

**THE ROLE OF GUIDED PLAY PEDAGOGY ON NUMBER CONCEPT  
DEVELOPMENT IN PRE-PRIMARY SCHOOL: A CASE OF AMAC  
SUB COUNTY, LIRA DISTRICT**

**BY**

**AKWANG BEATRICE**

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## **DECLARATION**

I Beatrice Akwang, do declare that this research report titled “The Role of Guided Play Pedagogy on Number Concept Development in Pre-Primary School: A Case of Amac Sub-County, Lira District, Uganda” is my original work which has never been submitted to any institution for any award. I am now submitting it to the School of Education Graduate Board of Kyambogo University with the approval of my supervisors.

**Signature..... Date.....**

**AKWANG BEATRICE**

## **APPROVAL**

This research report titled “The Role of Guided Play Pedagogy on Number Concept Development in Pre-Primary School: A Case of Amac Sub-County, Lira District” has been developed with our guidance and it is now submitted for examination with our consent as supervisors.

Signature ..... Date .....

**Prof. EJUJ GODFREY**

Signature ..... Date .....

**Dr. KISA SARAH**

## **DEDICATION**

I dedicate this piece of work to my beloved people. First, to my beloved Dad, Wilson Ekwar and my beloved late Mum Aidah Loy for the great academic inspiration and the moral and financial support extended especially at the early age of my life. Secondly, to my beloved husband Benjamin Oryang for the moral, spiritual, financial and academic advice and other forms of support you extended to me throughout the entire journey of my Masters Studies. To my beloved children Emmanuel, Robert, Daniel, Lydia, Stella, Grace, Mercy and Petra for the spiritual moral support during my studies.

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## **ABBREVIATIONS AND ACRONYMS**

ECCE_	Early Childhood Care and Education.
ECD	Early Childhood development
GPP	Guided Play Pedagogy
JICA	Japan International Cooperation Agency
MoES	Ministry of Education and Sports.
NCD	Number Concept Development
STEM	Science, Technology, Engineering, and Mathematics
TDMS	Teachers Development and Management System
ZPD	Zone of Proximal Development

## ABSTRACT

In pre-primary school, number concept development normally appears as a daily activity. Number concept development is considered as a way through which learners' cognitive growth is stimulated to think logically about quantities, patterns, and relationships to set the groundwork for more complex mathematical understanding. The purpose of this study was to examine the role of guided play pedagogy in promoting number concept development among pre-primary learners in Amac Sub-county, Lira District. Specifically, the study aimed to: (1) explore how guided play pedagogy creates a stimulating environment that influences number concept development; (2) investigate assessment practices within guided play pedagogy; and (3) establish teachers' perceptions regarding the influence of guided structured play on learners' number concept development. Grounded in Vygotsky's (1978) social constructivist theory particularly the concept of scaffolding instruction, the study adopted a qualitative case study design. The target population included 36 pre-primary school teachers, 12 head teachers, and 72 learners. Purposive sampling was used to select teachers and head teachers, while convenience sampling was applied to individual learners for classroom observation. Data were collected through classroom observations, semi-structured interviews, and document reviews across twelve schools, and analysed using content analysis presented in narrative form. The data collection process focused on observing participant interactions, classroom practices, and the integration of number concept development through guided play pedagogy. Key findings revealed that when guided play was effectively implemented using locally available materials and structured games, it created stimulating, child-centred environments that enhanced skills such as counting, sequencing, comparison, and problem-solving. However, implementation varied depending on teacher training, experience, classroom layout, and resource availability. Assessment practices were predominantly informal and aligned with sociocultural principles but were constrained by administrative reporting requirements and parental expectations for formal testing. Although teachers generally expressed positive perceptions of guided play pedagogy, practical challenges such as overcrowded classrooms, limited instructional materials, and inadequate professional support hindered full implementation. The study concludes that guided play pedagogy holds significant potential to strengthen early numeracy, provided there is systemic investment in teacher training, continuous professional development (CPD), improved classroom resources, guided play-based assessment policies, and stakeholder sensitization. It recommends a holistic and collaborative approach to embed guided play pedagogy as a foundational element of quality early childhood education in Uganda.

# CHAPTER ONE

## INTRODUCTION

### 1.0 Introduction

Early childhood education forms the basis of lifelong learning and development, particularly in foundational areas such as numeracy (Parker et al., 2022). Globally and nationally, there is growing emphasis on developmentally appropriate, play based, and child centred approaches that promote holistic growth in young learners. Guided play pedagogy is one of the approaches that have gained fame as a method that combines child initiated activities with purposeful teacher scaffolding to create engaging and meaningful learning experiences (Cheruiyot, 2024).

Guided play is rooted in Vygotsky's sociocultural theory, which suggests that learning occurs most effectively through social interaction within a child's Zone of Proximal Development (ZPD) (Cheruiyot, 2021; Wibowo et al., 2025). This is in line with the Ministry of Education and Sports, (MoES) through the National Curriculum Framework for Early Childhood Education (ECE) (2013) that advocates for play-based learning in pre-primary education (MoES, 2018). The framework recognizes play as central to early learning and development and calls for the use of creative, interactive methods to build foundational numeracy skills.

### 1.1 Background

This study was to investigate the role of guided play pedagogy in supporting number concept development among pre-primary learners in Amac Sub-county. So, this chapter presents the background of the study which includes; historical, theoretical, conceptual and contextual perspectives. The chapter points out the statement of the problem, purpose of the study, research objectives, research questions, scope of the study, significance of the study and delimitations of the study.

### ***1.1.1 Historical Background***

Number concept development supports learners' mathematical success and requirements for the advancement of Science, Technology, Engineering, and Mathematics (STEM) skills (Bezuidenhout et al., 2018; Ndabezitha, 2022 ; Visser et al., 2019). There have been many attempts to develop number concepts in various forms across the globe (Higgihbotham, 1956).

In the 1930s, Britain introduced workbook innovation to help learners practice number concept development problems. Later, the American School of Engineering introduced a workbook to reduce the workload of lesson preparation (Citadel et al., 2020). Meanwhile, in 2014, a revised workbook improved learners' knowledge of mathematics in Indian primary schools (Mcneil and Fyfe, 2015). However, in 2011, Tikly et al., (2018) found that, South African teachers were using workbooks differently. Due to insufficient standards and repetition of content, workbooks are no longer in use in many countries (Nidaulail, 2023). Additionally, all these innovations were at different levels of education (Vojřr and Rusek, 2021) ignoring nursery education as a foundation.

Another strategy was the introduction of vocational education policy in Romania in 1973 (Kim, 2021). This was to link academic and vocational studies to improve people's skills and competencies linked to number concept development. Then, in the 1970s, Australia trained labourers for industries, while in the 1990s, Uganda integrated vocational subjects into secondary schools to improve skill production among the youth. However, due to low number concept acquisition, shortage of competent teachers, and low attitudes among students and parents, vocational subjects still remained at low level (Badru and Birwa 2020).

In 1994, England introduced the Teacher Development and Management System (TDMS) as a strategic effort to enhance teacher effectiveness (Chychuk, 2016). Similarly, in Africa, initiatives were undertaken to retrain qualified teachers, licensed educators, and head teachers in management and pedagogical skills aimed at improving number concept development among learners (Adotevi. and Taylor., 2019; Ngobi et al., 2003). However, despite these extensive training and mentoring efforts, mathematics achievement remained low. This was largely attributed to inconsistent evaluation processes, which hindered the effective monitoring of learners' progress in number concept development (Syahir et al., 2020).

In the 2000s, the Japan International Cooperation Agency (JICA) launched initiatives across Africa aimed at enhancing the quality of mathematics and science education to promote scientific and creative thinking (Matachi and Kosaka, 2017). One of such initiatives was the introduction of the Secondary School Science and Mathematics Teachers (SESEMAT) programme in several African countries, including South Africa in 2003 (Alex, 2019), Nigeria in 2006 (Bessong and Ejar, 2015) and Uganda in 2005 (Manyiraho et al., 2020; Komakech and Osuu, 2014). However, due to inadequate support and supervision, teachers were often unable to effectively apply the pedagogical strategies they had been trained in. As a result, learners' development of number concepts and mathematical thinking remained low (Malunda, 2017; Omaali, Nabukeera and Ejuu, 2021).

Similarly, various programmes have been created in different nations (Ietersen, 2006). Among others were pedagogical methods like games that were designed by teachers to improve learners' number concept development. For instance, in Malaysia in 2003 (Ompok et al., 2021), in 2014, learners from low socioeconomic

status in Botswana had inadequate numeracy play engagement (Clerkin and Gilligan-Lee, 2018). However, due to a lack of knowledge and expertise, teachers were unable to integrate games into teaching to support learner number concept development (Sulistyaningtyas, 2019). At the school level, there are still few quality early childhood programmes that can protect and nurture learners number concept development.

### ***1.1.2 Theoretical Background***

This study is firmly grounded in the assumption that “Guided Play Pedagogy can significantly enhance learners’ Number Concept Development. The theoretical foundation draws on Vygotsky's (1978) Sociocultural Theory, which highlights the central role of social interaction and cultural context in cognitive growth (Wibowo et al., 2025; Yusof, 2021). Vygotsky argued that knowledge is co-constructed through collaboration, with learners gaining understanding by interacting with more knowledgeable ones (Luciana, 2024). In the context of pre-primary education, this means that number concepts such as counting, sequencing, and quantity recognition are best developed through socially mediated play activities where learners are actively supported and engaged.

A key concept within Vygotsky’s theory is the (ZPD), which describes tasks a learner can perform with guidance but not yet independently. Guided play pedagogy aligns well with this idea, as it involves adults or peers providing timely support known as scaffolding to help learners’ master number-related activities (Rehman et al., 2024; Peter, 2018). For example, through structured play activities like sorting objects, playing number games, or participating in counting songs, teachers can gradually adjust their support based on the learners’ progress. This process nurtures both confidence and competence in early numeracy.

Vygotsky emphasized the importance of language, social engagement, and a stimulating environment in shaping cognitive development (Smedsrud et al., 2024). Guided play provides opportunities for learner to explore mathematical ideas through communication, exploration, and collaboration. Research shows that adult-led play with embedded numeracy elements such as asking probing questions or setting up math rich play centres fosters deeper understanding of number concepts (Yilmaz & Cakiroglu, 2024; Lei & Hu, 2020). These activities not only support numerical reasoning but also cultivate broader cognitive and social-emotional skills.

While Vygotsky's Sociocultural Theory offers a powerful guidance for understanding guided play and number concept development, reliance on a single framework may direct the understandings from other educational theories. To enrich early numeracy instruction, teachers, caregivers, and school leaders should integrate Vygotsky's emphasis on social interaction and ZPD while remaining open to harmonizing approaches (Rehman et al., 2024). This includes tailoring learning experiences to learner developmental levels and promoting holistic growth. A balanced application of theory ensures that pre-primary learners receive inclusive support in building strong numerical foundations.

### ***1.1.3 Conceptual Background***

Number concept development is referred to as a person's perception of numbers and their relationships, which include number recognition, ordering, and cardinality (Björklund et al., 2020; Yilmaz, 2017) and the act of connecting numbers to objects (Boruah & Borah, 2021). On the same note, Bezuidenhout et al., (2018) noted that number relationships are integrated into counting concrete objects and abstract quantities.

Similarly, (Björklund et al., 2021; Petersson and Weldemariam, 2022; Björklund et al. 2020; Copping et al. 2024; Cramman et al. 2018) related number concept development to one's capability to match number words to symbolic representations and the quantity of objects matched. This includes number skills such as number sequence, quantity, and number word, which are key to mathematics achievements.

Additionally, Aunio et al. (2021) referred to number concept development as attainment of number competency hierarchically. It focuses on mental number lines, number names, symbols, and comparing. Furthermore, Schnepel et al. (2020); Stramel (2021) referred to it as the process of acquiring basic mathematical language through supportive classroom activities. It is attained through frequent exposure to strong number language (Parker et al., 2022; Ndabezitha, 2022).

For this study, number concept development refers to "a person's perception of numbers, their relationships (Björklund et al., 2020), recognition (Yilmaz, 2017), and the acquisition of basic mathematical language (Stramel, (2021)." It is measured against counting (Yilmaz, 2017), sorting, sequencing and comparing numbers (Cramman et al., 2018). When learners can sort, count, sequence, and compare things, identify number symbols, and attach to values, it implies that they have developed a number concept. Number concept development involves a child's ability to recognise numerals, one-to-one correspondence, counting, and simple operations.

However, learner number concept development is influenced by a number of factors, such as teacher (Awoniyi and Butakor, 2021; Agango, 2014). Similarly, Alex (2019); Ayebale et al. (2020) related teacher factors to methods, subject knowledge, classroom management, and language background. Similarly, Mabena and Mokgosi

(2020) noted that learner factors include low parental support, poor background, and low interest.

On the other hand, guided play refers to as a teaching method that combines free play and structured learning (Ndabezitha et al. 2023; Skene et al. 2022). The teacher sets up the learning environment, selects materials, and structures activities to facilitate learners' learning and development (Chimfwembe-gondwe, 2020; Karaoğlu, 2020; Parker et al., 2022). It guides the child towards a set of learning objectives that involves assessment, engagement, and scaffolding (Pyle et al., 2020; Chimfwembe-gondwe, 2020; Foulds and Bucuvalas, 2019; Ekeh and Educators, 2023). Similarly, Campbell (2021) refers to guided play pedagogy as a structured, adult-defined play that provides useful resources. It focuses on using games to achieve a balance of structure and autonomy in order to fill in any gaps in learning.

Thus, for this study, "the role guided play pedagogy" refers to an approach that combines structured learning (Campbell, 2021) and child-initiated play (Skene et al., 2022; Svensson, 2022). It is supervised, assessed, and scaffold (Foulds and Bucuvalas, 2019) in an engaging stimulating learning environment (Petersson and Weldemariam, 2022).

#### ***1.1.4 Contextual Background***

In Uganda, the value of play in ECD is clearly articulated in policy frameworks such as the National Curriculum Framework for ECD (MoES, 2018) which advocates for play based and child-centred approaches to learning. This framework emphasizes key competencies that are fundamental components of number concept development. However, despite these progressive policy directions, actual classroom practices in many Ugandan pre-primary schools particularly in rural

settings like Amac Sub-county remain predominantly traditional. Teachers often rely on rote memorization, repetitive drills, and written assessments that do not align with the developmental needs, interests, and learning styles of young children (Annet, 2024).

Several factors contribute to this gap between policy and practice. These include limited teacher training in guided play pedagogy, overcrowded classrooms, poorly resourced learning environments (Mapoma and Dagada, 2025; van de Kuilen et al., 2025; MoES, 2017), inadequate access to developmentally appropriate learning materials, and parental expectations that emphasize academic achievement over holistic child development (Annet, 2024). Consequently, guided play pedagogy is often marginalized in early childhood classrooms, and learners especially in rural communities like those in Amac Sub-county may miss out on the benefits of active, engaging, and meaningful numeracy learning experiences.

While non-governmental organizations such as Child Fund have made efforts to provide play materials and train ECD teachers, foundational numeracy levels among learners remain low, subsequently, affecting performance in primary level mathematics (Believe, 2017). This study is situated within this context, aiming to investigate the application of guided play pedagogy in pre-primary schools in Amac Sub-county, Lira District, and its contribution to number concept development.

Given these persistent challenges, the researcher has chosen to focus on Amac Sub-county, an area characterized by inadequate access to developmentally appropriate learning materials and limited access to quality ECD learning. This study responds to the pressing need for effective and developmentally appropriate teaching

strategies that can strengthen numeracy skills and improve learner retention in early grades (Ejuu, 2015; Nhase et al., (2025).

## **1.2 Statement of the Problem**

Early numeracy is widely recognized as a foundational domain in (ECD), serving as a predictor of later academic success and life skills (Bernabini et al., 2020); Schröder et al., 2022; Özkan, 2022). Mastery of number concepts equip young learners with critical problem-solving abilities and mathematical readiness for primary education (Annet, 2024). Uganda's National Curriculum Framework for ECD (2013) emphasizes the use of play-based and child-centred pedagogies as the most effective means of supporting learners' holistic development in pre-primary settings. Within this framework, guided play pedagogy has been identified as a developmentally appropriate strategy for fostering early numeracy.

Despite these progressive policy provisions, the implementation of guided play pedagogy remains unknown in many Ugandan pre-primary classrooms, especially in rural areas such as Amac Sub-county. According to the Ministry of Gender (2024), approximately 60% of children aged 3–5 years in Lira District which includes Amac Sub-county are not enrolled in pre-primary education. For those who are enrolled, the quality of instruction is often lacking, with inadequate numeracy skills (Bonney et al., 2021) due to poor infrastructures, limited access to teaching materials, and an absence of developmentally appropriate learning environments (Luciana , 2024; Ejuu et al., 2022). Some schools still involved children in the learning process in the absence of play (Ssenukusu, and Ssempala, 2022). Furthermore, over 30% of young learners struggle with basic number concepts (Moura et al., 2021), a situation worsened by weak coordination among nursery

schools (Khamis, 2022), overreliance on rote learning methods (Pyle et al., 2023; Kisa et al., 2020), low parental involvement (Locoro, 2022), and inadequate exposure to guided play (Wickstrom & Pyle, 2024; Ogar et al., 2024). Methodological gaps in teacher training, prioritize theoretical instruction over hands on practice, leave many teachers unprepared to implement guided play approaches (Ejuu, 2015); Luciana, 2024). Approximately 42.5% of early childhood teachers do not integrate guided play into numeracy instruction, negatively affecting learning outcomes ( Ashari and Baharuddin, 2018; Khalil et al. 2022; Luciana, 2024).

Although the existing studies support the potential of guided play pedagogy in enhancing number concept development such as improving conceptual understanding, reasoning, and long-term mathematics achievement (Murtagh et al., 2022; Parker et al., 2022; Boruah and Borah, 2021) most of these studies have been conducted in high income settings. Some studies focus on early mathematics language (Bezuidenhout et al. 2021), socio-emotional coping mechanisms (Li et al. 2020; Mapoma and Dagada, 2025) offering limited understanding into the implementation of guided play in rural Ugandan classrooms. There is a clear lack of localized, observed research exploring how guided play pedagogy is applied in low resource Ugandan pre-primary schools and how it influences number concept development in real world settings (Björklund et al., 2020; Moses and Kobusingye, 2024).

The study seeks to investigate the role of guided play pedagogy in enhancing number concept development in pre-primary schools within Amac Sub-county, Lira District. Specifically, it aims to explore how guided play pedagogy is implemented in classroom practices, on learners' number concept development. By bridging the gap between national policy expectations and actual classroom practices, this study

targets to generate practical settings that can inform ECD policy, guide teacher training programmes, and improve numeracy learning outcomes in Uganda's rural pre-primary education.

### **1.3 Purpose of the Study**

The purpose of this study was to investigate how guided play pedagogy is utilized to enhance number concept development among pre-primary school learners in Amac Sub-county, Lira District.

### **1.4 Objectives of the Study**

The objectives were:

1. To explore how guided play pedagogy creates a stimulating environment for number concept development among pre-primary learners in Amac Sub-county.
2. To examine the assessment practices used within guided play pedagogy that enhance number concept development in pre-primary schools in Amac Sub-county.
3. To discover the perceptions of teachers on the influence of guided structured play pedagogy on number concept development in Amac Sub-county.

### **1.5 Research Question**

The study was guided by the following questions:

1. How does guided play pedagogy contribute to creating a stimulating environment for number concepts development among pre-primary learners in Amac Sub-county?
2. What assessment practices are used within guided play pedagogy to enhance number concept development in pre-primary schools in Amac Sub-county?

3. What are teachers' perceptions of the influence of guided structured play pedagogy on number concepts development among pre-primary learners in Amac Sub-county?

## **1.6 Scope of the Study**

### ***1.6.1 Geographical Scope***

The research was conducted in selected pre-primary schools in Amac sub-county, Lira District. This was so because Amac has more nursery schools, which provided the required number of nursery schools needed for the study as compared to other sub counties.

### ***1.6.2 Content Scope***

This study was conducted to examine how guided play pedagogy is used to support number concept development among pre-primary learners in Amac Sub-county, Lira District. It focused on the types of guided play activities used, teacher implementation practices, and learner engagement during play-based number learning.

Additionally, it probed the level of learner engagement including; cognitive, emotional, and social aspects of development during guided play lessons (Cade, 2023), and how this engagement contributes to number concept development. Overall, the study focused on instructional strategies, teacher support, and learner collaboration within a guided play environment.

### ***1.6.3 Time Scope***

The study was carried out in a period between 2015 and 2025. This is because most literature cited states similar time scope and records were based on to draw conclusions.

## **1.7 Significance of the Study**

This study will help the Early Childhood Education at the sub county of Amac, Lira District Local Government and Uganda as a nation as indicates:

### ***1.7.1 Significance to Amac Sub-county***

This study is highly significant to Amac Sub-county as it directly addresses the teaching and assessment practices used in pre-primary schools in the region. By investigating how guided structured play pedagogy enhances number concept development, the study provides:

Practical understandings for teachers in Amac on how to integrate informal assessment into daily guided play pedagogical activities to track learners' progress effectively.

Evidence based recommendations that local education stakeholders can use to design targeted professional development for early childhood teachers.

Awareness raising tools for parents and caregivers on the value of developmentally appropriate assessment over traditional tests, helping to readjust community expectations with age-appropriate practices.

A framework for school leaders and administrators to improve classroom environments, routines, and resource allocation in support of guided play pedagogy.

The study supports the foundation for building more inclusive, engaging, and child-centred learning in Amac Sub-county's pre-primary schools, thereby laying a stronger mathematical foundation for learners.

### ***1.7.2 Significance to Lira District***

At the district level, the findings contribute to the broader education goals of Lira District by:

Offering a model of best practices that can be replicated in other sub-counties where early childhood education faces similar challenges related to teacher training, parental expectations, and overcrowded classrooms.

Supporting the District Education Office (DEO) in making informed decisions about (ECD) policies, resource allocation, and monitoring tools.

Providing data driven evidence to guide school inspectors and education officers, CCTs in evaluating and supporting guided play-based pedagogical strategies and assessment in early learning settings.

The study can inform the design of district wide interventions and strengthen Lira District's commitment to promoting quality foundational education.

### ***1.7.3 Significance to Uganda as a Whole***

Nationally, the study contributes to Uganda's Education Sector Strategic Plan (ESSP) and Early Childhood Development policy by:

Reinforcing the importance of guided play pedagogy and formative assessment, as recommended in the National Curriculum Framework for Early Childhood Education.

Offering empirical data from a rural Ugandan context that policymakers, NGOs, and teacher training institutions can use to advocate for context responsive and inclusive ECD practices.

Highlighting the challenges around teacher preparation, parental involvement, and classroom environments, which are common across the country, thus calling for national reforms in teacher education, community engagement, and school support systems.

Strengthening Uganda's progress toward Sustainable Development Goal 4 (SDG 4), which emphasizes inclusive and equitable quality education and lifelong learning opportunities for all, particularly in early childhood.

In summary, the study provides both localized solutions and national implications that can help transform early learning experiences across Uganda by ensuring that assessment practices in guided play settings truly support number concept development and holistic child growth.

### **1.8 Delimitation**

The study was restricted only to pre-primary school teachers because they are directly implementing mathematics curriculum and they are well positioned to give correct feedback on the teaching and learning of numeracy. The study was carried out in some selected pre-primary schools in Lira that were not attached to a primary school.

### **1.9 Operational Definition of Terms**

**Pre-primary school:** Is a formal, school-based, and feature-structured education for nursery school where learners between the ages of 3 and 5 are cared for by competent staff members.

**Guided play pedagogy:** Is a teaching and learning strategy where both the teacher and a child are engaged in learning through play.

**Number concept:** Is one's overall understanding of how to perform operations on numbers.

**Young learners:** Are infants and nursery school learners aged three to five years, or pre-primary school entry age being referred to as learners or pupils.

**Teacher:** Is an adult who is engaged in the education and care of young learners in an ECCE settings, with varying levels of professional qualification.

**Counting:** Is a demanding process by which learners are expected to call number values by name that can be identify by the value attach to.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

This chapter reviews literature on the role of guided play pedagogy on number concept development. It covers the guided play activities conducted including teacher-led, child-initiated and classroom interactions. The use of guided play pedagogy by integrating guided structured play based on routines, free play and learners' engagement in number concept development (number relationships, recognition, ordering, and mathematical language) were looked at. Teacher and learner factors, like methods, experience, language, and parental support, also influence number concept development.

#### **2.1 Guided Play Pedagogy Stimulating Environment on Number Concept Development**

Current trends in the critical literature highlight the profound influence of play-based education, particularly guided play pedagogy, on children's number concept development (Cramman et al., 2018). This approach has gained recognition as the most effective method for teaching and learning in pre-primary (Hadani & Hirshpasek, 2021; Edwards and Edwards, 2021; Pyle et al., 2020).

According to Nhase et al., (2025); Mapoma and Dagada, (2025); Pyle et al., (2020), play as a pedagogical tool that supports not only academic readiness but also the holistic development of young learners. Studies consistently highlight its role in promoting social interaction, creativity, and emotional well-being, in addition to cognitive growth. Play thus functions as a multi-dimensional approach that nurtures

children's social, emotional, and intellectual capacities, establishing a strong foundation for future learning (Özbay Karlıdağ, 2021; Obaki, 2017).

Within early mathematics education, guided play pedagogical learning environments particularly those structured around well-organised learning centres have been shown to scaffold learners' engagement in number concept development. Activities such as counting, sorting, and comparing are not only foundational to numeracy but also foster exploration, communication, collaboration, and critical thinking, which are vital for early academic success (Petersson and Weldemariam, 2022; Ogar et al., 2024). These findings suggest that guided play environments provide a unique context where number concepts are entrenched in meaningful, child-centred experiences.

Although play is often child-directed, research increasingly recognizes the importance of teacher mediation in structuring and facilitating guided play pedagogy. The organization of learning centres, the selection of play materials, (Yilmaz, 2017) and the teacher's role in scaffolding interactions are all central to ensuring that play effectively supports both number concept development and holistic development. However, much of the existing literature acknowledges this role without fully examining the specific pedagogical strategies and professional training required to maximize the benefits of play (Petersson and Weldemariam, 2022; Ogar et al., 2024).

In addition to pedagogy, the availability and adequacy of teaching and learning resources within classroom environments have significant implications for learners' number concept development. Concrete materials such as abacuses, counting aids, and puzzles facilitate collaborative learning and enrich mathematical language and

vocabulary (Rubio, 2013). Conversely, a shortage of these resources can hinder learners' exploration and imaginative play, possibly constraining their number concept development (Amananti, 2024). Teachers' perspectives often highlight these constraints: while educators recognize the pedagogical value of play and concrete materials, they frequently cite limited resources and insufficient institutional support as barriers to implementation (Alkhede & Holmqvist, 2021; Rosli & Lin, 2018); Mapoma and Dagada, 2025).

As Muema et al. (2018); Pyle et al., (2023) and Swan (2021) argue, well-structured play environments enriched with appropriate materials and guided by supportive teaching practices are crucial in scaffolding learners' transition from concrete experiences to symbolic reasoning. Such environments are particularly valuable in enhancing learners' competency in number concept development, an essential foundation for more advanced mathematical learning.

Through classroom interactions and the use of mathematics labs (Hadani & Hirshpasek, 2021) studies have shown that guided play pedagogy boosts children's interest in number concept development (Cade, 2023; Elofsson, 2017; Sanchez, 2025; Parker et al., 2022). However, it is important to note that current literature also highlights certain gaps and challenges related to guided play pedagogy and its effects on number concept development. While the benefits of guided play are evident, there is a need for further research to explore the specific mechanisms through which guided play enhances number concept development.

Despite the well-documented benefits, several gaps remain in the current learning on guided play pedagogy. First, while the importance of play and resources is emphasized, there is limited understanding of how socio-cultural and economic

contexts shape the effectiveness of guided play pedagogies (Amananti, 2024; McElhinney and Kennedy, 2022). Second, much of the existing work emphasizes immediate learning outcomes, with fewer longitudinal studies examining how play-based learning in number concept development influences learners' long-term achievement (Colliver et al., 2022; Derman et al., 2020; Sargsyan et al., 2024). Third, research frequently focuses on basic numeracy skills while overlooking the potential of guided play to foster advanced mathematical concepts such as spatial reasoning, measurement, and algebraic thinking (Atiqah et al., 2024; Mutaf-yıldız et al., 2020).

Furthermore, while teachers' roles are acknowledged, there is insufficient attention to their voices, strategies, and professional training needs, especially in resource-constrained settings (Bubikova-moan et al., 2019; Mabena and Mokgosi, 2020). Finally, a reliance on qualitative observation highlights the need for healthy assessment strategies that can quantitatively capture the influence of guided play pedagogy on measurable learners' academic achievement (Edwards and Edwards, 2021).

Addressing these gaps requires more context-sensitive and methodologically diverse research, as well as practical interventions that strengthen teachers' capacity and ensure equitable access to learning resources (Cheruiyot, 2024; Mary et al., 2018; Murtagh et al., 2022). Such efforts would not only advance learning but also enhance classroom practice by enabling guided play pedagogy to reach its full potential in supporting learners' number concept development.

## **2.2 Guided Play Pedagogy Assessment Practices and Number Concept Development**

Assessment is essential in guiding learners' number concept through guided play pedagogy (Yildiz, 2020; Eshaq, 2024). Effective classroom communication and constructive feedback can boost children's cognitive development, confidence, and social skills. Studies like Ndabezitha et al., (2023); Sanchez, (2025) and Steele, (2024) on play-based learning find that guided play pedagogy where teachers scaffold exploration towards learning goals is especially powerful for building early math skills like number recognising and sequencing.

By allowing learners' autonomy within a prepared environment, guided play capitalizes on their natural curiosity while still targeting specific learning outcomes. In this way, Aunio et al. (2021); Cronin-Golomb and Bauer, (2023) Weisberg et al., (2016) noted that teacher's positive feedback and support during play can foster a growth mind-set and enhance learner engagement is linked to the study theory supporting through ZPD for better learning outcome. These observations emphasize that assessment practices in the classroom do not merely measure learning but actively influence learners' self-confidence and willingness while at task to explore new concepts in a real life situation (Ejuu et al., 2022; Amananti, 2024).

Assessment in early childhood is fundamentally about collecting and interpreting data on what learners know and can do (Moses and Kobusingye, 2024; Moses and Kobusingye, 2022; Ruslin, 2022). Effective assessment involves careful planning, ongoing documentation, and considerate evaluation of each learner's progress. For instance, teachers may use observation checklists or anecdotal notes during play activities to record how a child counts, sorts, or matches objects (Montoya-Fernández et al., 2024); Moses and Kobusingye, 2023). When done well, this

process helps identify each child's strengths and the specific areas where they need more support.

In the Ugandan context, however, studies highlight concerns about current assessment methods. According to Nakabugo et al., (2019); Mary et al., (2018); Guarrella (2023) noted that many schools often rely on traditional pen-and-paper tests that emphasize rote recall and only a narrow set of skills. Such methods tend to overlook many learners' unique abilities and learning contexts. In other words, existing assessments often fail to reflect individual learners' needs and intelligences. This indicates a need for assessment approaches that are more flexible and responsive to each child's developmental profile (Bagnato et al., 2024; Puinean et al., 2022).

Assessing learning within play-based settings presents both opportunities and challenges. On the positive side, play activities naturally reveal how children are building number concepts (Puinean et al., 2022; Zannah et al., 2024). For example, a teacher can observe a child stacking and sorting blocks to gauge their understanding of counting and categorization. These kinds of hands-on tasks (e.g. matching, counting, and sorting with manipulatives) are realistic situations where number sense emerges, and teachers' observations during play become valuable assessment data. Similarly, noting how a child participates in classroom games or group activities can inform teachers about social skills and readiness for formal schooling (Noble et al., 2016; Yun et al., 2021).

However, many educators struggle to translate guided play-based interactions into formal assessments. Educators often report not knowing how to assess play effectively, partly due to limited training and high pressure for measurable learners'

outcomes and achievement level (Bubikova-moan et al., 2019; Montoya-Fernández et al., 2024). Moreover, when assessment is not clearly linked to pedagogy, valuable information can be missed. In practice, this can lead to inconsistent use of assessment tools during guided play whereby some teachers may not document play activities at all, while others may rely solely on end-of-term tests.

In Uganda specifically, there is concern that stakeholders (administrators and parents) still focus mainly on exam scores (Mary et al., 2021; Kahunzire et al., 2023; Kobayashi, 2025). This exam-focused mind-set can undervalue the skills children gain through play pedagogy (such as problem-solving and collaboration). These challenges show that while early childhood frame offers more interactive, rich learning moments and learner led pedagogies, schools need systematic assessment strategies so that every learner's progress in number concepts is captured and supported (Bosco et al., 2025; Adela, 2024).

According to Al-Hendawi et al., (2025); the key components of effective guided play assessment include; observation and documentation of learners' progress. It uses checklists or anecdotal records during play to note what the learner can perform like counting, sorting, and matching behaviours. This captures real-time number-concept learning. Teacher feedback should be emphasized providing timely feedback, using probing questions during play to encourage effort and correct misunderstandings. Positive, process-oriented feedback helps build a growth mind-set in number concept development (Ferrara et al., 2019; Geldhauser et al., 2022; Miedzo and Chipso, 2019). It is the teacher's roles to link play activities to the designing assessment activities that fit effortlessly into play as using blocks or games so that assessment is natural and modest. This makes it easier to assess cognitive skills without disrupting play.

Similarly, teachers face some challenges that affect their assessment process. These include; lack training in translating playful activities into measurable assessment. Assessment tools (like portfolios or observation records) are often used inconsistently across classrooms, leading to gaps in realistic data (Ejuu, 2018; Kisa et al., 2020; Montoya-Fernández et al., 2024). A persistent emphasis on test scores and pass results can de-prioritize holistic assessment of competencies like numeracy and problem-solving.

Researchers emphasize that using simple, developmentally appropriate tools such as observation forms and checklists can make assessment more authentic for young children. Also, Al-Hendawi et al., (2025); Ferrara et al., (2019); Parker et al., (2022) highlighted that the tools allow teachers to monitor skill acquisition in context. In guided play settings, such tools help teachers “capture how children engage with number concepts during play” without breaking the flow of exploration. They also encourage tracking progress over time, not just at the end of a unit. Notably, the Ugandan Ministry of Education has increasingly recognized the value of play in the recent policy statements and media reports affirm that play-based learning is a cornerstone of early education. The Ministry’s 2024 declaration notes that play “fosters holistic growth” and that new guidelines are being developed to integrate play into the curriculum. This national emphasis on play highlights the importance of aligning assessment methods (Bagnato et al., 2024) with guided play pedagogy, ensuring learners’ number-learning is both engaging and measurable in and out of school.

Despite these understandings, gaps remain in practice. Global studies like Pyle and Danniels, 2017; Spadafora et al., 2024; Bubikova-moan et al., 2019) noted that many preschool teachers value play but “often lack systematic approaches for

documenting and utilizing assessment data” in their classrooms. In Uganda, even with an official framework supporting guided play activity centred within the ECD programmes, there is limited evidence on how local teachers are actually using structured assessment tools to track number concept development (Moses and Kobusingye, 2024).

This inconsistency between recognized best practices and what happens day-to-day highlights the need for further investigation. This study therefore aims to explore how guided structured play is used not only to engage children but also to provide reliable assessment of number concept development among pre-primary learners in Amac Sub-county.

### **2.3 Perceptions of Teachers on the Influence of Guided Structured Play Pedagogy on Number Concept Development**

In the context of early childhood education, teachers’ perceptions play a vital role in shaping how guided structured play is implemented to support number concept development. Drawing from these, several studies highlight guided play as a meaningful approach to supporting numeracy learning (Cade, 2023; Smedsrud et al., 2024). Research has shown that when structured appropriately, guided play enhances learners’ engagement and conceptual understanding (Cheruiyot, 2024).

However, Ndabezitha et al. (2023) noted that limited attention has been given to how teachers can actively guide play, particularly within teacher training contexts. This gap suggests that pre-primary teacher education programmes need to place greater emphasis on preparing preservice and in-service teachers with guiding practices, which are essential for fostering effective number concept development. Following from the previous studies, guided play has emerged as a meaningful approach to

numeracy learning (Mapoma and Dagada, 2025; Ndabezitha et al., 2023), especially when integrated intentionally into classroom routines.

Wickstrom and Deluca, (2019) observed that in Canadian nursery classrooms, guided play was regarded by educators as an essential component of learning, fostering curiosity and exploration within structured environments rather than serving as a means of merely occupying time. Similarly, Clerkin and Gilligan-lee, (2018); Petersson and Weldemariam, (2022); Wickstrom and Pyle, (2024) noted that preschool teachers perceive early numeracy exposure through guided play pedagogy as foundational in shaping learners' attitudes toward mathematics. These studies suggest that teachers who value guided play often use it to cultivate mathematical thinking by push in number related activities into socially interactive and playful experiences (Waiswa et al., 2024).

Also, teachers' perceptions are influenced by Vygotsky's theory as they look at guided play pedagogy as a social activity that bridges learner interactions and number concept development (Vansdadiya and Gondaliya, 2025). Teachers design play stimulating environments that encourage exploration, sorting, comparing and sequencing numbers to support the learner in critical thinking and problem-solving skills.

Guided play pedagogy reinforced the perception that, "Play-based activities must be designed to ensure purposive learning." This reflects a growing understanding among educators that guided play must integrate clear learning competences, especially in foundational domains like numeracy. As noted by Ntshangase and Venketsamy, (2022), guided play pedagogy supports cognitive gains more

effectively than free play or direct instruction when teachers considerately set in learning goals into playful contexts.

From the teacher perception, such views demonstrate a shift toward valuing guided structured play pedagogy as not merely a classroom management tool but as a pedagogical strategy that can meaningfully promote number concept development. Teachers who perceive play as educationally purposeful are more likely to design activities that encourage counting, sorting, sequencing, and problem-solving skills which are essential to early mathematical development (Dağlı et al., 2019; Soar, 2019; Svensson, 2022). These understandings affirm the importance of teacher agency in implementing guided play that bridges playful engagement with numeracy outcomes in early childhood education.

Besides this, Derman et al., (2020) and Mutegi et al. (2021) provided further evidence on how teacher support learner engagement during play-based activities contribute to positive attitudes and confidence in mathematics. Their findings are in line with Carter et al., (2024) which highlight that, teachers' perceive their role as facilitators rather than direct instructors greatly influence how learners interact with number concepts through play.

In the Ugandan context, Nakabugo et al. (2019); Mbabazi et al., (2024) emphasized the significance of creating well-organized and stimulating learning environments using locally available materials. Teachers who recognize the value of such environments often perceive play not just as entertainment but as an instructional tool that supports holistic development, including cognitive and emotional growth.

Moreover, studies by Adela, (2024); Cheruiyot, 2024) and Okwanga and Mwesigwa, (2022) revealed that the effectiveness of guided play largely depends on the teaching

process and environment. Teachers who adopt child-centred approaches are more likely to perceive guided structured play as a viable strategy for fostering number sense, sequencing, and pattern recognition in pre-primary learners.

Despite these understandings, there remains a gap in understanding how guided structured play is perceived and practiced specifically within the context of Uganda's Amac Sub-county. This study addresses that gap by exploring how teachers in the rural location of Amac interpret and apply guided play pedagogy in fostering early numeracy, thereby contributing to a deeper understanding of its relevance and practical value in rural educational settings.

#### **2.4 Summary of Literature**

The current state of the systematic research investigating the interaction between guided play pedagogy and number concept development offers a complex picture. The importance of enriched, guided play-based learning settings with well-organised learning centres that promote mathematical inquiry, collaboration and socio-emotional development is one of the key components. The accessibility of practical teaching tools and efficient evaluation techniques also stand out as crucial elements. The research shows a strong connection between guided play pedagogy and learner attitudes, confidence, and math achievement, emphasising the significance of both the learning environment and instructional strategies. However, in order to make thoughtful contributions to the developing area of early mathematics education, there is a rising need for context-specific research, such as that conducted in Uganda's Amac sub-county.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.0 Introduction**

This chapter dealt with research design, methods, location of the study, target population, sample size and sampling techniques, research instruments, measurements, validity and reliability, data collection, procedure data processing and analysis and ethical consideration.

#### **3.1 Research design**

The study employed a qualitative case study design, which is appropriate for exploring how guided play pedagogy influences number concept development among pre-primary learners. This approach enabled the researcher to gain in-depth understanding of participants' experiences (Cade, 2023; Pawar, 2021), teaching strategies, and assessment practices within a natural setting in Amach Sub County. The study focused on how guided play pedagogy creates a stimulating environment, assessment practices are used within guided play pedagogy and the perceptions of teachers on the influence of guided structured play pedagogy on number concept development.

#### **3.2 Research Methodology**

This study utilized semi structured interviews, observation and documentary review to explore the role of guided play pedagogy and learner number concept development. Semi structured interviews targeted head teachers and teachers to provide varied perspectives (Carter et al., 2024) on the role of guided play pedagogy and learner number concept development. Whereas observations involved observation checklists for teachers while with learners to provide different views on

the role of guided play pedagogy and learner number concept development. While documentary review involved documentary review checklist to find out teacher preparation that include guided play pedagogy to support learner engagement in number concept activities.

### **3.3 Location of the Study**

The study was conducted in Amac sub-county, Lira District, because of its suitability for providing required study population more effectively in comparison to other sub-counties in the district. Based on the local government administrative structure, Lira District comprises of ten sub-counties and two town councils. It has 68 government aided primary schools as well as 44 private primary and 32 nursery schools. Besides, Amac, which includes a sub-county and a town council, has more than 18 nursery schools, making it an important and representative area for the study.

### **3.4 The study Population**

The study population comprised of pre-primary school teachers, head teachers and learners in Amac Sub-county who are engaged in the implementation of guided play pedagogy to enhance number concept development. Teachers were chosen for their active engagement in planning, implementing and evaluating guided play strategies (Craig et al., 2021). This provided valuable understanding in how teachers create a stimulating environment to support learner number concept development and their perceptions directly addressing objective one and three. Learners were observed to understand their engagement and participation in number-based guided play activities which is aligned with objectives one and two. Head teachers were included to provide understandings into curriculum support, school management, and teacher support supervision regarding guided play pedagogy which was in line with

objective two and three. This arrangement ensured that data collection and analysis remained consistent with the study objectives, research questions and problem statement thus supporting the integrity and significance of the findings (Owojori, 2021).

### **3.5 Target Population**

The study target population comprised of pre-primary teachers, learners, and head teachers in only community and private pre-primary schools in Amac Sub-county who are involved in teaching and supporting numeracy learning through guided play. This population was believed suitable for the study as it represents those most directly affected by the instructional approach under the study (Muhammad & Kabir, 2018).

#### **3.5.1 Accessible Population**

The accessible population included the specific teachers, learners, and head teachers from selected schools in Amac Sub-county who were available and agreed to participate in the study. These included participants from schools where guided play pedagogy was actively in use and were accessible to the researcher for data collection. The teachers were carefully chosen from selected pre- primary schools in Amac sub-county to provide relevant information that were supportive to the study.

### **3.6 Sample Size and Sampling Techniques**

#### ***3.6.1 Sample Size***

The study sample size was determined using the principle of data saturation which shows the point at which no new information is being discovered. The population was divided into categories of 72 Pupils, 36 Pre-Primary Teachers and 12 Head

Teachers totalling to 120 participants in 12 Pre-Schools. Within each school, participants were selected based on their potential to offer valuable perceptions in the implementation of guided play pedagogy and number concept development. These included three (3) pre-primary teachers per school using guided play to teach number concepts, six (6) learners observed during guided play periods, one (1) head teacher per school to provide pedagogical leadership roles in the implementation of guided play pedagogy.

### ***3.6.2 Sampling Techniques***

The study involved purposive and convenience sampling to select participants who were most knowledgeable and experienced in the implementation of guided play pedagogy for teaching number concepts. This techniques were ideal for identifying individuals who could provide relevant, and in-depth information (Taherdoost, 2022). Teachers were purposively selected based on their involvement in pre-primary numeracy instruction using guided play pedagogy. Head teachers were also purposively selected from the same schools to provide administrative and pedagogical support to teachers. Meanwhile learners were selected through convenience sampling based on their participation in the observed classrooms during guided play lessons.

***Table 3. 1: Showing Population, Sample size, Sampling procedure and methods***

<b>Category</b>	<b>Population</b>	<b>Sample size</b>	<b>Sampling technique</b>	<b>Methods</b>
Pupils	72	72	Convenience	Observation.
Teachers	36	36	Purposive	interview, observation, document review
Head Teachers	12	12	Purposive	Structured interview
<b>Total</b>	<b>120</b>	<b>120</b>		

**Source:** Primary data

### **3.7 Data Collection Methods**

This study employed a qualitative approach to explore the role of guided play pedagogy in enhancing number concept development among pre-primary learners. To obtain comprehensive and credible data, three main data collection methods were used: semi-structured interviews, classroom observations, and document review (Mashuri et al., 2022; Taherdoost, 2022). These methods were linked to the participants groups and the study objectives allowing triangulation and in-depth understanding of the occurrences under the study.

#### ***3.7.1 Interview Guides***

The study used a combination of structured and semi-structured interview guides to engage participants. I utilised structured and semi-structured interview guides because they provide a consistent technique, make analysis easier, focus on study objectives, enable flexibility, and enhance participant confidence (Mashuri et al., 2022). I also conducted in-person interviews, particularly with selected teachers, and head teachers, to provide direct and in-depth information on beliefs, experiences, challenges, and implementation strategies related to guided play pedagogy and number concept development. Additionally, the event recording, and summarising diaries tools were used for reminders during extended interviews, ensuring full data collection and analysis to increase data accuracy and organisation.

#### ***3.7.2 Observation***

In general, the main unit of observation was teacher preparation and classroom management. The researcher used observation checklists to assess how teachers prepare scheme of work, lesson plans and learners' activities and manage their classes (Puspita and Suyatno, 2020) for ideal number concept development. This included assessing how guided play is implemented (classroom layout), learner

engagement, teacher-learner interaction, use of play materials and appearance of number concepts in play (Maria et al., 2018). The observation was used to collect evidence and comments to determine how teachers support learners in developing number concepts using guided play pedagogy strategies. This made it easier to obtain first-hand information and experience that is in line with the study objectives and research questions.

### ***3.7.3 Document Review***

Furthermore, the researcher used relevant documents such as schemes of work, lesson plans, and learners' activity records were reviewed. This was to verify how teachers planned and integrate guided play in the teaching and learning process, and assess the alignment of activities with learner number concept development goals.

## **3.8 Measurement**

### ***3.8.1 Validity and Reliability***

In this study, the validity of the research instrument was ensured by subjecting the instrument to analysis of research experts whose recommendation was used to refine the instruments developed in order to capture the expected data. The practice of pretesting was greatly viewed as an effective method for enhancing data collection and interpretation of the findings. In order to ensure the validity in the research instruments, the researcher used quality control measures (Rozali et al., 2022). The study adapted four guidelines suggested by (McElhinney, 2022) to ensure trustworthiness in the qualitative studies. These strategies include; credibility, transferability, dependability and conformability. Furthermore validity of the research instruments was ensured by producing 10 items based on the study objectives and subjecting the instruments to rating by ten experts (Elangovan and

Sundaravel, 2021). Seven out of the ten items were ticked right which the researcher considered as the content validity index.

Dependability was ensured by triangulating reliable data collection methods that was used in the study, such as interviews, observations and document review (Bonn and Pinxten , 2021; Mihailov et al., 2022). The researcher collected data from teachers and head teachers using interviews, while Observation was conducted to teachers and learners and document review was directed to teachers. Triangulation of methods supported in strengthening the data given by different participants using different methods for example, during classroom observations, the findings helped to strengthen teachers' and learners' data (Korstjens and Moser, 2018). The researcher's interpretation was used as another measure of validity. In the statement, the researcher described their tendencies and opinion about the study before scrutinising the data to see how their preconception had changed after analysing and engaging the data on participants' experiences. According to (Goundar, 2025) subjective statements allow the reader to find a position of the findings into the context and to understand how the data was constructed by the researcher. All in all, this attempt would give the reader an opportunity to assess the study and come to it conclusions.

Conformability was ensured by examining participants' responses and conducting member checks to verify the accuracy of the findings (Korstjens and Moser, 2018; Muhammad and Kabir, 2018). The researcher interviewed teachers and head teachers to verify facts, clarifications and accuracy. The study draft report was sent to Lira education department concerning with pre-primary schools for members to check and verify the accuracy of the information about the guided play pedagogy

and number concept development in pre-primary schools. Finally the trustworthiness of the findings was validated and evaluated (Rozali et al., 2022; Ahmed, 2024).

### **3.9 Data Collection Procedure**

The research began with an assessment of the study tools' reliability and validity, specifically interview guides, and observation guides. Based on the research data collection protocol, permission was granted from the department Higher Degrees Committee of Kyambogo University to go out to seek permission from Lira District Education Office, and the chosen nursery schools. Aside from other measures, the key approaches included classroom observations, document review and interviews with educators and to assess the integration of numerical concept development into the school's daily routine. This exhaustive approach, which included an observation checklist, video recordings, and interviews, lasted at least two months.

### **3.10 Data Processing and Analysis**

#### ***3.10.1 Data Processing***

According to Muhammad and Kabir (2018), data collection methods need to first be identified and then linked to the required data. For this study, data processing involved data cleaning by editing, scrutinising complete schedules, and checking for gaps and consistency. The data were sorted and coded for quality information in order to eliminate errors in the scores as well as help in proper identification of strengths and gaps during data entry (Isangula et al., 2024). This ensured that the data entered fell within the accepted ranges, checking for no responses and removing the outliers.

### ***3.10.2 Data Analysis***

The data were collected through interviews, classroom observations, and document reviews, and were analysed using thematic analysis as outlined by Braun and Clarke (Naeem et al., 2023) The analysis of the data occurred concurrently with the data collection aligning with assertion that real time engagement with the data enhances the credibility of the findings. During data analysis, recordings were transcribed by repeatedly listening to audio while comparing the content with the field notes (McElhinney & Kennedy, 2022). The purpose was to ensure that data were organised and arranged systematically without omitting or alternating any. Transcription is a form of translation that requires a researcher to assign meaning to spoken words. The use of verbatim transcripts made the participants' authentic voices and intentions were preserved for accurate interpretation.

Following transcription, rigorous coding process guided by (Naeem et al., 2023) iterative model of qualitative analysis. Codes were generated through process of familiarisation with the data identifying significant phrases and labelling them based on patterns of meaning. The process simplified more abstract interpretation and support thematic progress.

Interview transcripts and observation notes were coded manually to identify recurring patterns related to guide play pedagogy and number concept development. Themes were derived directly from the data and were closely aligned with the study's objectives and research questions. Direct quotes from participants and field notes were used to support and validate each emerging theme (Craig et al., 2021). To enhance the credibility of the findings, triangulation was applied by integrating data from teachers, head teachers, and classroom observations. This analytical

approach ensured a comprehensive and objective evaluation, consistent with the specific research objectives presented in earlier chapters.

Also, textural descriptions and detailed narratives explaining participants experiences. Verbatim quotes were used to preserve the depth and emotions of the participants voices and practices as highlighted by (Brennan, 2022) who emphasised the significance of narrative clarity in communicating participant experiences. Later, structural descriptions which used imaginative variation to explore how the experiences occurred revealing underlying structures and contexts influencing those experiences.

The researcher then synthesized both the textural and structural descriptions into composite narratives, combining shared meanings across all co-researchers. This synthesis marked an essential step toward capturing the essence of the occurrence under investigation (Millum & Bromwich, 2020). The integration of these shared units aimed to express an integrated understanding of learners' number concepts experiences with guided play pedagogy.

During the validation stage, narratives were categorised by participant type (learners, teachers and head teachers) and shared with the respective individuals for member checking (McElhinney & Kennedy, 2022). According to Nabie, (2015); Willis, (2019) participant validation enhances the trustworthiness of qualitative data by allowing respondents to confirm or correct how their experiences were interpreted. Adjustments were made based on this feedback to ensure an accurate reflection of participants' perspectives.

Finally, the analysis process followed a six-phase thematic approach; familiarization with data, generating initial code, searching for themes, reviewing themes defining

and naming themes, and producing the report. The themes were contextualized by comparing them with existing literature, ensuring that the findings contributed meaningfully to the broader discourse on guided play pedagogy and learner number concept development (Coleman, 2021)

### **Ethical Considerations**

Before the commencement of data collection, the researcher obtained formal clearance from the university's ethics and research committee. Thesis clearance served as evidence with instructional and academic ethical standards, ensuring that the study met the necessary guidelines for responsible research (De Pascale et al., 2024). The letter was presented to the Lira District Education Office to facilitate accessibility of participants in the selected schools. While at the selected schools, the purpose of the research and study objectives were explained to the participants. This step was carried out within an authorised and ensuring that the research was carried out within an authorized and supportive environment

Participation in this study was entirely voluntary. All participants, including pre-primary teachers, head teachers and learners, retained the rights to choose whether to participate, decline or withdraw at any point during the research without fear of penalty or consequence (Akhurst and Leach, 2023). Each participant was issued a consent form, which was clearly explained in person. The form included details about the study's purpose, procedures, possible risks and benefits. Participants who proved informed consent did so by signing the form, while those who declined were respectfully excluded from the study (Millum & Bromwich, 2020).

## **Confidentiality**

Confidentiality was strictly maintained throughout the research process (Bingley, 2020). The data collection instruments, such as interviews, observation checklist and documentary guides, were deliberately designed without fields for participant names or identifying information. This ensured that the data collected could not be linked to specific individuals, thus preserving privacy

Furthermore, the researcher stored all physical instruments (transcripts, notes) in a lockable cabinet only accessible to the researcher. Digital data was securely stored on a password-protected laptop, with encrypted folders used to restrict access to sensitive files. To enhance participant privacy, all responses were reported in collected form (Hansson et al., 2022). The researcher ensured that no personal identifiers appeared in the final report or any subsequent dissemination of findings. This protected participants from reputational risk or unintended exposure, particularly given the small academic setting in the study took place (Lamb et al., 2024).

In this study, the main unit of observation comprised of pre-primary teachers in Amac Sub-county, whose teaching practices, perceptions, and instructional materials were observed, reviewed, and analysed. The unit of analysis focused on the teachers' perceptions and instructional strategies regarding the role of guided play pedagogy on number concept development among pre-primary learners. The analysis of data followed Braun and Clarke's six systematic steps: familiarization with the data, generation of initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the final report.

### **3.12 Summary of Methodology**

The chapter presents the methodology used to explore the influence of guided play pedagogy on number concept development among pre-primary learners in Amac Sub-county. The study adopted a qualitative case study design to allow in-depth exploration of teacher strategies, learner engagement, and pedagogical practices within real classroom settings. Data were collected from 120 participants, including 72 learners, 36 teachers, and 12 head teachers, selected from 12 pre-primary schools using purposive and convenience sampling. The main data collection tools included semi-structured interviews, classroom observations, and document reviews, which provided triangulated understanding into the integration and influence of guided play. Validity and reliability were ensured through expert review, pilot testing, triangulation, and consistent coding procedures. Thematic analysis following Braun and Clarke's framework was employed to analyse data, ensuring alignment with research objectives. Ethical approval was obtained, informed consent was secured, and confidentiality was maintained throughout the study.

## CHAPTER FOUR

### DATA PRESENTATION, ANALYSIS AND INTERPRETATION

#### 4.0 Introduction

This chapter presents analysis of the data findings, focusing on demographics, educational levels, and professional experience. The study intended at assessing teachers' and head teachers' perspectives regarding the role of guided play pedagogy in developing number concepts in ECCE teachers in Amac Sub County. The analysis was presented according to the research objectives that focused on guided play pedagogy stimulating environment for number concept development, the assessment practices that enhance number concept development and teachers' perceptions on the influence of guided structured play pedagogy on number concept development in pre-primary education.

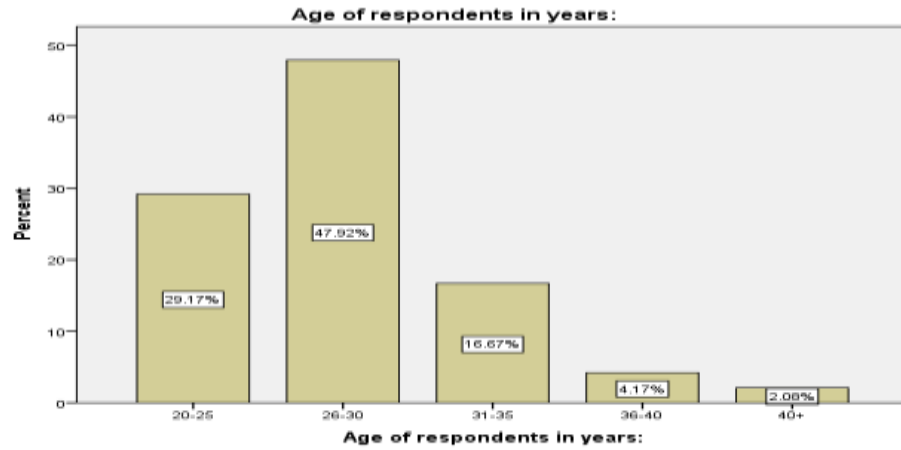
#### 4.1 Background Characteristics

The background of the study comprises of age of the respondents that ranged from 20 years to 40 years and above, the gender distribution and years of professional experience among which were represented on bar graphs. Education level-based certificates, followed with diplomas and bachelor's degrees holders is represented on a pie-chart to ascertain the qualification of the Pre-primary school teacher's in Amac Sub County.

##### 4.1.1 Age of Respondents

The data represents the age distribution of respondents in a survey, with a total sample size of 48. The respondents were categorised into different age groups: 20–25 years, 26–30 years, 31–35 years, 36–40 years, and 40 years and older. The majority of respondents (n = 23; 47.9%) fall into the 26–30 age group, followed by

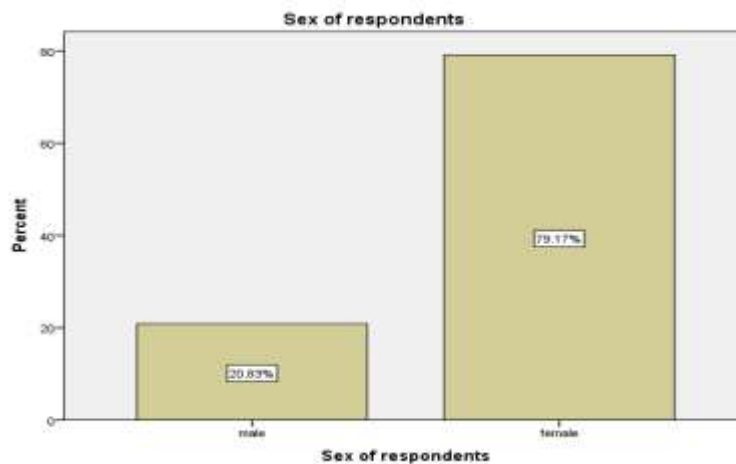
(n = 14; 29.2%) in the 20–25 age group. The proportions decrease as the age range increases, with (n = 8, 16.7%) in the 31–35 age group, (n = 2, 4.2%) in the 36–40 age group, and the smallest percentage, 2.1%, for respondents aged 40 and above.



**Figure 4. 1: Showing Pre-school Teacher’s Age Levels**

#### 4.1.2 Sex of Respondents

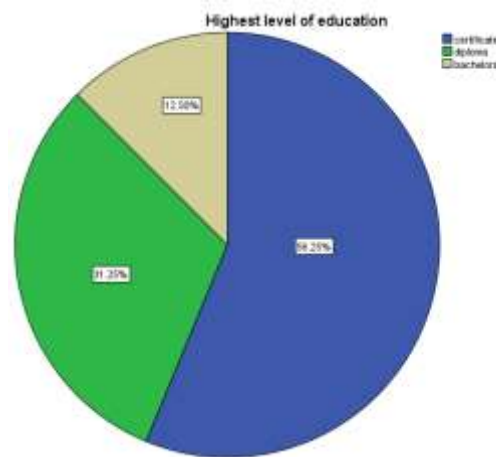
The provided data presents the gender distribution of respondents in a survey with a total sample size of 48. The majority of respondents, accounting for (n = 38, 79.2%), identify as female, while (n = 10, 20.8%) identify as male. The gender breakdown illustrates a notable imbalance in favour of female respondents.



**Figure 4. 2: Showing Pre-school Teachers by sex**

### 4.1.3 Education Level of Respondents

The data reflects the educational qualifications of respondents in a survey with a total sample size of 48. Among the respondents, the majority, constituting 56.3%, hold certificates, followed by 31.3% with diplomas and 12.5% with bachelor's degrees. This distribution indicates a diverse range of educational backgrounds within the surveyed population, with a notable proportion possessing certificates and a smaller percentage holding higher qualifications such as diplomas or bachelor's degrees.

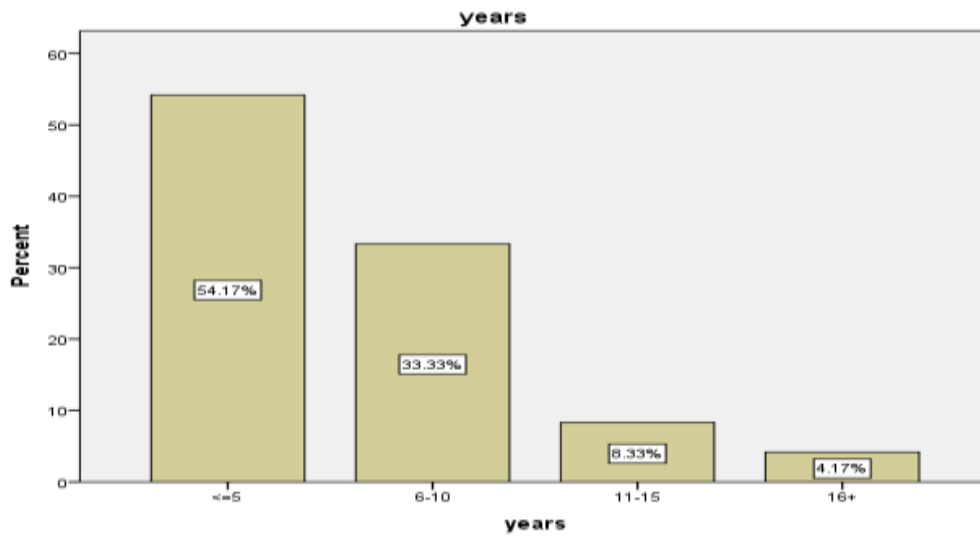


**Figure 4. 3: Showing Pre-school teacher's Education Levels**

### 4.1.4 Years of Experience

Figure 4.4 presents the distribution of years of professional experience among respondents in a survey, with a total sample size of 48. The majority of respondents, accounting for 54.2%, have accumulated up to 5 years of experience. Following this, 33.3% have 6–10 years of experience, while a smaller percentage, 8.3%, falls within the 11–15 years of experience range. The most experienced group, with 16 or more years of experience, constitutes 4.2% of the respondents. The findings suggest a diverse range of experience levels within the surveyed population, with a

concentration of individuals in the early stages of their professional careers and a gradual decline in frequency as experience levels increase.



**Figure 1: showing Pre-school Teacher's years of experience**

### **Summary of Demographics Analysis**

Commencing with a systematic examination of demographic attributes, this section underscores key understandings into the educators involved in the study. Notably, there is a predominant representation of individuals aged 26-30, constituting 47.9% of the cohort, with a significant majority being female at 79.2%. A breakdown of teacher's educational qualifications reveals that 56.3% hold certificates, and an exploration of professional experience indicates that 54.2% have up to 5 years of experience, while 33.3% possess 6-10 years. This detailed demographic analysis lays the foundation for proper understanding of the study's participant profile.

## **4.2 Analysis of Different Research Questions of the Study**

### **4.2.1 Introduction**

This section presents the qualitative analysis and interpretation of data gathered through semi-structured interviews, classroom observations, and document reviews.

The findings are organized thematically in alignment with the research questions. The perceptions of teachers and head teachers are presented to illustrate patterns, variations, and shared experiences across the selected schools in Amac Sub-county. Emerging themes are supported with direct quotations from participants and locations to instructional documents, enabling a deeper understanding of how guided play pedagogy is practiced and perceived in the setting of early numeracy learning.

#### ***4.2.2 Research Question 1:***

***How does guided play pedagogy contribute to creating a stimulating environment on number concept development among pre-primary learners?***

This research question aimed to examine whether pre-primary school teachers in Amac Sub-county implement guided play pedagogy to support the development of number concepts among learners. The study required to understand how these activities are structured to promote learners' interest and active participation. It further explored the types of learning materials available in the classroom environment that support interaction, exploration, hands-on learning, and collaboration among learners. In addition, the objective focused on the role of the teacher in fostering curiosity and providing appropriate guidance to support number learning through play. The data analysis was centred on 36 teachers' and 12 head teachers' views on how they use guided play pedagogy to develop number concept in 12 schools basing on the identified themes below.

#### ***4.2.3 Creating a Stimulating Environment through Guided Play***

In creating a stimulating environment through guided play, data was obtained from teacher, head teacher and learners through interviews, classroom observations and documentary review about the provision in the environment that promotes number

relationship, number recognition and number word system. According to the data analysis, it has revealed that songs and rhymes included in the environment promote learner number concept development best. However, the provision of space, mathematics learning areas and facilitating games for example, seven stones, number line, and number race were revealed as not commonly perceived effectiveness.

In School 1, Teacher Simon integrated songs and rhymes as part of guided play to enhance number concept development. During the lesson, teacher Simon led a group of learners in a counting rhyme titled “*number one number one where are you, here I am...*”, where learners used their fingers and classroom counters to physically demonstrate counting numbers as they sing the song.

From the classroom observation, “Teacher Simon begins the lesson by clapping and singing a familiar counting rhyme as learners eagerly join in, using their fingers and classroom counters to follow along with the numbers. The teacher could pause a bite to ask learners to show a specific number of fingers meanwhile others were showing group of items by quantity, reinforcing the connection between the song and the number concept.

During the interview, Teacher Simon explained;

*“... for me hmm...songs and rhymes make it easier for my learners to remember number sequences and relate them to real objects around them...”*

Meanwhile teacher Amidah (school 1) said that;

*“...my learners enjoy singing and making funds during mathematics lessons, these help them to relate with each other in class activities,*

*however, this has helped me to support those learners who normally get confused easily.....’’*

A review of instructional documents in School 1 provided additional evidence of the integration of songs and rhymes in numeracy lessons. Teacher Simon’s lesson plans, schemes of work, and classroom activity charts consistently reflected the use of musical strategies to support number learning. In contrast, the documentary review of Teacher Amidah’s (school 1) and Daniella’s (school 3) records revealed a more teacher-centred approach. Songs and rhymes were not included in the lesson preparations, and the materials used were primarily paper-based, offering limited opportunities for learners to engage in hands-on, tactile activities.

The scheme of work indicated the plan of using rhymes and songs during introduction and reinforcing number concepts such as counting, number recognition, and sequencing as observed in school 3 and school 4. Under Week 5 of the scheme of work for teacher Sandra school 4 the competence that shows the use of songs/ rhymes in the lesson. “I can count number 1 to 10 using songs and rhymes with real objects.” Similarly, the reviewed lesson plans included specific songs that matches to numeracy content, for example, in school 3 teacher Chura started a lesson with a song ..... ‘one, two where are you going.....while learners use fingers and bottle tops to represent numbers being sung.....’’ During an interview Teacher Chura noted that;

*‘... songs build confidence and make my learners more interested in counting, sorting and sequencing number. I love songs and rhymes when introducing mathematics lessons, but using counters such as bottle tops and counting sticks for the learners to explore during math play is very difficult... for me I use number charts and number cards mostly’’ he concluded.*

Additionally, in school 4, classroom (baby and middle) displayed charts I can count number, match the numbers and illustrations for several number rhymes, indicating that songs and rhymes were not only used during lessons but also remained visually accessible to learners throughout the day. The use of songs and rhymes was found to be an effective and intended strategy that created a calm, engaging learning environment while supporting number recall, one-to-one correspondence, and counting accuracy. Document review and classroom observations confirmed that these musical elements were not used randomly but were systematically planned and integrated into lessons to promote active participation and meet the diverse learning needs of both active and reserved learners.

In several classrooms especially in schools 2, 3, 4, 5, 10 and 12, the availability of guided play numeracy materials were limited. Teachers relied heavily on improvised materials including paper-based resources, which did not fully support tactile learning, exploration of number relationships and development of number vocabulary. A female teacher Nimaro (school 6) reported;

*...’for me... hmm...I always provide bottle tops, number cards, and counting sticks for the learners to explore during mathematics play but the materials are always not enough for every learner. However, the few materials I use have help my learners to be happy and interested in learning counting and comparing numbers better...’*

Teacher Amidah (school 1) and Daniella (school 3) stated that;

*...’we try to make our own materials like number cards and drawings, but sometimes the materials don’t last for long.... We do not have enough counters and building blocks for all learners... sometimes learners struggle for the materials which make class control a problem...’*

The data obtained from some of the head teachers during the interviews highlighted the usefulness of physical objects, noting, "Counters like sticks, bottle tops and stones enhance tactile learning." A male head teacher Makmot (school 2) suggested that;

*"...for me I think.... I need to start involving my parents in making play materials for their learners or they come and make it from school and the materials shall be displayed in different learning areas. These will help learners to connect classroom activities to home environment and my parents will learn to work together with teachers..."*

Additionally, female head teachers Bara (school 3) and Kiteng (school 4) had a similar view as stated that;

*"...it is my responsibility to see that classrooms are supplied with a variety of tangible objects that can be used for counting and learning number activities... Our learners are failing to reason and solve simple mathematical problems because of our weak leadership styles..."*

Regarding small group approaches, head teacher (school 2) stated;

*"...for me I thought that the methods are to keep learners busy at school yet it makes learners work together in their small groups while learning but...hmmm... I do not see my teachers using them, it seems these teachers are thinking of academic teaching ..."*

However, opinions varied; head teacher school 6 noted;

*"...hmm...for group activities...my teachers make learners work alone with a lot of writing and my classes do not have any space for group activities... so it is very difficult for my teachers to promote this government things of group learning. This cannot work in my school..."*

Basing on the data presented, it indicated that both teachers and head teachers acknowledge the importance of guided play pedagogy in developing number

concepts and its implementation is hindered by limited availability of age appropriate materials and inadequate classroom space. Some of the schools mostly relied on improvised, paper-based resources that do not fully support tactile learning, while those who are using items such as bottle tops and counting sticks, were found insufficient for all learners. Some teachers reported challenges in sustaining homemade materials due to lack of its durability and quantity.

Also, some of the head teachers, emphasized the value of physical objects and expressed willingness to involve parents in material development to enhance classroom-home learning connections. However, the continued dependence on individuals writing activities and under use of group learning approaches suggest a need for greater support in understanding and applying guided play pedagogy effectively within resource limited.

#### ***4.2.4 Classroom Organization and Physical Layout***

Regarding classroom space and arrangement, observations revealed that most of the classes visited especially in schools 2, 3, 5, 6, 7 and 11 had limited physical space, which controlled the effective implementation of hands-on and collaborative learning activities. The overcrowded environments made it difficult to set up activity centres to allow free movement during guided play lessons, thereby limiting learners' opportunities to fully engage in interactive number-based activities.

Teacher Anne in (school 2) Amidah (school 1) commented;

*“...sometimes I would like to organize number games on the floor and use different learning centres, but the space is too small and the furniture is not flexible... So I always take these lessons outside where learners can freely express themselves and use varieties of material.... Sometimes the learners are engaging in peer and group learning which enhance the social development and finer muscles...”*

The opinions varied, some of the head teachers like in (school 6 and 7) noted that;

*“...hmm...for flexible seating...my teachers make learners sit in one place throughout the term and my classes do not have any space for playful leaning...this has affected their creativity and exploration skills ...”*

To address this challenge, the schools should consider reorganizing classroom layouts and labelling simple numeracy centres with playful and portable materials. Where possible, outdoor spaces can be utilized for guided play activities to allow more flexible and child-friendly learning environments especially during morning circle.

During an interview with some of the head teacher; Jacky head teacher (school 5) noted;

*“... for me I have organised a workshop and trained my teachers to guide play without controlling it. This has helped our learners think independently as they engage with number activities individually or in their small groups.....”*

The teacher’s facilitation style contributed to a rich and learner friendly environment. Guided play pedagogy allows learners explore and discover new ideas while being supported, which created room for curiosity and critical thinking about number concepts.

#### ***4.2.5 Role of the Teacher in Creating Guided Play Stimulating Environment to Enhance Number Concept Development.***

The findings of this study revealed that teachers play a vital role in designing and facilitating a stimulating learning environment that promotes number concept development through guided play. Across the preschools visited in Amac Sub-

county, teachers took on multiple roles to ensure learners could meaningfully engage with number-related tasks in an interactive and supportive setting.

One of the key roles observed was that teachers organized the classrooms to include selected learning areas, often using locally available materials such as bottle tops, number charts, and number cards. In schools 1, 2 and 5, teachers had labelled spaces like the “Math area (learning Area 4)” where learners could freely access materials for counting, matching, and sorting. Teacher Sandra from School 4 stated;

*“... hmm I always try to set up different areas for activities like the number counting and building block to help learners rotate and engage with different play activities...but the inadequacy of materials and space always affect my lessons greatly...whenever I talk to the school leaders, they only say we shall see it next time and their next time is not ending.... ”*

Similarly, Teacher Daniella from School 4 mentioned;

*“...for me I make sure there are always counting objects, number charts and number cards available in the classroom for learners to interact with...”*

These examples reveal a careful effort by teachers to provide hands-on materials and organize learning spaces that stimulate learner curiosity and participation. However, space limits in schools like 3, 4, 5, 9 and 11 especially in Top and Middle classrooms limited the full implementation of guided play pedagogy strategy to number concept development. Teachers also emphasized their role in making the learning environment inclusive and child-friendly. Teacher Simon from School 1 explained;

*“... for us in our school we always encourage learners to move around and work in small groups, sitting in one place for too long makes them fail to concentrate, meanwhile movements help learners enjoy learning.”* Teacher Amidah added as, *“... we sometimes let our learners choose their own play activities during the maths lessons, that freedom keeps learners engaged, confident and express themselves freely and I love to see my learners working together...”*

These views reflect an understanding of how learner independence and freedom of movement around the class contribute to a stimulating environment and number concept development.

Some teachers also acted as facilitators of guided play activities. During classroom observations, several teachers were seen leading number songs, rhymes, and structured play responsibilities that encouraged learners to explore number relationships. For example, Teacher Komoli guided learners through a “number hop” game, prompting them to jump on the correct number while counting aloud. These activities maintained a balance between learner independence and teacher support.

Another key role expressed by teachers was scaffolding and guiding learners during play. Teacher Alice from School 4 was observed and pointed out that;

*“...for me during guided play, I move around and ask learners questions about what they are doing, like how many sticks they have counted or how have you sorted.... that helps them think and talk about numbers which helps me to support individuals according to the problem I see...”*

Teacher Nimaro from School 6 added;

*“... for me my role is not just to supervise but to guide learners through questioning and giving small clues about the activities to help discover answers by themselves.”*

These understandings illustrate how teachers support deeper learning by interacting with learners within the play setting to build confidence and fostered a positive attitude towards number activities, even among reserved learners.

As observers and assessors, teachers used guided play to informally assess learners' levels of number understanding. Teacher Nimaro shared;

*“... hmm I can tell among the learners who is struggling with counting by watching how they sort objects during the lesson...”*

Such observations allowed teachers to direct and follow up activities as well as providing individualized support where needed. Despite their commitment, teachers also pointed out difficulties in creating an ideal play environment, including overcrowded classrooms and lack of resources. Male teachers Gineno from School 7 and Makome School 5 noted;

*“We want to create good play spaces, but with too many learners in the class and very small rooms, it is hard to set up play areas properly....”*

Nonetheless, teachers often relied on creativity and improvisation. As Teacher Daniella and Komoli explained;

*“We use bottle tops, sticks, and old boxes to make our own play materials. It's not perfect or adequate but it works for teaching counting and grouping which has helped our learners to compare and describe objects well...”*

These reflections show how teachers adapt to constraints while still striving to promote interactive learning. Additionally, some teachers highlighted the importance of setting routines and behavioural expectations to maintain an organized play environment. Teacher John School 4 and Teacher Nimaro remarked;

*“... young learners need regular instructions even during play, so we always give learners clear instructions before the activity starts, so they know what to do and how to take care of materials but sometimes we do not give them chance of doing their own activities...”*

The documentary review showed that some teachers effectively integrated guided play into numeracy lesson preparations. According to scheme of work and lesson plan from Schools 1, 2, 5 and 12 teachers planned some activities involve reading numbers using number cards and number charts mostly. The songs were observed to enhance number learning and some of the classroom layout allows movement and group activities, which shows a child-friendly setting. These documents demonstrated that deliberate planning and spatial organization significantly supported number concept development through guided play pedagogy.

On the contrary, the documentary review revealed several gaps and loopholes in how teachers designed learning environments for guided play. In some schools, lesson plans lacked clear descriptions of guided play numeracy activities, and focused on teacher-centred instruction such as rote counting and chalkboard demonstrations. Lesson competence states: “Learner can copy numbers from 1–20 with no mention of materials and learner interaction,” I read lesson plans from Schools 4, 6 and 11. Schemes of work from some schools had no evidence of planned guided play activities for the entire term, as observed in lesson plans from Schools 6, 7, 8 and 10. These findings suggest that despite the acknowledged value of guided play

pedagogy, some teachers struggled to interpret this into classroom practices possibly due to lack of training, resources, and institutional support.

In summary, majority teachers see themselves as active facilitators of guided play environments by arranging space, preparing materials, and scaffolding learning, and managing routines. While limited age appropriate resources and space present challenges, their expressions reflect a strong sense of support, creativity, and dedication to fostering an engaging and stimulating environment that engages learners' number concept development through play.

#### ***4.2.6 Research Question 2:***

What assessment practices are teachers using within guided play pedagogy to enhance number concept development in pre-primary schools in Amac Sub-county?

This research question explored how assessment practices embedded within guided play pedagogy contribute to the development of number concepts among pre-primary learners in Amac Sub-county. To achieve this, the researcher collected qualitative data through semi-structured interview and documentary review with teachers and head teachers, as well as classroom observations using a structured checklist. The focus was on understanding how assessment is integrated into guided play activities and how it supports learner's conceptual understanding of numbers following the themes.

##### ***4.2.6.1 Assessment Practices within Guided Play Pedagogy***

This section presents findings on the assessment practices employed by pre-primary school teachers within guided play settings, and how these practices support number concept development among learners in Amac Sub-county. The data were gathered through interviews with teachers and head teachers, observations of classroom

practices and reviews of relevant documents such as schemes of work, lesson plans, and learner progress records.

#### ***4.2.6.2 Observational Assessments during Guided Play***

Classroom observations revealed that the most common form of assessment during guided play was teacher observation. Teachers closely monitored how learners engaged in activities such as counting games, number songs, and sorting tasks. For example, in School 1, Teacher Simon was observed using a number rhyme activity where learners used their fingers and bottle tops to represent numbers. As they played, he took note of learners' ability to count accurately, match numbers to objects, and follow number sequences and provided necessary feedback.

Teachers used this observational approach to measure learner progress informally.

Teacher Amidah (School 1) shared during the interview;

*“...When learners are playing, I can easily see who understands counting and who needs more help. It helps me know how to follow up by correcting learners' behaviours using correct responses... but I do not write the actions for further references like to parents or the office....”*

Similarly, in School 4, Teacher Sandra used number hop game where learners jumped while counting numbers. The teacher observed how learners identified numbers, followed directions, and applied counting skills. Also, it was observed in School 7 Teacher Damalie and school 5 Teacher Rose used a number clap game where learners clap as feedback while counting the numbers like taa-taa-taa, taa-taa-taa taaaa. The teacher observed how learners clapped and identified numbers, followed the rhythm, and applied the accurate counting skills.

The most of teachers were able to identify the learner who was not counting to the rhythm or directions and provide the necessary support accordingly. In this situation,

some classes had less hands-on activities which was challenging to observe individual learner's contributions in the lesson. For example, in school 6, 7, 9, 10 and 11 (Top and Middle class) where the activities were more of teacher led with very few materials, which denied learners chance to express themselves. In an interview with the teachers, Alice from school 4 and teacher Kiki from school 12 noted;

*“...for us we do not know how to make our learners play games while learning our school did not teach us that methods of teaching. ...We shall tell our head teachers to make one workshop like that for us....it would help us improve on our ways of teaching...”*

Some head teachers acknowledged that teachers in their schools had adopted informal observation-based assessment strategies during guided play pedagogy. They appreciated the use of questioning, peer interaction, and real time monitoring to track learners' understanding of number concepts;

*“...for me... hmm my teachers always use what they see and hear during play to assess learner's progress, but I do not understand how they do their things...I need to be more serious in supporting my teachers in order to obtain quality learning...”*

Noted a head teacher from School 1. Others reported that teachers documented learners' achievements in guided play activities using learner's portfolios and anecdotal records;

*“...some of our teachers' could record learners' counting skills and participation during guided play in weekly assessment activities but we are constrained by parents' expectations of receiving numerical marks...”*  
suggested head teacher school 5.

These practices were seen as effective in capturing the holistic development of young learners and aligning with the learner-centred goals of guided play pedagogy.

Despite these efforts, several head teachers expressed concerns over variations and gaps in assessment practices within guided play pedagogy. Some reported that some of the teachers lacked clarity on how to assess learning outcomes during play activities.

*“... hmm there are teachers who just let learners play but don't link the learners play to learning competence and tracking what is being achieved by our learners...”* remarked head teacher school 3 and school 8. Others noted that record keeping was often neglected, and assessment data from play lessons were rarely used to inform instruction.

*“Most of the time, our teachers do not have records of what was assessed during guided play and even during story telling..., teachers want to write full marks in the learners progress report cards to make parents happy of their children's good marks and yet these marks does not show what the child can do...”* commented a head teacher from School 4.

Due to lack of standardized tools and guidance on guided play assessment has contributed to shallow evaluation approaches. These gaps highlighted the need for further training and structured support to strengthen assessment practices within guided play contexts.

#### ***4.2.6.3 Use of Informal Questioning***

Another common assessment method was informal questioning during play activities. Teachers would ask questions such as; teacher Simon (school 1) could ask

*“Can you show me five bottle tops?”, “How many stones do you have?”, and “Which number comes next?”*

These open-ended questions enabled teachers to assess learners’ thinking and understanding in real-time without interrupting the flow of play.

In School 3, Teacher Chura and school 2 Teacher Kamoli were observed stopping a number song to ask a learner to show a specific number using fingers or counters. A quick respond was given following the learner responses which motivated them in learning. While less common, some teachers used simple checklists to track learners’ performance during guided play. These checklists included competences such as: I can count 1 to 10 using real objects. I can match numbers with quantities. I can follow a sequence during a counting game. Teacher Simon (School 1), Teacher Daniella (School 3) and Teacher Kamoli (school 2) have showed a sample checklist they used to record observations after each guided play session, indicating the integration of informal assessment into planning and reflection.

#### ***4.2.6.3 Document Review on Assessment Integration***

A review of lesson plans and schemes of work showed that assessment was sometimes planned alongside guided play activities. For example, Teacher Sandra’s lesson plan in School 4 for Week 3 included the assessment:

*“...I will observe learners as they use bottle tops, counting sticks to count and match numbers during a song...this helps me to gage the level of learners’ performance.”*

However, in several schools, assessment plans were either unclear meanwhile others had missing assessment records from lesson documents. Majority of schools were found with assessment records showing row marks for midterm and end of the term’s test. Some teachers admitted relying on memory or general impressions rather than

structured tracking. Teacher Gineno (School 7) and Teacher Nimaro (School 5) had similar ideas as stated;

*“...for us we do not always write down how each child is doing. I just remember who is struggling or who got it right during the game since we know all our learners by their names...normally these parents of ours like seeing their children going with marks so why wasting my time recording what they can do....”*

Furthermore, teacher Kamoli (school 6) and, Teacher Chura (School 3) noted that parents demand a lot from school about learners' marks. Kamoli quoted one parent;

*“... me, I want my child to be given work every day and I help my child to count and write the numbers from home but teachers only give work for shading which I do not understand it and there are no colours for shading in my home because I have brought all the colours you asked me to buy to school now what can I use...”*

The data from the head teachers during the interviews highlighted the usefulness of provision of oral work, noting;

*“...for me in my school if my learners can tell their names, parents' names, and the name of their school and also telling names of their teachers these help in promoting speaking skills hmm...apart from that, even my teachers make learners count and compare objects during P.E lessons which promote their memory to sort and count things in the environment...”*

One head teacher suggested that;

*“...for me I think.... I need to help my teachers teach more orally rather than giving these learners more written work as their parents want us to do...” These will help learners to develop strong communication skills and have many mathematics vocabulary...”*

Likewise, one of the head teachers stated that;

*“...these parents are confusing us, they want their learners to write good work in day one in school. Parents are forcing us to give exams to these young learners who cannot even hold pencils because of marks which they only know, this government should save us in nursery schools otherwise...”*

Regarding learners’ progress records, one head teacher stated,

*“...hmm for me in my school, my parents want to see only ticks and the marks that the child has got, I think I should call these parents for a meeting and tell them the kind of examination in nursery classes...”*

The discussions revealed that while some teachers planned assessment within guided play such as observing counting during songs, many schools had unclear and missing assessment records. Most relied on midterm and end-term test marks, with limited evidence of continuous tracking. While some teachers were using memory rather than written records to monitor learner progress. Parents were reported to put pressure on teachers for frequent written work and visible marks, which is often misunderstood the value of guided play pedagogy. Head teachers highlighted the benefits of oral work and suggested shifting focus from written tasks to activities that build communication and mathematics vocabulary.

#### ***4.2.6.4 Challenges in Assessment during Guided Play***

Teachers identified several challenges in effectively assessing learners during guided play these included; Time constraints arise due to tight schedules and academic demands, teachers often had limited time to document or reflect on their observations. It was observed that the allocated time to guided play activities was often insufficient due to rigid daily schedules and a focus on academic drilling, especially in preparation for assessments which was observed in all the seven schools visited. “Teacher Anne and teacher Simon reported;

*... for us... we have many lessons to cover and the demand from parents about the child's work... so we only manage short play lessons, and sometimes we skip them when time runs out... in order to give learner written work...."*

Large class sizes as many classrooms were overcrowded, making it difficult for teachers to monitor all learners effectively.

Limited resources, Teachers reported a lack of durable play materials to support diverse assessment tasks. As Teacher Amidah (School 1) noted;

*... "sometimes we lack materials like counters, so we cannot involve every child equally in the play activities..."*

The findings indicate that assessment practices within guided play are primarily informal, with teachers relying heavily on observation, questioning, and occasional checklists. These practices are used to assess key number concepts such as counting, number recognition, sequencing, and one-to-one correspondence.

Although the informal nature of assessment aligns with the principles of early childhood education, its effectiveness is affected by related challenges such as large class sizes, limited instructional materials, unrealistic demands from parents and the absence of structured assessment documentation. If these challenges are minimised consistently, these practices will help teachers identify learners' strengths and learning gaps, allowing them to adjust instruction and provide individual support accordingly.

Assessment practices within guided play pedagogy in pre-primary schools in Amac Sub-county are largely informal and observation-based. Teachers assess learners by watching their participation in number-related games, posing spontaneous questions,

and occasionally using checklists. These practices support the development of number concepts by providing immediate feedback and allowing teachers to tailor instruction. However, their full potential is limited by inadequate time, resources, and documentation practices.

#### **4.2.7 Research Question 3:**

***What are teachers' perceptions of the influence of guided structured play pedagogy on number concept development in Amac Sub-county?***

This section discusses findings in line with research question 3, drawing on themes from interviews, classroom observations, and document reviews conducted across 12 pre-primary schools in Amac Sub-county. The purpose was to examine how teachers perceive the role of guided structured play pedagogy in enhancing number concept development among young learners. The analysis was guided by key themes, including teachers' understanding of guided play pedagogy, perceived benefits, instructional strategies, challenges, and overall attitudes. The study critically interpreted the findings in relation to theoretical frameworks and relevant literature, highlighting key perceptions of teachers and head teachers on guided structured play pedagogy and its contribution to number concept development.

##### **4.2.7.1 Teachers' Understanding of Guided Structured Play Pedagogy**

The study revealed variation in teachers' understanding of guided structured play pedagogy. Some, teachers had positive ideas meanwhile others had mixed ideas, like Teacher Simon and Teacher Daniella, demonstrated a clear understanding of guided play as a structured flexible approach where teachers facilitate play to target specific numeracy concepts. Others eight teachers like Teacher Kamoli and Teacher Alice,

understood guided play in more general and behaviour management terms, with limited appreciation of its pedagogical value.

Interviews with teachers and head teachers revealed varied levels of understanding of guided structured play pedagogy. Teachers from Schools A, E and H exhibited a strong grasp of the concept, describing it as a teacher-led approach where learning objectives are achieved through planned play activities. Teacher Rose from School A explained that;

*“...for me I understand guided play pedagogy as a way to teach through fun and allows learners to understand counting and number patterns more easily...”* Similarly, Teacher Alice from School C shared that;

*“...children actively participate and enjoy learning when engaged in structured play activities such as number relays and sorting games. When learners are happy while working together as my work is to direct them on what they want to do...”*

In contrast, teachers from seven schools including Schools K and L displayed limited understanding, with Teacher Peter from School B equating guided play pedagogy to free play and expressing uncertainty about its influence on learning outcomes. Teacher John from School D associated guided play more with physical activity that make learner happy as they work together with less numeracy learning.

Across all schools, teachers generally acknowledged the benefits of guided play for number concept development, though to varying extents. In Schools A and C, teachers confidently stated that guided play pedagogy enhances learners' understanding of numbers, especially in counting, sequencing, and number recognition. For example, the use of songs, games, and locally available materials was reported to make learning more enjoyable and meaningful. Teacher Alice

emphasized that learners are more attentive and responsive when engaged in play-based learning. In Schools B and D, while some benefits were recognized such as improved learner engagement and effective behaviour management. Meanwhile some teachers were less certain about the direct academic gains from guided play pedagogy due to unclear implementation and insufficient support.

Classroom observations confirmed these perceptions. In School A, the teachers effectively used counting songs integrated with movement, where learners jumped and clapped to specific numbers. Learning competences were clearly communicated, and the teachers assessed learners' level of understanding through direct questioning and observation. In School C, guided play was actively implemented using natural materials like stones to form number patterns. Learners worked in groups, and the teachers provided prompts to facilitate conceptual understanding, showing a strong link between guided play pedagogy and numeracy learning. Conversely, in Schools B and D, guided play-based activities were either absent or poorly executed as majority of the teachers were found less concern about learners play. In School B, for instance, the teacher relied on rote oral questioning without involving hands-on and interactive materials. In School D, E, F and J, counting game was attempted, but learners appeared confused, and the limited classroom space made it more difficult to conduct structured activities effectively.

A review of instructional documents further supported these observations. Schools A and C had lesson plans and schemes of work that clearly integrated guided play activities aligned with specific numeracy competence. These documents showed evidence of planning for both play and assessment, with some teachers recording formative observations and learner responses. In contrast, Schools B and D had

insufficient references to guided play in their instructional documents. Activities were either missing or not clearly linked to number concept development, and assessment strategies were largely summative, lacking structured approaches for capturing learning during play.

Despite the recognized value of guided structured play, several challenges hindered its effective implementation. Teachers in all four schools reported constraints such as overcrowded classrooms, lack of appropriate teaching and learning materials, and insufficient professional development. In School D, these challenges were particularly acute, with the teachers citing a small and congested space and lack of play items as key limitations. Teachers also noted limited awareness among parents and some school leaders, who sometimes dismissed play as unimportant in academic development. These factors demotivated some teachers from fully adopting guided play approaches.

Nonetheless, teacher attitudes towards guided structured play remained largely positive. Teachers in Schools A and C expressed strong support for guided play, viewing it as a powerful and appropriate strategy for teaching early numeracy. They showed enthusiasm and willingness to learn more about how to design effective play-based lessons. Teachers in Schools B and D, while supportive in principle, expressed hesitation due to inadequate training and lack of confidence in aligning play with learning objectives. The teachers recommended increased capacity building, resource provision, and institutional support to boost the effectiveness of guided play pedagogy.

In conclusion, the findings show that while teachers in Amac Sub-county generally view guided structured play as a valuable tool for number concept development,

there are significant variations in understanding, implementation, and support across schools. Schools A and C demonstrated more consistent and effective use of guided play, supported by detailed planning, active classroom practices, and formative assessment. Schools B and D, however, require additional support to strengthen teacher capacity, improve resource availability, and foster an enabling environment for play-based pedagogy to thrive. Addressing these gaps can enhance the quality and consistency of early numeracy instruction across the sub-county.

#### **4.2.7.2 Perceived Benefits of Guided Structured Play on Number Concept Development**

Across most schools, teachers expressed strong belief in the benefits of guided play for engaging learners and improving number recognition, counting, and comparison. Teacher Simon and Teacher Daniella described how activities like counting songs, sorting, and matching with manipulatives improved learner participation and concept retention. The study findings also showed that guided play encouraged collaborative learning, especially in inclusive settings where slow learners could participate actively.

However, some teachers, like Kamoli and Alice, were less confident in linking guided play to numeracy development, which identifies gaps in teacher competent to align play with curriculum competences. The teachers view also suggest a lingering disconnect between play and perceived "serious learning," an issue that needs to be addressed through pedagogical mind set shifts.

### **4.2.7.3 Challenges of Implementing Guided Play on Number Concept Development**

A recurring theme across schools was the set of structural and systemic challenges impeding the effective use of guided play. These included overcrowded classrooms, lack of instructional materials, inadequate training, and time constraints due to large class sizes. The findings show that most schools in rural settings are physically and pedagogically unprepared for learner-centred approaches like guided play. The lack of locally flexible assessment frameworks, compounds the challenge by discouraging teachers from experimenting with flexible instructional models.

Six teachers including Kamoli remarked;

*“...for me I sees parents and school administrators’ resistance to play that reflect a wider socio-cultural attitude... teachers’ efforts are often shaped and constrained by community beliefs about what constitutes real learning, there is need to sensitize stakeholder to redefine the role of play in formal learning contexts....*

Moreover, the absence of policy support and clear implementation guidelines highlighted by four head teachers indicated a broader institutional gap for effective early childhood pedagogies which require systemic support, not just classroom-level enthusiasm.

### **4.2.7.4 Support Systems and Resources for Guided Play Implementation**

Teachers and head teachers consistently identified limited resource as a key obstacle in implementing guided play pedagogy in enhancing learner number concept development. These resources included shortage of manipulatives, teaching aids, and safe play spaces restricted the scope and frequency of guided play activities.

Teacher Peter and Teacher Alice emphasized that improvisation could not fully substitute for properly designed educational materials.

Majority of the head teachers highlighted that successful implementation of guided play requires thoughtful resource planning and infrastructural investment to link mathematical cognition in early years to hands-on exploration with real objects and symbolic materials.

Notably, peer collaboration and local support emerged as promising informal coping strategies to strengthen guided play pedagogy in pre-primary schools of Amach Sub County. Teachers like John and Kamoli appreciated sharing ideas and materials among colleagues, reflecting understandings that peer learning among teachers enhances instructional creativity, particularly where formal training is effective. This calls for more Continuous Professional Development (CPD) across the sample the ECD centres and others in order to generate more new methodologies that will support quality number concept development.

#### **4.2.7.5 Summary**

The perceptions of teachers and head teachers in Amac Sub-county reveal a broadly positive attitude toward guided structured play as a pedagogical tool for number concept development. However, the study also surfaced significant variations in understanding, confidence, and implementation, shaped by resource availability, professional training, and institutional support.

The researcher noted the critical role of the teachers as a mediators of guided play pedagogy. Where teachers effectively scaffold learner number concept development learning through guided play, which support learners demonstrate increased

motivation, participation, and concept retention in and out of school. However systemic barriers such as inadequate space, limited materials, weak policy frameworks, and sociocultural misconceptions continue to hinder best utilization of guided play. Addressing these gaps through CPD, resource mobilisation, curriculum alignment, and stakeholder engagement is essential for scaling effective early numeracy instruction in pre-primary settings.

## CHAPTER FIVE

### DISCUSSION, CONCLUSION AND RECOMMENDATION

#### 5.0 Introduction

The chapter presents a detailed summary of the study findings based on the three study objectives. The chapter begins with a discussion of the findings as it is informed by the research questions of the study. It also draws conclusions and outlines key recommendations for improving the use of guided play pedagogy to enhance number concept development in pre-primary schools in Amac Sub-county. The chapter is structured around the main themes arising from data collected through semi-structured interviews, classroom observations, and document reviews.

#### 5.1 Discussion of the findings

##### *5.1.1 How does guided play pedagogy contribute to creating a stimulating environment on number concept development among pre-primary learners?*

##### *Understanding the Stimulating Environment in Context*

The concept of a "stimulating environment" varies globally and is shaped by local educational and cultural contexts. In the United States, it is linked to supportive school culture and climate that encourages holistic development (Lah, 2020). In India, Shazia Kouser, (2022) describe it as an environment rich in play materials that foster early learning. Uganda's Ministry of Education and Sports MoES, (2018); Sargsyan et al., (2024) emphasize a stimulating environment as one that ensures safety, care, and empowering learners to become confident and equipped with lifelong learning competencies. In Amac Sub-county, these definitions meet through guided play pedagogy, where teachers utilize locally available materials and setting specific strategies to support number concept development.

### ***Classroom Organization, Physical Layout and its usage to Stimulate Number Concept Development***

Findings show that pre-primary teachers in Amac Sub-county use a variety of guided play strategies, including number rhymes, sorting games, jumps, and bottle top counting. These activities aim to develop number sense, number words, counting, and basic operations. The degree of structure in these play activities varied significantly across schools.

Teacher Simon (School 1) and Teacher Daniella (School 3) stood out for effectively aligning guided play with numeracy goals. They scaffold activities using number cards, stones, and bottle tops to help learners' sort, count, and compare quantities. Their practices demonstrate the views of Kisa et al. (2020), who stress the importance of local materials in enhancing teacher creativity and learner engagement. Also, Guarrella (2023) supports this, noting that such materials act as stimuli in developing number concepts.

### **The Role of Teacher Experience and Gender in Guided Play**

The study revealed that gender and teaching experience play significant roles in shaping guided play implementation. Female teachers with longer experience such as Teacher Alice (School 4) exhibited more patience and creativity in guiding group play and promoting collaboration. In contrast, younger and less experienced teachers, (20 to 25 years) especially those without formal training in guided play pedagogy, tended to rely heavily on rote counting and unstructured physical movement, which limited learning outcomes. This inconsistency highlights the importance of targeted professional development, especially in ECD focused guided play pedagogy (Taiwo, 2023).

### **Classroom Environment, Flexibility, and Learning Spaces**

Several schools in the study lacked flexible classroom arrangements conducive to guided play. Learners were often kept in fixed seating with limited access to learning centres with less exploration spaces. In School 2, Teacher Komoli's and Anne's lessons were mostly teacher led, lacking manipulatives and interactions. This environment opposes recommendations by Mendenhall et al. (2021); Worku, (2025) who argue that well-structured learning spaces enhance guided play outcomes. Similarly, Sanguiliano Intra et al. (2023) emphasize that flexible spaces foster stronger teacher learner relationships and deeper conceptual understanding. Teachers in Amac are therefore encouraged to create classroom layouts that allow free movement, self-direction, and differentiated learning.

### **Resource Availability and Use of Local Materials**

The availability and creative use of resources strongly influenced the effectiveness of guided play pedagogy. Teachers like Daniella (School 3) and Teacher Rose (School 5) demonstrated creativity by using old boxes, sticks, and bottle tops for counting, sorting and comparing activities. However, several classrooms faced resource shortages, large class sizes, and space constraints, limiting implementation. These observations support Mbabazi et al., (2024); Ogolla (2018) and Smedsrud et al. (2024), who argue for community involvement in providing natural play materials and adequate space to foster numeracy through play.

### **Influence of Teacher Training and School Leadership**

Teacher capacity-building emerged as a key driver of effective guided play pedagogy. In School 4, Head Teacher Kiteng noted that teachers who attended ECD workshops returned with improved skills and strategies, making lessons more

interactive. This aligns with Karuppiah (2022), who found that teachers with advanced nursery training are better positioned to implement guided play pedagogy that supports numeracy. Stakeholder investment in continuous professional development is therefore essential to sustain meaningful change.

### **Challenges Limiting Effective Implementation**

Despite promising practices, several constraints were noted. Many classrooms either lacked sufficient space, appropriate teaching aids, or had overcrowded conditions. In School 7, learners sat in congested rooms with no visible learning centres, and lessons focused on verbal instruction without tactile learning. These gaps often resulted in excessively teacher-led activities disconnected from numeracy goals. As Parker et al. (2022) ; Özbay Karlıdağ, (2021) suggest, guided play must be intentional and linked to clear learning objectives to foster holistic development.

### **Stakeholder Roles and Future Considerations**

Creating a stimulating environment +requires collaboration between teachers, parents, and school leadership. According to Bolin (2015) and Lah (2020), stakeholders must invest in creating resource rich, learner friendly spaces. Guided play pedagogy, when supported adequately, can develop learners' mathematical reasoning and creativity skills essential for 21st-century competence (Ekeh & Educators, 2023; Paxton, 2022). In Amac Sub-county, the use of songs, rhymes, natural materials, group games, and physical play spaces must be deliberately planned and implemented. Liu & Tian (2023) emphasize the importance of self-directed learning and collaboration in promoting number concept development.

## **Summary and Implications**

In conclusion, guided play pedagogy has the potential to create stimulating environments that support number concept development among pre-primary learners in Amac Sub-county. Teachers like Simon, Daniella, and Komoli shown innovative practices that aligned with research supported strategies. However, implementation was often hindered by structural and pedagogical challenges, including inadequate space, resources, and training. Addressing these gaps will require holistic support, including stakeholder involvement, teacher training, and infrastructural investment. By drawing on both global literature and local practices, this study calls for an improved focus on related factors to ensure effective integration of guided play pedagogy into early childhood numeracy instruction.

### ***5.1.2 Assessment practices that were used in pre-primary schools in Amac Sub-county***

Assessment in early childhood education is increasingly recognized as a basis for supporting holistic learning and development. Globally, scholars emphasize that assessment at this level should be flexible, child-centred, and integrated within play-based pedagogies (Cade, 2023; Yun et al., 2021). Pre-primary assessment is often characterized by informal strategies such as observation, questioning, and documentation of children's interactions (Montoya-Fernández et al., 2024); Pyle et al., 2020). These practices align with Vygotskian perspectives, which highlight the importance of scaffolding learning within the child's ZPD through dynamic teacher child interaction (Parker et al., 2022).

Within the African context, scholars argue that effective assessment in pre-primary classrooms should be contextualized, drawing on locally available materials and culturally relevant play activities to both engage learners and provide meaningful understanding into their developmental progress (Takumi, 2025; Nicholas et al., 2021). In this regard, assessment through guided play has gained importance as it not only nurtures foundational numeracy skills but also promotes creativity, problem-solving, and social interaction (Fesseha & Pyle, 2016).

Comparatively, European pre-primary frameworks and those in UK, also emphasize formative assessment, through teacher observations and documentation of learning activities (Kangas et al., 2022; OECD, 2020). The assessment focuses on supporting individualized learning progress. Similarly, in parts of Asia, including Singapore and China, early years assessment is developing from a traditionally academic orientation toward more play-based, formative approaches, with teachers increasingly using structured observations and portfolios to track development (Kangas et al., 2022); Al-Hendawi et al., 2025). These international practices emphasise the informal strategies observed in Amac Sub-county, suggesting a shared global shift toward assessment approaches that prioritize the child's learning process over standardized outcomes.

It is against this global and regional setting that the findings from Amac Sub-county are located. Besides these, data from interviews, classroom observations, and document reviews revealed that assessment practices in the sub-county's pre-primary schools remain predominantly informal, reflecting broader international trends in early childhood assessment. Teachers commonly used observation, questioning, and learner interaction to assess understanding during numeracy related

play activities. For example, Teacher Simon (School 1) used bottle tops during number rhymes and observed learners' engagement and accuracy to adjust his support accordingly. Likewise, Teacher Daniella (School 3) and Teacher Kamoli (School 2) assessed sequencing and matching skills through spontaneous questioning and visual prompts during group games. Informal checklists were also used by Teacher Damalie and Teacher Simon to monitor learners' counting skills and attainment levels.

These assessment strategies align with Vygotsky's sociocultural theory, which emphasizes that learning is mediated through social interaction and occurs within the learner's (ZPD). In this model, the teacher roles as a more knowledgeable adults, offering scaffolding to promote development. This corresponds with the views of Paxton (2020) and Ndabezitha et al. (2023), who argue that effective early childhood assessment should focus on observation, feedback, and guided support rather than formal testing.

Assessment practices varied across schools, largely influenced by teacher qualifications and training in early childhood education. In schools where teachers had professional ECD training, guided play was not only used for instruction but also served as a means of ongoing assessment. For example, Teacher Alice and Teacher Sandra used sorting and classifying games, combined with verbal responses, to assess learners' numeracy understanding.

In contrast, teachers with limited training and less experience struggled to integrate assessment meaningfully into guided play pedagogy. Observations indicated that in some schools, activities lacked structure and assessment was related. A female head Teacher Kiteng noted, "Most of our teachers use observation, but few of them

document what they observe.” Document reviews confirmed that many lessons plan lacked specific assessment goals, and learner records were general and irregular.

According to Syafrina (2021), effective assessment should identify skills gained and support future scaffolding. Furthermore, Hübner et al. (2022) highlight the close relationship between early language development and mathematics vocabulary, indicating the need for assessments that capture both cognitive and communicative competencies.

Teachers reported pressure from parents to provide frequent written assessments, which often conflicted with the nature of guided play pedagogy globally. In (School G), the researcher observed learners doing weekly written exercises to meet parental demands for evidence of learning. However, this sometimes led to unrealistic practices, such as parents completing homework for their children. As one teacher observed, “Some parents are unable to assist their children from home, while other parents do the homework for their children.”

These tensions highlight cut off parental expectations and developmentally age appropriate practices. From the interviews conducted, sixteen teachers recommended sensitizing parents to the goals of guided play. This is consistent with who argue that parental involvement is most effective when aligned with guided play pedagogy and age-appropriate pedagogical approaches.

Despite acknowledging the value of guided play assessment, many teachers continued to rely on formal tests due to administrative reporting demands. Teacher Kamoli, Teacher Alice, and others mentioned that tests were given mainly to generate report marks, rather than to reflect true learning outcomes. As they stated,

“Sometimes we give tests because we are required to report marks to the administration, but these do not show the child’s real learning.”

In School 7, mid-term and end-of-term tests were emphasized over formative methods overpowering assessment through observation. Head Teacher Dano admitted, “We need more support to help teachers use play to assess learners, especially those who are new to this way of teaching.” These practices contradict the recommendations from some teachers who advocates for child-centred assessment methods in early learning environments, such as portfolios and anecdotal records, instead of academic-style testing as noted by (Al-Hendawi et al., 2025; (Al-Hendawi et al., 2025)Al-Hendawi and Hussein, 2024)

Some teachers demonstrated effective alignment between guided play pedagogy and sociocultural assessment. For example, Teacher Daniella (School 3) used probing questions such as, “Why do you think this group of bottle tops is more?” to stimulate learner reasoning. In School 2, Teacher Kamoli created peer assisted learning situations where learners corrected one another’s counting errors.

These practices support teacher Daniella and teacher Rose who emphasize that effective preschool assessment involves observation, questioning, feedback, and scaffolding. When properly implemented, formative assessment during guided play can foster critical thinking and conceptual development. However, such strategies require pedagogical knowledge and confidence, which many teachers in Amac Sub-county lacked. Majority of head teachers requested for continuous professional development to build teacher capacity in aligning instruction and assessment through play which is in line with (Luciana, 2024).

The study identified a range of interrelated factors that influenced the implementation of effective assessment in guided play settings:

Teacher-related factors which include limited training in guided play pedagogy assessment, low confidence, and reliance on outdated testing methods.

Parental factors due to demand for academic style tests and lack of understanding of guided play goals and innovativeness.

Learner factors that are related variation in home support, motivation, and readiness for guided play pedagogical activities.

Classroom environment with overcrowded settings and lack of learning materials, which constrained one-on-one observation and feedback.

These findings align with the work of Pyle et al. (2023) and Mary et al. (2021), who emphasize the need for a supportive environment, strong school home partnerships, and consistent classroom routines to sustain guided play pedagogy.

The study found that the most effective practices involved observing learners during play, using open-ended questions, and maintaining learner journals or portfolios. For example, Teacher Alice (School 4) used checklists to record progress in number recognition and one-to-one correspondence. However, such practices were limited. As Teacher Damalie (School 7) noted, “We try to give feedback, but sometimes the numbers are too many, and we cannot follow up every child.” This highlights the need for systemic support.

Similarly, Ndabezitha et al. (2023) and Smedsrud et al. (2024) argue that guided play pedagogy requires smaller class sizes, appropriate materials, and teacher training to enable meaningful observation and assessment. There is need to engage

in early pre-primary pedagogy approaches in order to offer economic returns of 7 to 13 dollars for every dollar spent (Ejuu and Opiyo, 2022). As a result, many high quality ECE settings have adopted their own policies to enrol learners using available opportunities (Watson and Collins, 2022). Without these conditions, even committed teachers may find it difficult to sustain formative assessment practices.

### **Summary and Implications**

This objective explored the assessment practices used by pre-primary teachers in Amac Sub-county within guided play pedagogy. The findings revealed that most teachers used informal, observation-based assessment strategies consistent with Vygotsky's sociocultural theory and guided play pedagogy learning principles. Teachers such as Simon, Daniella, Kamoli, and Alice demonstrated good practices by embedding assessment in everyday play, using questioning, scaffolding, and learner reflection. However, formal assessments still dominated in many schools due to administrative and parental pressures. The study emphasizes the urgent need for professional development, stakeholder sensitization, and better learning environments to support holistic assessment practices aligned with guided play pedagogy. Strengthening these components will enhance number concept development and support meaningful early learning experiences for all learners in Amac Sub-county.

#### ***5.1.3 Teachers perceptions on the influence of guided structured play pedagogy on number concept development in Amac Sub-county***

In the exploration of the third study objective involving the teachers' perceptions on the influence of guided structured play pedagogy in enhancing number concept development and the adjustment of number concept development in pre-primary

education. The study found that most experienced teachers had positive perceptions of guided play pedagogy as an effective and engaging approach to teaching number concepts. Majority teachers noted that guided play pedagogy strategies increased learner motivation, participation, and comprehension, especially among slow learners. These findings are consistent with research by (Karatas et al., 2017; Ogar et al., 202; Smith and Cekiso, 2020) which emphasizes that guided play pedagogy supports active learning and enhances cognitive development in early numeracy. Also, more experienced teachers have an upper hand of guiding young learners effectively.

However, despite favourable attitudes, teachers faced practical limitations such as large class sizes, lack of training, and time constraints. This reflects Vygotsky's sociocultural theory, where the learning environment and the adult's role are essential in shaping cognitive development. Without adequate support and manageable class conditions, the effectiveness of guided play is weakened.

While acknowledging the significance of routines for number vocabulary, a majority of teachers encountered challenges in maintaining consistent practices for number concepts, reflecting differences in pedagogical approaches and highlighting the fundamental role of guided structured play pedagogy in shaping learners' understanding of numerical concept. Previous studies such as Clerkin and Gilligan-lee, (2018); Mutegi et al., (2021); Pyle et al., (2023) and Wickstrom and Deluca, (2019), highlight the influence of structured play in learning environments being consistent with the current research findings. They also study best moment the ways that learner confidence, teacher support, and early exposure to numeracy activities all steadily affect their mathematical achievement in a variety of educational settings.

However, as studies by Ogolla, (2018) have shown, there are inconsistencies and difficulties in the application of guided play pedagogy, which throws light on the complex system of issues hindering successful implementation and its effects on learner achievement outcomes.

In the context of limited existing studies, particularly concerning the interplay between guided play pedagogy and number concept development, there is a strong case for undertaking a comprehensive investigation in this area. This research initiative aims to clarify and address the important problems that significantly affect young learners' basic mathematical abilities. These problems are particularly common in rural schools, where there are insufficient educational resources and few skilled teachers.

Knowledge of learners' number concept development is linked to a basic cognitive foundation with language for advanced mathematics (Ndabezitha, 2022). However, most teachers in the sub county are challenged to help learners, relate number concepts of figures to number words. In quality with contemporary scholarly dissertation, existing critical understandings emphasize the fundamental role of play-based education, particularly guided play pedagogy, in shaping learner's numerical competencies. Besides that, Cramman et al. (2018) noted this approach's effectiveness, supporting its influence on learner's mathematical interests and capabilities. However, current literature also emphasizes gaps and challenges, advocating for a deeper understanding of the mechanisms underlying guided play's facilitation of number concept development. This argument is supported by Hadani & Hirsh-pasek, (2021) and Zosh et al. (2018), who have highlighted the influence of guided play pedagogy on learner's mathematical interest and capacity.

Furthermore, the involved influences on guided play pedagogy and learner numeracy development, as lightened by various scholarly inquiries, emphasize the complexity of this educational domain. Teachers' competence, attitudes toward mathematics, and learner factors, such as parental support and interest, significantly shape number concept development (Agango 2014; Metropolis et al. 2016).

Similarly, Mitana, (2018) observed that existing educational assessments do not address the requirements and situations of individual learners. Meanwhile MoES, (2018) noted that teacher pedagogical practices in the teacher training institutions are not emphasising the current national education goals. All these can be strengthened through regular continuous professional development to improve teacher's pedagogical skills (Okumu and Opio, 2023). Also, Jovanice et al., (2023) found CPD increases teacher collaboration by allowing them to explore and discuss practical methods of enhancing their instructional approach, like developing effective number concepts.

Addressing the highlighted challenges in teacher training and support, classroom environments, and learning area design becomes influential for scaffolding the development of learner number concepts. This emphasizes the critical need for a holistic understanding of the diverse components influencing guided play pedagogy and its influence on number concept development in pre-primary education, as noted by (Kjoberg, 2020); Nicholson, 2018; Nicholson, 2019; (With et al., 2019); (Assessment & Learning, 2020).

## **5.2 Conclusions**

In conclusion, the study probing into pre-primary education through the lens of guided play pedagogy offers comprehensive understandings of learner number

concept development. Demographically, the dominance of educators aged 26-30, mostly female, and with certificates highlights the circumstance.

The study explored the role of guided structured play pedagogy in enhancing number concept development among pre-primary learners in Amac Sub-county. The findings, drawn from interviews, classroom observations, and document reviews across seven out of twelve schools, demonstrate that guided play, when effectively implemented, creates stimulating environments that support young learners' understanding of numeracy.

First, the study established that guided structured play pedagogy contributes significantly to the creation of engaging, child-centred environments that stimulate number concept development. Teachers who utilized local materials, integrated number songs, sorting games, and counting activities were able to foster learners' number counting, comparison, sequencing, and problem-solving abilities. However, these practices varied greatly depending on teacher training, experience, classroom conditions, and available resources.

Secondly, the study found that assessment practices within guided play were primarily informal and formative in nature. Teachers used observation, questioning, and peer interaction to support learners' progress. Yet, inconsistencies in implementation determined by lack of training, high parental expectations for formal assessments, and administrative pressures challenged the potential of guided play pedagogy as an effective assessment tool.

Thirdly, teachers' perceptions of guided play were largely positive, with many acknowledging its role in enhancing learner engagement, motivation, and concept retention. Nonetheless, challenges such as overcrowded classrooms, limited

materials, and insufficient professional development hindered full scale implementation. Teachers like Simon, Daniella, Kamoli, and Alice shown promising practices, but others struggled due to limited support and unclear pedagogical guidance.

The study concludes that while guided play pedagogy holds transformative potential for early numeracy learning in Amac Sub-county, its success depends on a well-coordinated approach involving teacher training, resource provision, classroom re-organization, and stakeholder sensitization. The alignment of theory with practice, through continuous professional development and supportive policy frameworks, will be critical for long-term influence.

#### **5.4. Recommendations**

Based on the findings and conclusions, the following recommendations are made:

##### **Strengthen Teacher Capacity through Continuous Professional Development (CPD)**

The Ministry of Education and Sports (MoES), in collaboration with district education authorities, should provide regular CPD workshops focused on guided play pedagogy, play-based assessment strategies, and number concept development. Emphasis should be placed on linking play to curriculum goals and using formative assessment tools.

##### **Integrate Guided Play pedagogy into Pre-service and In-service Training Curricula**

Teacher training institutions should embed guided structured play pedagogy into their training syllabi to ensure pre-primary teachers graduate with the necessary

skills and mind set. Refresher programmes for serving teachers should be standardized and accredited to maintain teaching quality.

### **Improve Classroom Environments and Access to Play Materials**

Local governments, NGOs, and school management committees should invest in creating flexible, safe, and resource rich learning spaces. Schools should be encouraged to use locally available, low-cost materials such as bottle tops, sticks, seeds, and boxes to facilitate hands-on number activities rather than relying on paper work.

### **Promote Collaborative Learning and Peer Teaching**

Schools should adopt peer learning strategies among teachers to encourage sharing of best practices in guided play pedagogy. Head teachers should provide time during staff meetings for reflection and planning around guided play pedagogy numeracy instruction.

### **Develop Clear Policy Guidelines on Assessment in Guided Play Contexts**

The MoES should create guidelines that emphasize formative and observation-based assessments within guided play settings. Assessment tools such as learner portfolios, checklists, and anecdotal records should be promoted to document learner progress in number concepts and other learning areas meaningfully.

### **Sensitize Parents and Stakeholders on the Value of Guided Play Pedagogy**

Community sensitization programmes should be launched to shift parental attitudes from exam-oriented learning to developmentally appropriate, guided play pedagogy approaches. Schools can organize open days or learner exhibitions to demonstrate the learning gains from guided play.

### **Monitor, Assess and Support Implementation Progress**

The District Inspector of Schools and Centre Coordinating Tutors should conduct regular school visits to support the implementation of guided play pedagogy. Feedback mechanisms should be established to identify gaps and provide targeted support to teachers and schools.

### **Foster Cross-sectoral Collaboration**

The study recommends partnerships between education stakeholders, health professionals, and community leaders to support a holistic approach to early childhood development. This includes integrating nutrition, hygiene, and psychosocial support within guided play activities for optimal learner outcomes.

### **Summary**

To attach the full benefits of guided play pedagogy in numeracy development, it is essential to move from isolated, teacher-led initiatives toward systemic change of learner-initiated activities. By creating enabling environments, building teacher capacity, and fostering community involvement, guided play pedagogy can become a foundation of quality early childhood education in Amac Sub-county and beyond.

### **5.5 Areas for Further Research**

Based on the findings of the study on the influence of guided play pedagogy on number concept development in pre-primary education, several key gaps have been identified that require further scholarly investigation. Here are well-defined Areas for Further Research for your study on guided play pedagogy and number concept development in pre-primary schools:

Future research could track learners over time to examine the long-term influence of guided play pedagogy on number concept development and later mathematical

achievement. Such studies would provide evidence on retention, transfer of skills, and foundational readiness for primary school mathematics.

A comparative study between urban and rural schools could explore how contextual differences (resource availability, parental involvement, teacher qualifications) influence the effectiveness of guided play in supporting number concept development.

Given the central role of teacher training, future studies could assess how different models of continuous professional development (CPD) influence teachers' knowledge, attitudes, and actual classroom practices related to guided play pedagogy.

Research can explore how parents understand and implement guided play at home and how this complements school-based efforts. Studies could also examine the effectiveness of parent sensitization programmes in supporting play-based learning at home.

Further research could examine how gender norms, disability, and inclusion are addressed in guided play settings. This would inform more inclusive pedagogical approaches that ensure equitable learning opportunities for all learners.

There is a need to develop and validate context-appropriate assessment tools that align with guided play pedagogy. Such tools could help teachers effectively monitor and document learners' progress in number concept development through play.

Investigating how leadership practices, school culture, and administrative support influence the implementation and sustainability of guided play in early childhood education settings can provide valuable insights for policy and school management.

## **5.6 Limitation of the study**

Although the current study made a significant contribution, it also has some limitations. The study was conducted using a very small selection of participants in only Lira district. These factors will not allow for the findings to be generalised to broad Ugandan population. Furthermore, the selection was comprised of researchers and practitioners like teachers' learners and parents, leaving out other important stakeholders such as non-governmental organisations and religious leaders.

The researcher faced several challenges during the recently concluded research project:

The limitations in resources presented significant hurdles, compelling the researcher to navigate financial, logistical, and human resource constraints. Mitigating this scarcity involved utilizing meagre funds derived from various sources, including workshops, school practices, and national monitoring. Additionally, the researcher resorted to cost-effective strategies and maximized the use of existing institutional infrastructure.

The constraints of time exerted pressure on the research process, necessitating careful navigation within project timelines and delegation of responsibilities during data collection and analysis. Meticulous planning and time allocation across each research stage were essential to ensure high-quality outcomes and meet stringent deadlines for data collection and subsequent publication.

Ethical considerations were of utmost importance. Prior to data collection, the researcher diligently sought and obtained necessary permissions to proceed with the research. Instances of conflict and disagreements during proposal development and

data entry were observed and effectively managed with guidance from experienced mentors, particularly in addressing conflicts of interest.

The process of data collection and analysis presented its own set of challenges, particularly in participant recruitment, access to specific populations, and potential biases. To address these issues, the researcher implemented diverse selection alternatives, resorted to phone calls for absentee participants, and enforced stringent quality control measures. Collaboration with statisticians played a crucial role in ensuring accurate and efficient data analysis, especially with extensive or intricate datasets.

Minimizing bias and subjectivity throughout the research process required the implementation of rigorous study designs, the adoption of blinding methods, and a commitment to transparent reporting of methods and results. Peer review and collaboration with fellow researchers were instrumental in identifying and addressing potential biases. The researcher made reproducibility a priority by openly sharing research protocols and data among experts and supervisors, encouraging a collective effort to enhance the validity of the research.

In the realm of scholarly research presentations, the researcher encountered cognitive challenges. However, findings were optimized through clear and concise writing, supplemented by expert and supervisor reviews.

Despite these challenges, the researcher's perseverance, collaborative spirit, and innovative approaches significantly contributed to meaningful advancements in the field of research.

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## APPENDICES

### Appendix A: Semi- Structured Interview Guide for Teachers.

**TOPIC:** *“The Role of Guided Play Pedagogy and Number Concept Development in Pre-Primary School: A case of in Amac Sub-County, Lira District.”*

I am Akwang Beatrice, currently pursuing a Master's degree in Early Childhood Education at Kyambogo University. My research focuses on *“The Role of Guided Play Pedagogy and Number Concept Development in Pre-Primary School: A Case of in Amac Sub-County, Lira District.”* The semi-structured interview questions were set for teachers, which was in line with the research objectives that included main guiding questions and follow-up probes to encourage deeper responses and flexibility.

Your participation in this study by providing understandings on learners is greatly appreciated, and your responses will be kept confidential. Thank you for your contribution.

**Title of the respondent:** .....

**Name of School name/code:** .....

#### Section 1: Background Information

**1a: Age of respondents in years**  20 – 25  26 – 30  31 – 35  36 – 40  41

and above.

#### 1b: Gender of respondents

1.  Male      2.  Female

#### 1c: Highest level of education

(i)  Certificate (ii)  Diploma (iii)  Bachelor's (iv)  on course.

**1e: Years of experience:**  1 – 5     6 – 10     11 – 15     16 and above

**1f: Responsibility.....**

**Section 2: How guided play pedagogy creates a stimulating environment that influences number concept development among pre-primary learners.**

1. In what ways do you organize your classroom to support guided play in numeracy?
2. How do the materials you use during guided play help children understand number concepts (counting, number recognition)?
3. What kind of teaching resources do you recommend to support number learning through play? (Manipulatives, learning corners and charts).

**Section 3: The assessment practices used within guided play pedagogy that enhance number concept development in pre-primary schools.**

4. How do you assess your learner's progress in number concepts development during guided play activities (*counting, sorting, and number recognition*)?
5. Describe any specific tools, techniques, or measures you use to assess learners' progress in numeracy during or after guided play lessons?
6. In what ways do you adjust your guided play activities based on the assessment information you gather about learners' number concept development?

**Section 4: Perceptions of teachers on the influence of guided structured play pedagogy on number concept development.**

7. What is your general opinion about the use of guided structured play in helping young learners understand number concepts such as counting, comparing, or sequencing? (*Makes learning easier or more difficult for children*)?

8. From your experience, how has guided structured play influenced learners' interest, participation, and performance in numeracy activities?
9. What challenges, if any, do you face when trying to create a stimulating learning environment through play?
10. How did you solve the challenges identified above?
11. Is there anything you would like to share about how your classroom or school environment supports number learning through play?

**Appendix B: Structured Interview Guide for Head Teacher.**

**TOPIC: “The Role of Guided Play Pedagogy and Number Concept Development in Pre-Primary School: A case of in Amac Sub-County, Lira District.”**

I am Akwang Beatrice, currently pursuing a Master's degree in Early Childhood Education at Kyambogo University. My research focuses on “*The Role of Guided Play Pedagogy and Number Concept Development in Pre-Primary School: A case of in Amac Sub-County, Lira District.*” These questions aim to gather strategic understandings from the head teacher on implementation, support structures, and learner outcomes during guided play pedagogy lessons.

Semi-structured interviews included main guiding questions and follow-up probes to encourage deeper responses and flexibility. Your participation in this study by providing understandings on learners is greatly appreciated, and your responses will be kept confidential. Thank you for your contribution.

**Title of the respondent:** .....

**Name of School name/code:** .....

**Section 1: Background Information**

**1a: Age of respondents in years**  20 – 25  26 – 30  31 – 35  36 – 40  41 and above.

**1b: Gender of respondents**

1.  Male      2.  Female

**1c: Highest level of education**

(i)  Certificate (ii)  Diploma (iii)  Bachelor’s (iv)  on course.

**1e: Years of experience:**  1 – 5     6 – 10     11 – 15     16 and above

**1f: Responsibility.....**

**Section 2: How guided play pedagogy creates a stimulating environment that influences number concept development among pre-primary learners.**

1. How would describe the physical environment in your pre-primary classrooms look like? (*Arrangement, availability of play materials, and presence of numeracy learning corners contributes to children's engagement in guided play and understanding of number concepts*).
2. What support does the school provide to ensure guided play is effectively implemented for number learning? (*Allocation of spaces, provision of materials/ schedules for guided play, supervision, and professional development opportunities*).

**Section 3: The assessment practices used within your pre-primary classes that enhance number concept development.**

3. What are the assessment practices used by your teachers during or after guided play activities to evaluate learners' understanding of number concepts? (*Written work, observation, checklists, verbal questioning*).
4. How do you support teachers in planning and delivering guided play activities to enhance effective assessment? (*Offer training/peer learning/instructional supervision*).
5. What challenges do your teachers faced in assessing learner numeracy progress during guided play pedagogy?
6. How has the school addressed these challenges?

**Section 4: The perceptions of teachers on the influence of guided structured play pedagogy on number concept development.**

7. What is your observations regarding teachers' attitudes and perceptions towards using guided structured play to teach number concepts in your school?
8. In your view, how do learners react to guided play activities involving numbers? (*Observed increased interest/participation/performance*).
9. In your own perception, would you consider guided play an effective pedagogical approach in developing number concepts in pre-primary education? Why or why not?
10. What improvements would you recommend to enhance the use of guided play for teaching number concepts?

### **Appendix C: Observation Checklist for Teachers and Learners**

The observation checklist is designed to assess both teachers' practices and learners' engagement based on the research objectives. This checklist was tested and found suitable for use in preschool classrooms during guided play lessons focused on learner number concept development.

#### **Section A: Teacher Practices**

<b>No</b>	<b>Observation Item</b>	<b>Yes</b>	<b>No</b>	<b>Partially</b>	<b>Comment</b>
1	Teacher integrates guided play to introduce number concepts by using purposeful play.				
2	Teacher uses hands-on materials to support number learning (blocks, beads, counters number cards and number charts.				
3	Teacher provides clear learning goals for the play activity.				
4	Teacher uses open-ended questions and prompts to guide thinking and encourage number reasoning.				
5	Teacher scaffolds learning without dominating the play and balances support with learner choice.				
6	Play activities are structured with flexibility for learner choice which encourage freedom and exploration.				
7	Teacher uses storytelling, games, or real-life situations to teach				

	numbers to make it meaningful and engaging.				
<b>8</b>	Teacher uses and adjusts play activity to assess learners' understanding informally				
<b>9</b>	Teacher supports peer collaboration during number play				
<b>Section B Objective 3: <i>To establish the perceptions of teachers on the influence of guided structured play pedagogy on number concept development in Amac Sub-county</i></b>					
<b>10</b>	Does the teacher actively plan and facilitate guided play activities that aim at enhancing number concept understanding?				
<b>11</b>	Are the numeracy learning goals clearly embedded in the guided play activities?				
<b>12</b>	Does the teacher demonstrate positive views about the usefulness of guided play in supporting number learning?				
<b>13</b>	Does the teacher respond to and extend learner's number-related ideas during play-based interactions?				

**Document Review Checklist**

**Purpose:** To examine schemes of work, lesson plans, and learners' activity records for evidence of guided play pedagogy supporting number concept development in pre-primary schools.

	Checklist Item	Yes	No	Comments
<b>1.Scheme of work</b>				
<b>a</b>	Does the scheme of work include numeracy topics related to number concepts (counting, sequencing, and number recognition)?			
<b>b</b>	Are there planned activities that integrate guided play methods for teaching number concepts?			
<b>c</b>	Are teaching strategies mentioned that reflect the use of play (role play, games, manipulatives)?			
<b>d</b>	Are the weekly activities sequenced in a developmentally appropriate way?			
<b>2. Lesson Plans</b>				
<b>e</b>	Are competences focused on number concept development (counting, comparing quantities, number recognition)?			
<b>f</b>	Is there evidence of structured play activities planned (use of counting blocks, number songs, sorting games)?			
<b>g</b>	Do the lesson plans indicate learner participation through hands-on activities?			
<b>h</b>	Are assessment methods listed in the lesson plan (observation, checklists, oral questioning during play)?			
<b>i</b>	Does the classroom arrangement (activity corners, play stations) described to support guided play?			

<b>Learners' Activity Records</b>				
<b>j</b>	Do activity records show learner involvement in guided play activities related to number concepts?			
<b>k</b>	Are learners' achievements in number tasks documented (e.g., number writing, counting correctly, and matching quantities)?			
<b>l</b>	Is there a clear link between documented learner activities and the numeracy goals from the schemes and lesson plans?			
<b>m</b>	Are there comments by teachers indicating learner progress or challenges in number concepts?			
<b>n</b>	Do records indicate differentiated activities to meet the varying developmental levels of learners?			

**General Notes Section**

- Observations on the consistency between planning and implementation.  
.....
- Recommendations for improving alignment of guided play with numeracy goals.  
.....

## **Appendix D: Consent for Participation in Research Project**

I volunteered to participate in a research project conducted by **Akwang Beatrice** from **Kyambogo University**. I understand that the project is designed to gather information about academic projects of the faculty of the school of education. I am one of approximately 62 people participating in the research project entitled **“Guided Play Pedagogy and Number Concept Development in Pre-Primary School. A case of Amac Sub County, Lira District, Uganda”**.

1. My participation in this project is voluntary. I understand that I will not be paid for my participation. I may withdraw and discontinue participation at any time without penalty. If I decline to participate or withdraw from the study, no one in my community will be told.
2. I understand that most interviewees will find the discussion interesting and thought-provoking. If, however, I feel uncomfortable in anyway during the interview session, I have the right to decline to answer any question or to end the interview.
3. Participation involves being interviewed by researchers from Kyambogo University. The interview will last approximately 20-25minutes. Notes will be written during the interview. An audio tape of the interview and subsequent dialogue will be made. If I don't want to be taped, I will not be able to participate in the study.
4. I understand that the researcher will not identify me by name in any reports using information obtained from this interview and that my confidentiality as a participant in this study will remain safe and sound. Subsequent uses of

records and data will be subjected to standard data use policies that protect the privacy of individuals and institutions.

5. Faculty and administrators from my campus will neither be present at the interview nor have access to raw notes or transcripts. This precaution will prevent individual comments from having any negative repercussions.
6. I have read and understand the explanation provided to me. I have had all my questions answered to my satisfaction and voluntarily agree to participate in this study.
7. I have been given a copy of this consent form.

Name-----Signature-----Date-----

For more information, please contact: Miss. Akwang Beatrice (researcher on 0782132474).

## **Appendix E: Child Assent Form**

I am Akwang Beatrice from Kyambogo University, and I am pursuing a master's degree in early childhood education. I am undertaking a study in the area of "Guided Play Pedagogy and Number Concept Development in Amac Sub County," which involves learners. The purpose of the study is to determine how learners' number concept development might be enhanced through play while learning. We are requesting you to participate in the study since your teacher suggested you for the project. We shall be asking you some questions on how you learn mathematics at your school. We will keep all of your replies private and will not reveal them to your teacher or parent/guardian. Only Kyambogo University researchers working on the study will view them.

We do not expect any major problems to arise as a result of this study, although you may be disappointed if you are unable to answer any questions. You may also feel disturbed if other learners see you answering questions, but we will do our best to keep them from seeing. Your involvement will help us find better ways to improve mathematics teaching and learning for other preschool students who may be experiencing difficulties at school.

You should be aware that you are under no obligation to participate in this study. You will not face any consequences from Kyambogo University, your teacher, or the school if you say no.

You may withdraw from the study at any time if you do not wish to participate in an activity; simply leave it. Your parents/guardians were asked if it was okay for you to participate in this study. Even if they say its fine, you can still choose whether or not to participate.



## **Appendix F: CONSENT FORM**

### **“The Role of Guided Play Pedagogy and Number Concept Development in Pre-primary School: A case of Amac Sub County Lira District”.**

I.....agree to participate or agree to participation of my child.....in the research project title The Role of Guided Play Pedagogy and Number Concept Development, conducted by Akwang Beatrice, who has discussed the research project with me.

I have received, read, and kept a copy of the information letter. I have had the opportunity to ask questions about this research and have received satisfactory answers. I understand the general purposes, risks, and methods of this research.

I consent to participate in the research project, and the following has been explained to me:

- The research may not be of direct benefit to me.
- My participation is completely voluntary.
- my right to withdraw from the study at any time without any implications to me
- What I am expected and required to do
- whom I should contact for any complaints with the research or the conduct of the research
- Security and confidentiality of my personal information.

In addition, I consent to: audio-visual recording of any part of or all research activities (if applicable) and publication of results from this study on the condition that my identity will not be revealed.

Name.....

Signature.....

Date.....

## Appendix G: Learners' work Using Local Materials



## Appendix H: Introductory Letter

### Appendix J: Introductory Letter

## KYAMBOGO UNIVERSITY

P. O. BOX 1, KYAMBOGO – KAMPALA, UGANDA

School of Education

Department of Early Childhood & Pre-Primary Education

### INTERNAL MEM

FROM: Chair, Department Graduate Board, 26<sup>th</sup> September 2023  
TO: Ms. AKWANG BEATRICE REF: 19/U/GMEC/18613/PD  
C/o Early Childhood Education & Pre-Primary Education

### REF: APPROVAL OF RESEARCH PROPOSAL

This is to inform you that the Faculty Graduate School Board at its meeting of Friday 2<sup>nd</sup> June 2023 approved your research proposal for the Master of Education (Early Childhood Education). You can now proceed to the field for data collection.

Thank you.  
Yours sincerely,

  
Assoc. Prof. EJUJ GODFREY  
FOR: CHAIR, FACULTY GRADUATE BOARD

CC Chair, Early Childhood & Pre-primary Education Graduate Board

### Supervisors

1. Assoc. Prof. Ejuu Godfrey  
Early Childhood & Pre-primary Education
2. Dr. Kisa Sarah  
Mathematics and Statistics