data sources contributed to a comprehensive and nuanced understanding of the lived realities of the participants. The collected data underwent thematic analysis, a process of identifying recurring patterns and themes that revealed significant links between socioeconomic factors and cognitive outcomes. This approach ensured a holistic

understanding of the complex issues influencing cognitive development within the specific context of Luanshya District.

4.2 Demographic Data

The study encompassed a diverse group of 297 participants, including 3 teachers, 50 parents, and 244 learners from a selected school in Luanshya District. The inclusion criteria focused on individuals directly involved in the education and development of early learners, ensuring that the research captured a variety of perspectives and experiences relevant to the study's objectives.

The demographic characteristics of the participants were as follows:

- **Teachers:** The participating teachers possessed extensive teaching experience, averaging 7 years in the teaching profession. This depth of experience provided valuable insights into the educational landscape and allowed for a more nuanced analysis of trends and challenges across different socioeconomic groups.
- **Parents:** The parent group represented a wide range of socioeconomic backgrounds, including low-, middle-, and high-income households. Furthermore, the parents represented diverse household structures, including single-parent households, extended families, and nuclear families. Their employment status also varied, with some in formal employment, others engaged in informal work, and some unemployed. Additionally, the study captured variations in housing situations, with some families residing in rented accommodations while others owned their homes. This multifaceted representation of parental backgrounds allowed for a deeper understanding of the diverse socioeconomic realities faced by families in Luanshya District.
- **Learners:** The 244 learners who participated in the study included both male and female students between the ages of 6 and 9 years old. These learners came from a variety of socioeconomic backgrounds, reflecting the spectrum of socioeconomic conditions in the district. Some children lived in densely populated, impoverished neighborhoods characterized by limited resources and challenging living conditions, while others came from more affluent backgrounds with access to greater support and opportunities.

This rich diversity in the demographic profiles of the participants was crucial for achieving a comprehensive understanding of how socioeconomic factors influence the cognitive development of learners from different backgrounds. To ensure that the data analysis aligned with the study's objectives, the researcher revisited the research objectives, which then guided the presentation, interpretation, and discussion of the findings. The analysis was organized around key themes that emerged from the data, allowing for a focused and meaningful exploration of the complex relationship between socioeconomic factors and cognitive development in young learners.

4.3 Influence of Socioeconomic Factors on Cognitive Development among Learners.

The study utilized interview schedules to ascertain the influence of socioeconomic factors on cognitive development among learners. Analysis of the responses revealed that children from affluent families generally displayed stronger language, numeracy, and critical thinking skills. These learners typically had access to resources such as storybooks, digital media, and after-school tutoring, which enriched their learning environments. Conversely, their less-privileged peers faced obstacles such as overcrowded housing, lack of quiet study spaces, and limited access to play materials, hindering their cognitive

development. These findings underscore the importance of enriched environments in fostering early brain development, supporting the conclusions of previous research in this area (Walker et al., 2017).

Through thematic analysis, several socioeconomic factors emerged as having a significant influence on cognitive development. These included parental income and employment status, parental educational attainment, nutrition and health status, access to learning resources, and home and community environment.

4.3.1 Parental Income and Employment

Parental income and employment significantly influenced learners' cognitive development. Responses from parents and teachers indicated that learners from low-income households often faced challenges such as inadequate nutrition, limited learning materials, minimal parental attention to school matters, and reduced access to early childhood education. One teacher stated,

"Many of our learners from low-income households struggle with memory retention and comprehension. They come to school hungry, and this affects their concentration levels."

Another teacher observed,

"Some of the learners are inactive when they are hungry."

These observations highlight the detrimental effects of poverty on children's cognitive abilities.

These findings align with Bronfenbrenner's (1979) ecological systems theory, which posits that family income, situated within the microsystem and exosystem, influences children's immediate environment and access to developmental resources. Children from economically disadvantaged families are more likely to experience cognitive delays compared to those from middle- or high-income backgrounds (Duncan et al., 2017).

4.3.2 Parental Education

The study also revealed a strong correlation between parental education levels and children's cognitive development. Children whose parents had attained higher levels of education tended to perform better in cognitive tasks. This observation supports Vygotsky's (1978) emphasis on the role of "more knowledgeable others" in children's learning. Parents with higher education levels are often better equipped to provide stimulating learning environments and support their children's cognitive growth. One parent, for instance, shared,

"I always make sure to read with my child every evening. I have noticed that he picks up new words quickly compared to his friends."

This finding is consistent with other studies demonstrating that parental literacy significantly influences children's language and cognitive skills development (Hart & Risley, 1995).

4.3.3 Nutrition and Health

Observations conducted during the study highlighted a direct link between proper nutrition and cognitive abilities. Piaget's (1952) stages of cognitive development suggest that inadequate nutrition may impede the transition between cognitive stages, particularly in the preoperational and concrete operational stages. In Luanshya District, limited financial resources often translate to inadequate nutrition for children. Learners who had access to balanced meals exhibited better concentration, problem-solving skills, and overall academic performance, whereas malnourished children displayed lower attention spans and difficulty grasping new concepts (Grantham-McGregor et al., 2007). One learner poignantly stated,

"I feel tired and sleepy in class when I don't eat breakfast."

4.3.4 Access to Learning Resources

Access to learning resources also emerged as a crucial factor in cognitive development. Children with access to books, digital learning tools, and structured learning environments performed better in cognitive tests compared to those with limited or no access. This finding aligns with Vygotsky's (1978) zone of proximal development (ZPD) concept, which emphasizes the importance of guided learning experiences for children to reach their full potential. A study by Evans et al. (2010) confirms that children from resource-rich households exhibit greater cognitive engagement and academic success. One teacher noted,

"Learners with access to books at home tend to perform better in literacy and comprehension activities. They are more confident in class discussions."

4.3.5 Home and Community Environment

The home and community environment also plays a critical role in cognitive development. Children from supportive and intellectually stimulating home environments demonstrated higher cognitive abilities. This finding is consistent with Bronfenbrenner's ecological systems theory, which highlights the importance of the mesosystem—interactions between school, home, and community—in cognitive development. Conversely, children from environments marked by poverty, instability, or lack of parental involvement showed signs of delayed cognitive development. A teacher observed,

"Students who receive encouragement at home and have a quiet place to study, show remarkable progress compared to those whose home environments are chaotic."

4.3.6 Academic Performance and Absenteeism

The study revealed a concerning trend: students from low socioeconomic backgrounds often struggled in subjects like Mathematics and English, and they also exhibited higher rates of absenteeism. These findings are consistent with existing research demonstrating the significant impact of socioeconomic status (SES) on academic success (Coleman et al., 1966; Sirin, 2005). Children from low-income families often lack access to essential educational resources, hindering their academic progress (OECD, 2018; Reardon, 2011). Additionally, the stress associated with poverty and unstable home environments can negatively impact concentration and motivation, further widening the achievement gap (Evans & Kim, 2013).

High rates of absenteeism among students from low-income backgrounds are linked to various socioeconomic factors. Limited access to healthcare, transportation difficulties, food insecurity, and the need for children to contribute to family income can all contribute to absenteeism (Balfanz & Byrnes, 2012). Chronic absenteeism can have long-lasting negative consequences, including lower academic achievement and reduced graduation rates (Chang & Romero, 2008). However, the study did note a few exceptional cases where students from low socioeconomic backgrounds achieved high marks in mathematics and English and maintained consistent attendance despite facing numerous challenges.

4.4 Socioeconomic Factors Influence Cognitive Development Outcomes such as Memory, Attention, and Problem-Solving Skills.

Analysis of student assessments, teacher interviews, and classroom observations revealed that socioeconomic factors significantly impacted several key cognitive domains in young learners.

4.4.1 Memory and Retention

The study established a clear connection between socioeconomic conditions and critical cognitive skills such as memory, attention, and problem-solving. Children from disadvantaged backgrounds, particularly

those experiencing food insecurity and inconsistent access to meals, often demonstrated weaker memory retention capabilities. This difficulty in recalling information, especially over time, aligns with the findings of Alloway (2010), who concluded that children from socioeconomically disadvantaged backgrounds exhibit weaker memory retention. Furthermore, this challenge in retaining learned information is consistent with Piaget's (1952) assertion that memory plays a crucial role in the development of schema, the building blocks of knowledge and understanding. Observations conducted during the study showed that these children frequently struggled with tasks that required sequential recall and had difficulties retaining newly introduced concepts. Teachers also observed a direct link between nutrition and cognitive performance. Poor nutrition and lack of consistent meals in low-income families were often associated with diminished concentration and problem-solving abilities. Teachers frequently noted that hunger appeared to be a significant barrier to active participation in learning activities, while students who were well-nourished were noticeably more engaged and able to focus.

4.4.2 Language and Communication Skills

Language and communication skills were also notably influenced by socioeconomic factors. Learners from homes with low literacy rates often exhibited delayed language acquisition and had smaller vocabularies compared to their peers from more literate backgrounds. This delay in language development can hinder their ability to comprehend lessons effectively and participate fully in classroom discussions. These findings reinforce the importance of language in cognitive development, as emphasized by Vygotsky (1978). Vygotsky argued that language serves not only as a tool for thought but also as a crucial means of social interaction, both of which are vital for cognitive growth. Teachers participating in the study reported that children from households where literacy was valued and practiced demonstrated stronger verbal expression and comprehension skills compared to their peers from less literate backgrounds.

4.4.3 Problem-Solving and Critical Thinking

The study also revealed a connection between socioeconomic disadvantages and challenges in problem-solving and critical thinking. Learners who had limited access to learning materials and stimulating experiences at home often struggled with tasks that required them to think critically and solve problems. This observation supports the conclusions of previous studies, which have found that the ability to think critically and solve problems is more developed among children who are exposed to a variety of learning materials and interactive activities at home (Anderson et al., 2001). This aligns with Piaget's (1952) stage of concrete operations, which emphasizes the development of logical thinking and problem-solving abilities through hands-on experiences and active exploration. Classroom observations conducted as part of this study revealed that children who had access to structured play and inquiry-based learning environments exhibited stronger problem-solving abilities.

4.4.4 Attention and Concentration

The study also found that socioeconomic factors can influence attention and concentration levels in young learners. Children from disadvantaged backgrounds, particularly those experiencing malnutrition and other challenges associated with poverty, often demonstrated lower levels of sustained attention, which in turn affected their academic performance. This observation is consistent with Vygotsky's (1978) emphasis on the importance of scaffolding in learning environments to maintain attention and engagement. Observations conducted during the study showed that learners facing socioeconomic disadvantages were

more prone to distractions, fidgeting, and disengagement during lessons, hindering their ability to learn effectively.

4.4.5 Further discussion

The connection between socioeconomic factors and cognitive functions such as memory, attention, language skills, problem-solving, and critical thinking was undeniable. The qualitative data gathered through interviews, classroom observations, and document analysis consistently pointed to the profound influence of socioeconomic conditions on various aspects of cognitive development.

For instance, children from food-insecure homes often struggled to concentrate and retain information, a finding that mirrors those from other studies conducted in similar low-income settings (Gelli et al., 2020). Teachers repeatedly observed that students who had eaten breakfast were more likely to participate enthusiastically in classroom activities compared to those who had not. Similarly, problem-solving skills were also found to be influenced by socioeconomic factors. Learners from stimulating home environments, particularly those with access to puzzles, games, and other enriching activities, displayed better logical reasoning skills compared to their peers from unstimulating environments. These findings strongly support Bronfenbrenner's ecological systems theory, which emphasizes the crucial role that various environmental factors play in shaping a child's development (Bronfenbrenner, 1979).

Furthermore, the study highlighted the significant impact of family stability and parental resources on children's cognitive development and academic performance. Young learners from households with educated parents and stable income levels consistently excelled in school compared to those from disadvantaged families. The emotional stability and consistent support provided by such families nurtured resilience and cognitive readiness in children, which was reflected in their overall academic performance. This finding underscores the importance of a stable socioeconomic base in fostering both emotional and intellectual growth in young learners.

In summary, the study found a strong correlation between socioeconomic factors and cognitive development in young learners. Children from affluent families, with access to greater resources and more stimulating environments, tended to outperform their peers from disadvantaged backgrounds in various academic tasks. Conversely, children facing financial hardship and instability often lacked access to quality early education, nutritious food, and consistent parental support, which negatively impacted their cognitive development and academic performance. These trends are consistent with Bronfenbrenner's ecological model, which emphasizes the interconnectedness of socioeconomic factors such as family income, education, and social support in shaping a child's development, and Vygotsky's sociocultural theory, which highlights the importance of social interactions and guided learning experiences in fostering cognitive growth.

The study also revealed a clear link between family stability and cognitive outcomes. Children from stable, educated households, where they received consistent emotional and financial support, generally outperformed their peers from less secure backgrounds. This emotional security, fostered by a supportive family environment, often translates into better classroom performance and academic achievement (Engle et al., 2011). It is important to note that even when children from low socioeconomic backgrounds had access to supportive school environments, disparities in cognitive development and academic performance persisted, underscoring the pervasive influence of home conditions. As one teacher aptly remarked,

"You can give a child resources at school, but their progress relies on what they go home to at the end of the day."

4.5 Influence of School Resources and Parents on Learners' Cognitive Development

Cognitive development in children is a complex process influenced by multiple factors, with school resources and parental involvement playing crucial roles. This qualitative analysis delves into the narratives of parents, teachers, and students to uncover the nuanced ways in which these elements interact to shape cognitive growth.

4.5.1 Parental Involvement

The interviews revealed that parental involvement is pivotal in fostering cognitive development. Through narrative exploration techniques, it became evident that parents who actively engaged with their children's learning at home created an environment conducive to academic success. For instance, regular homework support and participation in academic discussions not only enhanced understanding but also instilled confidence in children. Furthermore, high parental expectations motivated children to strive for academic excellence. These findings are supported by previous research, which argues that parental engagement that complements school efforts creates a synergy essential for reinforcing learning and improving cognitive outcomes (Neergaard et al., 2009).

Moreover, effective communication between parents and teachers ensures consistency between home-based learning activities and school curricula. This alignment strengthens the learning process and leads to improved cognitive outcomes. Additionally, parents' emotional support helps mitigate stress related to academic pressures, allowing children to focus more effectively on their studies.

4.5.2 School Resources

School resources are equally crucial, as they provide the foundational infrastructure for effective learning environments. Access to technology facilitates interactive educational tools that enhance cognitive skills by engaging students more deeply with course materials. Teachers who offer personalized attention play a critical role in tailoring instruction to individual needs, thereby fostering robust cognitive growth. Narrative exploration highlighted how well-equipped schools were able to better accommodate diverse learning styles.

For example, bilingual or multilingual environments present unique challenges and opportunities for enriched cognitive development. When appropriately supported by both schools and parents, these learners can thrive. Culturally sensitive teaching practices are essential in these contexts. The study's observations revealed that culturally responsive teaching helped mitigate potential biases in assessment methods used for bilingual or minority students. By acknowledging and respecting these differences and adapting teaching strategies accordingly, teachers ensured equitable access to quality education.

4.5.2 Further discussion

This qualitative analysis underscores the importance of both parental involvement strategies, such as active support at home, and accessible, quality school resources as pivotal elements driving positive outcomes in children's cognitive development. The findings emphasize that creating an environment where home-based learning, complemented by strong parental engagement, aligns with well-resourced educational settings can significantly enhance cognitive abilities among young learners.

The study also highlights the importance of culturally responsive teaching practices that acknowledge and value diverse linguistic backgrounds (Sandelowski & Leeman-Castillo et al., 2010). Such approaches are essential to mitigate potential biases in assessment methods used for bilingual or minority students, ensuring that all learners have an equal opportunity to succeed.

4.6 Evidence-Based Interventions and Strategies Aimed at Supporting Cognitive Development in Young Learners.

Several strategies were identified as effective in mitigating the adverse effects of socioeconomic inequalities on cognitive development:

i. School-Based Feeding Programs:
Addressing hunger is essential for improving learners' focus and energy levels. Teachers noted visible improvements in participation and engagement following the introduction of a one-off meal program, echoing the findings of Gelli et al. (2020) that such interventions significantly enhance students' focus and participation. This highlights the crucial link between nutrition and cognitive function, as well as the importance of ensuring that children have access to regular, nutritious meals to support their learning.

ii. Teacher Training:
Empowering educators to identify and assist at-risk children is invaluable. Training initiatives to equip teachers with the skills and knowledge to effectively intervene and offer personalized support to students facing challenges related to socioeconomic disadvantages is significantly essential. In situations where teachers employed these skills, socially disadvantaged pupils showed signs of improvement. This not only helped address learning delays early on but also encouraged more empathetic and individualized teaching approaches, fostering a more supportive and inclusive learning environment for all students.

iii. Parental Engagement Workshops:
Community-based efforts, such as workshops on early childhood stimulation, provided parents with tools and knowledge to enrich their children's learning environments at home (Edelytics, 2024). These workshops raised awareness about the importance of nutrition, cognitive engagement activities, and the crucial role parents play in supporting their children's cognitive development. Parents expressed appreciation for the practical tips and strategies shared in these workshops, which they could readily implement to enhance their children's learning experiences.

This qualitative analysis highlighted the significant influence of socioeconomic factors on cognitive development in early primary school learners in Luanshya District. It underscores the urgent need for policy-level interventions aimed at leveling the educational playing field for disadvantaged students. Implementing programs like school feeding schemes, targeted teacher training, and parental engagement workshops can significantly alleviate the cognitive disparities caused by socioeconomic inequalities.

Addressing these disparities through targeted interventions, increased parental involvement, and improved resource allocation can help bridge the cognitive gap and promote equitable educational outcomes for all children. Future research should explore the long-term impacts of these interventions on cognitive development in socioeconomically disadvantaged settings to ensure sustainable cognitive gains among young learners in similar contexts.

This study underscores the profound effects that socioeconomic disparities have on cognitive development in early primary school learners. Beyond highlighting these inequalities, it identifies actionable steps that can make a real difference for at-risk students. Interventions like school feeding programs, parental workshops, and teacher training not only close developmental gaps but also empower communities to uplift their children. Policymakers, educators, and parents must collaborate to deploy these strategies effectively. Future studies could examine the long-term impacts of such interventions and, crucially,

leverage these findings to inform national policies that guarantee a fair chance for every child to succeed. By acting now, we can unlock the boundless potential of all learners, regardless of their circumstances.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This study provides valuable insights into the complex interplay between socioeconomic factors and cognitive development in young learners in Luanshya District, Zambia. By utilizing a qualitative approach, the researchers were able to capture the nuanced experiences and perspectives of students, parents, and teachers, shedding light on the challenges and opportunities within the educational landscape. The findings underscore the significant impact of socioeconomic disparities on children's cognitive abilities, particularly in areas such as memory, attention, language, and problem-solving skills.

Furthermore, the study emphasizes the crucial role of school resources and parental involvement in mitigating these disparities and promoting equitable learning opportunities for all children. The recommended interventions, including school feeding programs, teacher training, and parental workshops, offer practical and evidence-based strategies for addressing the cognitive gaps created by socioeconomic inequalities. This research contributes valuable knowledge to the field of education and provides a roadmap for policymakers, educators, and communities to work together to create a more equitable and supportive learning environment for all children, regardless of their socioeconomic background.

5.1 Discussion of Findings

This study, through a qualitative inquiry, has confirmed the critical importance of cognitive development during early childhood for academic success and personal growth. However, the research also highlights the stark reality that socioeconomic disparities (SES) can significantly hinder children's cognitive development, limiting their ability to learn and develop essential critical thinking skills. This disparity is evident in the advantages experienced by children from affluent households who benefit from enriched learning environments, while those from lower-income backgrounds often face cognitive delays due to limited resources and opportunities (Walker et al., 2017). In Zambia, where socioeconomic inequalities are prevalent, understanding the impact of these disparities on young learners' cognitive development is crucial. This study aimed to investigate these influences and propose interventions to foster more equitable learning outcomes for all children.

The ecological systems theory (Bronfenbrenner, 1979) provides a valuable framework for understanding how various environmental factors interact to affect a child's cognitive development. This theory emphasizes the interconnectedness of different systems, from the immediate family environment to the broader social and cultural context, and how these systems influence a child's development. Research has consistently shown that socioeconomic factors, including parental education and income level, are significant factors shaping children's cognitive abilities (Duncan et al., 2017). Moreover, Vygotsky's sociocultural theory (1978) highlights the critical role of knowledgeable individuals, such as parents and teachers, in guiding and supporting children's cognitive growth. These theories, along with previous research demonstrating the adverse effects of poor nutrition on concentration and memory (Grantham-McGregor et al., 2007) and the impact of unstimulating home environments on problem-solving skills (Evans et al., 2010), provide a strong theoretical foundation for this study.

The findings of this study corroborate and expand upon existing research. Children from wealthier families in Luanshya District were found to exhibit stronger language, numeracy, and critical thinking skills. This

advantage is largely attributed to their greater access to educational resources, such as books and digital media, which enrich their learning environments and provide opportunities for cognitive stimulation. Conversely, learners from low-income households experienced cognitive delays, often stemming from overcrowded living conditions, lack of quiet study spaces, and limited access to learning materials (Walker et al., 2017).

This study identified several key socioeconomic factors that significantly influence cognitive development: parental income and employment status, parental education level, nutrition and health conditions, access to learning resources, and the overall home and community environment. Children from financially stable families had clear advantages in terms of educational opportunities compared to their low-income peers who faced challenges related to nutrition, health, and educational support (Duncan et al., 2017). Higher parental education levels were also correlated with improved cognitive performance in children, reinforcing Vygotsky's assertion about the importance of knowledgeable individuals in a child's learning process (Hart & Risley, 1995).

The study also found a clear link between nutrition and cognitive function. Poor nutrition was linked to diminished concentration levels and problem-solving abilities, which is consistent with Piaget's cognitive development theory (1952) and previous research on the impact of malnutrition on cognitive development (Grantham-McGregor et al., 2007). Access to learning resources also played a significant role. Students with access to books and structured educational environments performed better academically (Evans et al., 2010).

Classroom observations provided further evidence of the impact of socioeconomic factors on children's learning experiences. Children from food-insecure households often displayed signs of fatigue and inattentiveness, making it challenging for them to fully engage in lessons. These difficulties were particularly pronounced among those who arrived at school without breakfast (Gelli et al., 2020). Teachers noted that well-nourished students were more active participants in class discussions and exhibited greater enthusiasm for problem-solving tasks.

In terms of language acquisition, the study found that children whose parents regularly engaged in reading activities with them showed superior vocabulary development and comprehension skills. In contrast, learners from households with low literacy levels struggled with both expressive and receptive language skills, hindering their ability to follow instructions and grasp new concepts (Hart & Risley, 1995). This finding aligns with Vygotsky's view that social interactions with more knowledgeable individuals are crucial for facilitating cognitive development.

Furthermore, access to structured play and interactive learning resources was found to be a significant factor influencing children's problem-solving and critical thinking skills. Children exposed to diverse learning experiences, such as puzzles, games, and storytelling, demonstrated stronger logical reasoning abilities compared to their peers with limited access to such enriching activities (Anderson et al., 2001). Teachers emphasized the value of guided play in fostering cognitive resilience among learners.

The study also revealed a connection between the home environment and children's attention spans. Children from unstable home environments, characterized by frequent disruptions such as overcrowding or lack of quiet study areas, were more likely to disengage from academic tasks. This observation supports previous research by Shonkoff and Phillips (2000), which identified the home environment as a critical factor in cognitive and emotional development.

Finally, parental involvement emerged as a vital element influencing cognitive outcomes. Parents who actively engaged in their children's education by helping with homework, providing learning resources, and encouraging curiosity fostered a more stimulating home learning atmosphere. However, many low-income parents faced time constraints due to demanding work schedules, limiting their ability to provide consistent academic support. These findings highlight the need for community-based initiatives aimed at enhancing parental engagement in early education (Neergaard et al., 2009).

5.2 Conclusion

This study provides compelling evidence of the significant impact of socioeconomic factors on the cognitive development of early primary school learners in Luanshya District, Zambia. The findings resonate with existing research, confirming that factors such as income, parental education, occupation, and access to learning resources play a crucial role in shaping children's cognitive abilities.

The implications of this research are clear to foster equitable learning opportunities and ensure that all children can reach their full potential, targeted interventions are necessary. School feeding programs, for example, can address the detrimental effects of malnutrition on concentration and learning (Kristjansson et al., 2022). Furthermore, initiatives aimed at enhancing parental engagement can empower parents to create more supportive and stimulating learning environments at home. By addressing these socioeconomic disparities, we can help bridge the cognitive gap and pave the way for a brighter future for all young learners in Luanshya District.

5.3 Suggestions and Recommendations

To address the challenges revealed in this study, the following interventions are proposed:

I. **School Feeding Programs:**
These programs aim to mitigate the negative impacts of hunger on cognitive function by providing students with nutritious meals, leading to improved focus and participation in learning activities (Gelli et al., 2020; Kristjansson et al, 2022).

II. **Teacher Training Initiatives:**
These initiatives focus on equipping educators with the knowledge and skills to identify and support at-risk learners through targeted interventions and individualized learning strategies (Engle et al., 2011).

III. **Parental Workshops:**
These workshops aim to educate parents about the crucial role they play in their children's cognitive development. By providing practical guidance on activities like storytelling, structured learning exercises, and creating stimulating home learning environments, these workshops empower parents to actively support their children's learning (Neergaard et al., 2009; Edelytics, 2024)

5.4 Limitations of the Study

This study offers valuable insights into the influence of socioeconomic factors on cognitive development in early primary school learners in Luanshya District, Zambia. However, it is essential to acknowledge certain limitations that may affect the generalizability and interpretation of the findings.

First, the study's geographical scope was limited to a single district. Therefore, the findings may not be directly applicable to other regions in Zambia with different socioeconomic contexts. Future research should consider expanding the scope to include multiple districts with varying socioeconomic characteristics to enhance the generalizability of the findings.

Second, the qualitative nature of the study, while allowing for rich and in-depth exploration of the phenomenon, introduces the possibility of subjective biases. Participants' responses in interviews and observations are inherently influenced by their individual perceptions and experiences. While efforts were made to mitigate these biases through triangulation of data sources, it is important to acknowledge this inherent limitation of qualitative research.

Third, although the sample size was adequate for the qualitative analysis, it may not be fully representative of the entire population of early primary school students in Zambia. Future research with larger and more diverse samples could enhance the representativeness of the findings.

Fourth, the study focused specifically on socioeconomic factors and did not explore other potentially influential variables, such as cultural practices, teacher effectiveness, and school infrastructure. These factors can also play a significant role in cognitive development and should be considered in future research to provide a more comprehensive understanding of the issue.

Finally, the study's cross-sectional design limits its ability to assess the long-term impacts of socioeconomic factors on cognitive development. Longitudinal studies that follow children over time would provide valuable insights into how these factors influence cognitive development trajectories and the lasting effects of early disadvantage.

Despite these limitations, this study makes a significant contribution to the understanding of socioeconomic disparities and their impact on cognitive development in young learners in Zambia. The findings highlight the urgent need for interventions to address these disparities and promote equitable learning opportunities for all children. Future research that addresses the limitations identified in this study will further enhance our understanding of this complex issue and inform the development of effective strategies to support the cognitive development of all learners.

5.5 Areas for Further Research

Given the limitations identified in this study, there are several important areas for future research that could enhance our understanding of socioeconomic factors and cognitive development:

1. Long-term Effects: Investigating the long-term impacts of socioeconomic factors on cognitive development through longitudinal studies would provide valuable insights into how these factors influence children as they grow into adults.
2. Comparative Studies: Conducting research across different regions or countries can shed light on how various economic and cultural contexts affect early childhood learning, helping to identify unique challenges and effective strategies.
3. Intervention Effectiveness: Examining specific interventions—like programs aimed at increasing parental involvement, school feeding initiatives, and teacher training—could reveal their effectiveness in reducing the adverse effects associated with low socioeconomic status.

4. Role of Technology: Exploring how digital learning tools and technology can support cognitive development for disadvantaged learners would be beneficial, especially as education increasingly incorporates tech solutions.
5. Psychological Impacts: Investigating the psychological and emotional effects of socioeconomic stress on young learners could lead to more holistic approaches that address both educational and personal growth needs.

By focusing on these areas, future research can contribute to a deeper understanding of how socioeconomic factors shape cognitive development and help develop strategies to support children in overcoming these challenges

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