COMMUNITY INVOLVEMENT IN TEACHING AND PUPILS' NUMERACY SKILLS DEVELOPMENT IN LOWER PRIMARY IN NANSANA MUNICIPAL COUNCIL, WAKISO DISTRICT

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Declaration

I, Nandera Miria, declare that this dissertation titled “Community Involvement in Teaching and Pupils’ Numeracy Skills Development in Lower Primary in Nansana Municipal Council” is my original work and has never been presented for a degree in any other University. I am now submitting it to Kyambogo University Graduate School with the approval of my supervisors.

Signature: _____ Date: _____

Approval

This dissertation titled “Community Involvement in Teaching and Pupils’ Numeracy Skills Development in Lower Primary in Nansana Municipal Council” by Nandera Miria has been developed with our guidance and it is now submitted for examination with our consent as supervisors.

We as University supervisors confirm the work done by the candidate under our supervision.

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Dedication

This research dissertation is dedicated to all Early Childhood Education and Care practitioners.

Acknowledgement

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Abbreviations and Acronyms

FGD:	Focus Group Discussion
GoU:	Government of Uganda
LC:	Local Council
NCDC:	National Curriculum Development Centre
NCLB:	No Child Left Behind
SASA:	South African Schools Act
SPSS:	Statistical Package for the Social Sciences
UPE:	Universal Primary Education
USA:	United States of America

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Abstract

Evidence shows that children's early development of numeracy skills acts as a foundation for future specialization in technical professions. Ugandan children are taught numeracy regularly, but, the country is ranked second in the world with less proficient children in numeracy where Wakiso district has 45.7%. Basing on the Situated Cognition Theory and using a cross-sectional survey research design, this study aimed at establishing whether community involvement in teaching using every day occurring practices and activities develops pupils' numeracy skills. The objectives were to establish the community involvement practices used to support the development of numeracy skills in pupils; to identify and examine activities that children participate in the community that develop their numeracy skills; and the relationship between pupils' participation in these activities and their numeracy performance at school. Data were collected through questionnaires, interviews, focus discussion groups and observations from 193 randomly and purposively selected participants who included 28 teachers, 32 parents, 20 community elders and 113 pupils. Findings of the study indicate that involvement of children in home chores; family business; giving responsibilities, money saving habits and sending children to nearby shops are the practices that develop numeracy skills in pupils. While counting items, buying groceries, cooking, fetching water and washing were the activities pupils participate in. This study also found a statistically significant positive relationship ($r = .577$, $p = .000$) between pupils' participation in activities in the community and their performance in numeracy at school. The study concluded that the numeracy related practices and activities in the community provide opportunities to promote children's numeracy skills development although parents are not aware of it. It is recommended that Parents be supported to use identified activities to develop children's specific numeracy skills.

Chapter One

Background to the Study

1.1 Introduction

This chapter explains the background of the study; it highlights the problem of the study, purpose, objectives and research questions. It also specifies the significance of the study, theoretical framework, conceptual framework, scope of the study and also defines the operational terms used in this study.

1.2 Background of the Study

In its Vision 2040, Uganda aspires to become an upper middle income country, highly industrialized with globally competitive human resource that have relevant skills to the world's job market and national development (GoU, 2007). To achieve this, scientific and technological knowledge is emphasized of which numeracy skills are fundamental (Operemo, 2015).

Substantial evidence by National Research Council, (2001) indicates that numeracy skills form a basis upon which children specialize in technical professions such as engineering, medicine, Computer science, biotechnology, teaching and financial management, which any country requires to develop (Operemo, 2015). It is also noted that numeracy is the source of strategic, logical, critical and creative thinking (Makeo, 2013). Therefore, all children need numeracy skills to enable them solve the world's unconditional problems and to compete favorably in the future global labour market.

Historically, in Uganda numeracy skills were developed in children by use of cram work of multiplication tables (Opolot-Okurut, Opyene-Eluk & Mwanamoiza, 2008). The teachers emphasized that children should know

tables by heart so that whenever a number and its multiple is mentioned, the answer should be on one's fingertips. For others, they emphasized mental work as a warm-up mathematics exercise that tested memory and critical thinking. However with the coming of calculators and computers such numeracy skills have been ignored. Yet children need to know that to use calculators and computers correctly and most efficiently, they require a strong grounding in mathematics operations to be able to tell whether the answer seen displayed is reasonable (U.S. Department of Education, 2005).

A survey on educational achievement by Uwezo East Africa (2012), an education quality assessment civil society group that monitors educational achievement in three East African countries, Tanzania, Kenya and Uganda found out that despite gains in access to educational facilities, pupils acquire basic skills of numeracy late. World Bank (2018) identified similar challenges ranking Uganda the second in the world with less proficient pupils in numeracy. This low performance in numeracy by children in Uganda threatens the foundation for future technical areas of national development. In view of these findings, Uwezo advised and invited different ideas, technologies and approaches which should be tested to determine how well they work (Uwezo East Africa, 2012).

World over, policymakers, educators and others involved in education are seeking for efficient and effective ways to utilize the limited resources in order to identify and solve problems in the education sector as well as providing quality education for children. In this effort, they have realized the significance and benefits of community involvement in education as one of the

strategies to improve educational access and quality for children (Goos, Lowrie, & Jolly, 2007).

There is worldwide recognition of parents' role as children's first and most important teachers and their necessity to get involved in education. Developed countries have already embarked on this as noted by Mncube, Harber and Du Plessis (2011) when they posited that in developed countries, there is widespread interest in community involvement in education. This is seen in different countries that have incorporated community involvement in their laws. For example, in America the 'No Child Left Behind (NCLB) Act, 2001' clearly states the mandate of schools and rights of parents to implement community involvement (Wilder, 2014); The Indonesian Law Number 20, 2003, in Indonesia, (Werf, Creemers, & Guldemond, 2001); and The South African Schools Act (SASA) 84 of 1996, in South Africa (Prew, 2009). All this creates an enabling environment for the implementation of community involvement in children's education. In New York, some schools have plans which require the involvement of family activities at home (Epstein & Sheldon, 2005). Some of these activities included parent interactions with their children about their studies, interactive homework, and reading with children among others.

The benefits of community involvement in children's education have been noted globally. For example, studies on community involvement in United States of America (USA) show that when schools, parents, families and communities work together to support learning, students exhibit social development; improved learner attitudes towards schooling; positive behavior; improved school attendance; decreased school dropouts; and higher academic

achievement (Desforges & Abouchaar, 2003; Epstein, 2006; Sheldon, 2007; Sheldon & Epstein, 2005; Senechal & LeFevre 2002; Van Voorhis, 2001).

In Uganda, communities understand involvement in their children's education differently. Some look at community involvement in terms of allowing children time and space to do homework (Marphatia, Edge, Legault & Archer, 2010). Similarly, Ezati, McBrien, Stewart, Sempala & Ssenkusu, (2016) observed that parents see their role as providing educational materials like exercise books, textbooks and school supplies but do not get involved in teaching their children, and then blame the teachers when the child performs poorly in school. On the contrary, some community members are apathetic to schooling and doubt the importance of schooling for their children and this in turn may influence their involvement in education (Berg & Noort, 2011). Because of that parents neither supervise the learners at home nor visit them at school to find out from teachers on how they are performing (Marphatia, et.al, 2010).

Conceptually, the aspect of community involvement in education takes two forms namely: School-based and community-based. School-based community involvement refers to attending meetings, participating in volunteer activities, fundraising, assisting on field trips and attending school events by parents (Kim, 2009). While community-based community involvement is the engagement of children in real-life activities carried out in the community (Lee & Bowen, 2006). This study was specifically interested in the community-based involvement in development of numeracy skills in pupils. Development of numeracy skills refers to the nurturing of mathematical talents and abilities in children in a gradual, systematic and

cumulative manner (Borovik & Gardiner, 2006). It can also mean the extension of the theoretical or practical aspects of mathematics concepts in a person.

Studies show that everyday occurring activities in homes and communities provide the stimulus for much of children's informal mathematical development (Anthony & Walshaw, 2009). For instance a study in USA established that children of parents who were guided to be involved in mathematical activities at home improved in standardized mathematics achievement tests (Sheldon & Epstein, 2005). Similarly, a quasi-experimental study carried out in Kenya by Abuya, Ngware, Hungi, Mutisya, Nyariro, Mahuro and Oketch (2014) established that students who were exposed to community involvement intervention, significantly increased their numeracy mean scores by over 10% than those who were not exposed to community involvement.

In Uganda, a study conducted in Iganga and Mayuge districts, found out that community involvement increased pupils' numeracy scores by 15% (Mahuro & Hungi, 2016). All this link with the Situated Cognition Theory by Brown, Collins and Duguid's (1989) which states that people's knowledge is constructed within and linked to the activity, context, and culture in which it was learned. This theory explains that if children are taught by community members, learning becomes easy and practical. Therefore, when community members are given skills, they are capable of supporting pupils to develop numeracy skills.

Contextually, in Nansana Municipal Council, teaching of numeracy to pupils is the sole responsibility of the teachers (Nansana Municipal Council,

2017). Pupils are seen struggling to work out numeracy tasks in classrooms. Behaviors such as scratching heads, biting pencils/rubbers, starring at the roof, peeping at their neighbors books in a struggle to copy and looking down when the teacher asks a question are common, which seems to be indicators of lack of understanding. They also look down if he/she does not know the answer. All these confirm with the Uwezo (2015) report which revealed that a significant number of pupils in Wakiso district lack full competence of P.2 level numeracy.

Uwezo further reported that 45.7% of pupils in Wakiso are unable to add, subtract, multiply and divide given numbers. Surprisingly, these very pupils are seen at school canteens budgeting for their money, buying different items and sharing with friends, which activities are mathematical in nature. After classes they are seen participating in different activities in the community that require numeracy knowledge and skills. This raises the question that, how can we help children to relate what they learn in class with the daily experiences outside the classroom and school?

If community involvement in teaching has worked in other places and for developing other skills, it may probably work in Nansana Municipal Council. It was our hope that carrying out a study on community involvement in teaching using home practices and activities will pave way for improving our children's numeracy skills.

1.2 Statement of the Problem

In Uganda there is a competence-based thematic curriculum which puts emphasis on numeracy learning at lower primary level (National Curriculum Development Centre (NCDC), 2007). Ordinarily when children engage in different activities that are mathematical in nature either in school or community, they should be able to learn numeracy skills that they can use in different situations both at school and in the community.

However, this is not the case in Nansana Municipal Council. Reports have consistently shown that pupils' numeracy proficiency is still low, they are unable to count, add, subtract, multiply or divide given numbers (Uwezo, 2015). In Wakiso District over 45.7% of pupils lack full competence of P.2 level numeracy (Uwezo, 2015; & 2016). Children from other countries have been supported to learn numeracy through use of different techniques that include community involvement in their learning. While there have been some studies conducted on community involvement in Uganda (Berg & Noort, 2011; Marphatia, et al, 2010), these studies mainly focused on how schools involve parents in children's education, none clearly established community practices that enhance numeracy skills development. Few studies like that of Mahuro and Hungi (2016) tried to establish community involvement and pupils' numeracy performance, but their finding falls short of identifying and examining community activities that develop numeracy skills.

Establishing how communities can be supported to use their everyday practices and activities in promoting learning of numeracy may go a long way in improving the attitude towards numeracy. This study therefore sought to establish whether community involvement in teaching using every day

practices and activities enhances pupils' numeracy skills development in lower primary in Nansana Municipal Council.

1.3 Purpose of the Study

The purpose of this study was to establish whether community involvement in teaching through practices and activities, enhances development of numeracy skills in pupils of lower primary in selected schools in Nansana Municipal Council.

1.4 Objectives of the Study

The study was guided by the following objectives:

1. To establish the community involvement practices used to support pupils' numeracy skills development at home.
2. To identify and examine numeracy related activities in the community that pupils participate in to enhance their numeracy skills.
3. To establish the relationship between pupils' participation in numeracy related activities in the community and their performance in numeracy at school.

1.5 Research Questions/Hypothesis

This study was guided by two research questions and a hypothesis.

1.5.1 Research Questions

1. Which community practices in Nansana Municipal Council are used to support pupils' numeracy skills development?
2. What numeracy related activities in the community do pupils participate in that develop their numeracy skills?

1.5.2 Research Hypothesis

H_1 There is a significant relationship between pupils' participation in numeracy related activities in the community and their performance in numeracy at school.

1.6 Scope of the Study

This section describes the scope of the study in three dimensions, that is, contextual scope, geographical and time scope.

1.6.1 Contextual Scope

The content of this study was limited to establishing whether community involvement in teaching through practices and activities enhances development of numeracy skills in pupils of lower primary in selected schools in Nansana Municipal Council. Specifically, it established the community involvement practices used to support pupils 'numeracy skills development; identified and examined the numeracy related activities in the community that children participate in to enhance their numeracy skills development; and the relationship between pupils' participation in numeracy related activities in the community and their performance in numeracy at school.

1.6.2 Geographical Scope

This study was conducted in Nansana Municipal Council, Wakiso District. Nansana Municipal Council was chosen because of the knowledge gap. The related study carried out focused on factors hindering the involvement of parents in primary education in Uganda and was conducted in Kumi, Bukedea and Mbale district. Information on community involvement in teaching in Nansana Municipal Council was unavailable.

1.6.3 Time Scope

The validity of this study is limited to the period starting from 2015 when Nansana Municipal Council started operations to 2019.

1.7 Significance of the Study

The study will be of significance to the following:

Nansana Municipal Council leaders will use the information on numeracy related community activities to sensitize community members how these activities can be used to support the development of numeracy skills in their children.

Teachers will use information on community practices and activities to help pupils relate numeracy learned in school to their everyday activities.

The head teachers and school directors will use the information on the community involvement practices and activities that enhance pupils' numeracy skills development to provide quality education using community resources which could be either cheap or even free.

NCDC may use the information on community involvement practices and activities to incorporate community involvement in the school curriculum to successfully achieve numeracy skills development in pupils.

Non-Government Organizations may use the information on community involvement practices and activities to design programs that will give parents and community members in general skills to support their children to develop numeracy skills.

It will also serve as background information for future research of the same topic.

1.8 Theoretical and Conceptual Framework

This section highlights the theory that underpins this study and how it is related to the study. It also explains the relationship of variables in the conceptual framework.

1.8.1 Theoretical Framework

This study was guided by The Situated Cognition Theory which was developed by Brown, Collins and Duguidin1989. The theory states that people's knowledge is constructed within and linked to the activity, context, and culture in which it was learned (Brown, Collins & Duguid, 1989). The theory recognizes the importance of the aspect of cognitive apprenticeship where important skills, interactions and experiences are shared between the novice learner and an expert in the community (Collins, Brown, & Newman, 1988). Different people in our communities have different ideas about how the world works.

Therefore, if children are taught by community members, learning becomes natural, easy and in context compared to the current situation where they cannot relate school work and what is learned from the community. Since these children are under the Concrete -operational stage of development (Piaget, 1981) they learn best through practical experiences using real objects which are available in the community cost free.

Numeracy skills are not like other physical skills like swimming or cycling which can be retained even without practice for life once it has been learned, a numeracy skill needs to be reinforced by the community

immediately after learning through practice, otherwise it will quickly be forgotten (Soon, 2009).

1.8.2 Conceptual Framework

This conceptual framework shows that the independent variable in this study is Community Involvement in teaching. The dependent variable is development of numeracy skills while parents' negative attitude towards numeracy is the extraneous variable. It explains that community involvement in teaching leads to pupils' numeracy skills development. When communities are involved in teaching through practices such as mentorship and coaching; provision of support, protection and materials; and giving opportunity to practice (Epstein, 2009), pupils are able to develop numeracy skills through training, coaching, teaching and participation in addition, subtraction, multiplication and division skills (Soon, 2009). This is also referred to as educative involvement and regarded as one of the most successful type of community involvement (Flecha, 2005). Where family and community members are actively involved in teaching pupils through community numeracy related activities such as, home chores, business activities, and farm work pupils' develop numeracy skills. The parent's attitude towards numeracy determines their involvement or not.

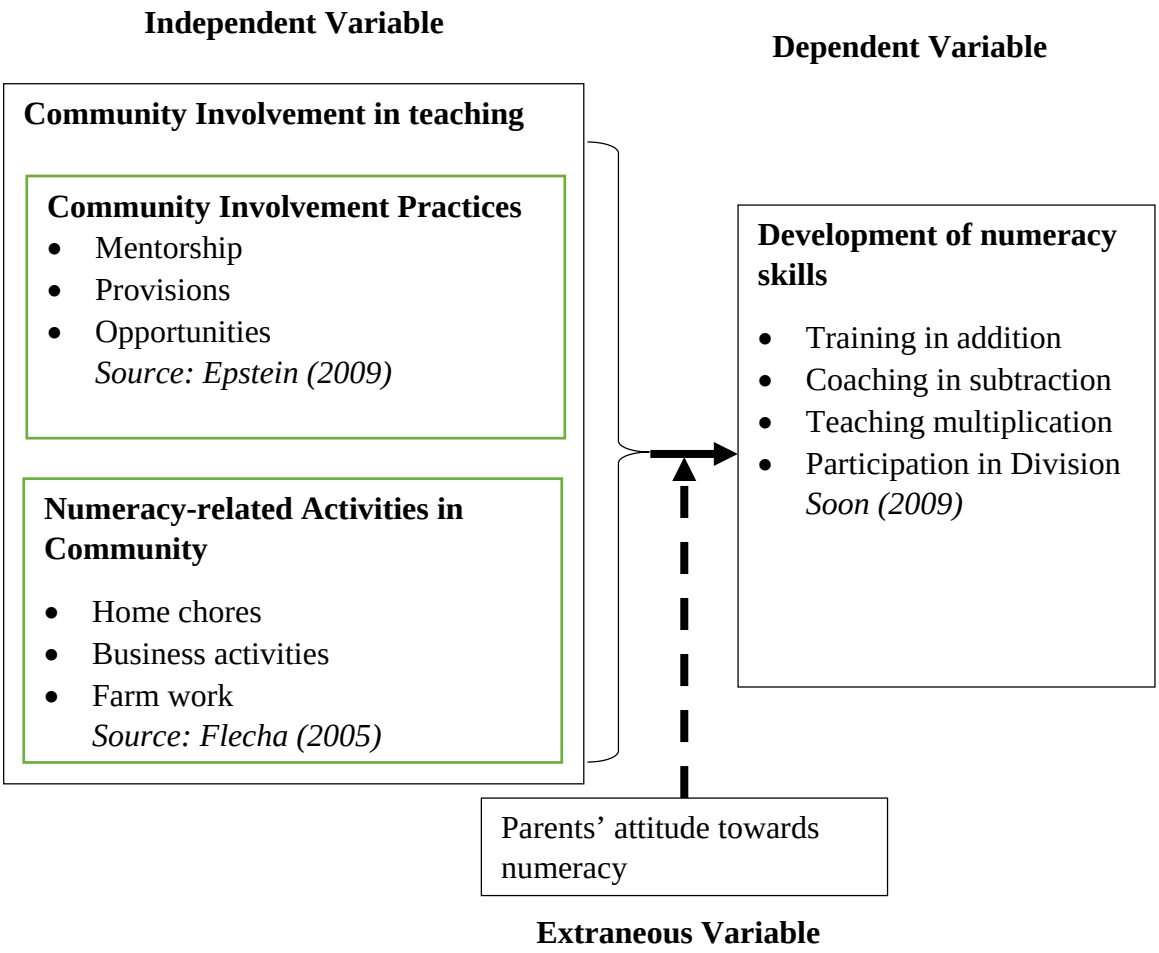

Figure 1.1:

Conceptual framework showing Community Involvement and Numeracy Skills Development

1.9 Operational Definition of Terms

In this study, the meanings of the terms used are:

Community elders refers to persons aged 60 years and above in Nansana Municipal Council.

Community Involvement in teaching refers to community members engaging pupils in everyday activities with the aim of developing their numeracy skills.

Community Involvement Practices refers to the routine behavior community members in Nansana Municipal Council exhibit that enhance children's numeracy skills.

Community refers to people living within the same locality who include: parents, families, and community members and leaders where the school is situated.

Development of Numeracy Skills refers to gradual fostering of mathematical abilities in children through teaching, coaching and mentoring.

Lower Primary means primary one to primary three.

Teachers refers to teachers of lower primary who teach numeracy in the selected schools.

Numeracy related activities mean tasks done in the community that promote the development of numeracy skills in pupils of lower primary.

Numeracy Skills refer to the ability to apply the acquired knowledge of addition, subtraction, multiplication and division in real life situations.

Parents refer to biological parents, grandparents, guardians and any other adult person in charge of pupils of lower primary at home.

Pupils mean children of primary one, two and three in Nansana Municipal Council.

Chapter Two

Literature Review

2.0 Introduction

This chapter focuses on review of related literature about community involvement in teaching and pupils' numeracy skills development in lower primary classes. The review presents the literature related to the following sub-headings; Community involvement practices and development of numeracy skills; Numeracy related activities in the community and numeracy skills development; and Relationship between pupils' participation in numeracy related community activities and their performance in numeracy at school.

2.1 Community Involvement Practices and Pupils' Numeracy Skills Development

Community involvement practices are vital in the development of numeracy skills in pupils. Some practices develop numeracy skills in children while others discourage it. Different researchers have established different practices that have been used to develop numeracy skills as discussed below.

One of the practices used is supporting children through direct teaching of numeracy by adults. Huntsinger, Jose, Larson, Balsink Krieg, & Shaligram (2000) found that parents' deliberate efforts to teach math in early childhood correlated with later math achievement. It was also revealed that preschoolers whose parents provided them with numeracy support at home exhibited more concurrent numeracy knowledge (Zippert & Rittle-Johnson, 2018). Another study by Involvement Education, (2006) established that direct parent-teaching activities like showing children how to write words are linked to

children's ability to identify letters and connect letters to speech sounds. While Hoover-Dempsey, Kathleen, Walker, Sandler, Whetsel, Wilkinson and Closson (2005) noted that modeling of appropriate school-related skills such as showing the child how to solve a specific type of math problem improved their academic performance. The above ways of direct teaching includes providing support, actual teaching and modeling which can be done by a person who has had formal education. In the case of Nansana Municipal Council where there are many persons who have not had formal education how do they engage in direct teaching? This is a gap which this research may fill.

Another practice used to support numeracy learning in pupils is encouraging parent-child interaction about school at home. A study by Hoell (2006) established that encouraging, guiding, monitoring and discussing school subjects increase learners' academic achievement. Similarly, Lee & Bowen (2006) also found out that discussing school experiences with learners correlates with their academic achievement. For the two cases they point out discussion of school subjects. How could this be possible with illiterate parents? To answer this question further research was needed.

Provision of materials to children at home to create a conducive learning environment is another practice commonly used to support numeracy learning. A study by Hill and Tyson (2009) established that provision of conducive learning environment, appropriate structure, and materials, had a significant positive effect on learners' academic achievement. Similarly, Olatoye and Agbatogun (2009) established that there exists a relationship between providing conducive learning environment at the house and academic

achievement. While a study by Bradley, Corwyn, McAdoo, and Garcia (2001) showed that homes with fewer socioeconomic resources tend to have less stimulating home environments. Hart, Ganley, and Purpura (2016) also established that household income had an effect on children's numeracy skills. From the available evidence, it is noted that a conducive home environment is mandatory for proper learning. However, the issue of establishing how poor parents support their children in home-learning yet they have less stimulating home environments arises. A gap which this study could bridge.

Another practice is involving children in doing home chores. A study by LeFevre, Skwarchuk, Smith-Chant, Fast, and Kamawar (2009) established that children whose parents involved them in doing home chores developed numeracy skills. In studies that examined direct and indirect numeracy activities, it was established that direct numeracy activities were associated with numeracy skills (Kleemans, Peeters, Segers &Verhoeven, 2012; LeFevre, Clarke, Stringer, 2002). However, on the contrary other studies showed no relation between the direct numeracy activities and math performance (Blevins-Knabe, Berghout, Musun, Eddy, & Jones, 2000; LeFevre, et.al, 2009). This indicates mixed results in regard to which specific numeracy activities may be used to enhance children's numeracy skills.

Involving children in family businesses is another practice parents engage in to enhance numeracy skills development in pupils. A research by Marphatia, Edge, Legault, & Archer (2010) revealed that parents in Masindi, Uganda and Mchinji, Malawi involve their children in small businesses to supplement on family income. Ezati, et al (2016) also noted that parents in Northern Uganda involve children in business activities due to poverty. These

studies showed that although parents involved their children in family business, their aim was different from supporting their numeracy skills development. Information on how to use business activities to teach numeracy required further research.

Involving children in shopping is a common community involvement practice many parents engage in to enhance numeracy skills development in pupils. A longitudinal study by LeFevre, et.al, (2009) established that Children's indirect experiences with number, particularly talking about money while going for shopping may be important contributors to their preparation for numeracy experiences in the early grades. This was a quasi-experimental research which involved intervention. According to McMillan and Schumacher (2010) behaviour is studied as it happens naturally without any control, manipulation and externally enforced constraints.

Homework assistance, according to Pezdek, Berry, and Renno (2002) improves students' mathematics scores. McAskill, Holmes, Pelton, and Watt, (2006) also established that offering teaching help with specific homework influenced student's outcomes. While O'Sullivan, Chen and Fish (2014) looking at middle school students in urban public school found that parents providing structured homework support for example, setting aside time for homework or providing incentives to complete homework, had a significant and positive impact on student mathematics grades. However, on the contrary some studies found out that assisting children with homework did not have a significant impact (Chen & Fish, 2014; Hill & Tyson's, 2009; O'Sullivan, Patall, Cooper, & Robinson's, 2008). A study by Jeynes (2012) established that "checking homework" yielded statistically significant results, but the

results were the weakest. However, in the above studies homework referred to school designed activity for purposes of engaging parents, information on community designed homework is still scarce.

Tutoring by parents, family or community members was established to improve children's numeracy skills development (Erion, 2006; Sheldon, 2009). Similarly, the evaluation results of school-community partnership in James Ford Rhodes High School which recruited community and teacher volunteers to tutor students after school to assist in improving students' mathematics skills indicated an increase of 18% in mathematics for ninth-grade students who attended tutoring sessions (Greenfeld, Sheldon, Epstein, Hutchin, Thomas & Ganss, 2009). From all these researches parents' tutoring session took place in the school environment which differs from the community environment. Jeynes (2007) found out that there was no statistically significant impact of attendance and participation in school activities on overall academic achievement.

Literature reveals that rewarding children is another community involvement practice used to develop numeracy skills in children. A study by McAskill et.al, (2006) established that reinforcement of learning like, praising the child verbally when he or she solves a problem influences their learning outcomes. On the contrary Wadende, Oburu and Morara (2016) established that in Africa, children's attempts may go unnoticed, reason being that if you praise a child for good performance she/he relaxes. This discrepancy in practices in the Western world and the African communities highlights the point that the context determines the practices that enhance learning (Graves & Wright, 2011). The issue is that Western World differs in culture and it is

not clear whether the practices of Western communities can also enhance numeracy skills development in pupils in Nansana Municipal Council, Uganda.

2.2 Numeracy Related Activities in Community and Numeracy Skills Development

Besides practices, literature shows that different numeracy related activities can also be used to development numeracy skills in pupils. The aspect of numeracy related activities in the community is of two kinds, direct activities and indirect activities. Direct activities focus on numbers and typically are used by parents for the explicit purpose of developing quantitative skills. While indirect activities are real-world tasks (LeFevre, et.al, 2009).

Counting domestic items is one of the numeracy related activities pupils participate in that develop their numeracy skills. Andika, Akbar, Yufiarti & Sri Sumarni *(*2019) stated that doing the activity of counting objects makes the child able to master the early numeracy skill through objects around. A study by Yıldız, Sasanguie, De Smedt, & Reynvoet (2018) indicated that the children who participated in counting objects or learning simple sums with their parents, showed better performance in enumeration and symbolic number line estimation tasks. However, these studies were conducted in Europe whose context and cultures may be different from Uganda and specifically Nansana Municipal Council.

Playing board games is another activity that develops numeracy skills in children. A study by Zippert & Rittle-Johnson (2018) indicated that board or card games that involve counting, arithmetic or number recognition, is an indirect activity that increases children's numeracy skills development. Siegler

(2008) established that Linear Board Games have an effect on increasing knowledge and acquiring preliminary numeracy skills in preschoolers compared to Circume Board Games. A further study showed the importance of applying Linear Number Board Games in the context of classroom learning (Ramani & Siegler, 2008). While another study proved that Board Games called "Shut the Box" are able to train mathematical abilities of children 6 years through video analysis (Stebler, Vogt, Wolf, Hauser & Rechsteiner, 2013). These studies indicate that there are different kinds of board games such as circume, linear and 'shut Box' which could have different effect on children's numeracy skills in relation to context. In Nansana, the type of numeracy games may be different as well.

According to Epley (2013), reading with children improves learners' academic achievement. It is also evidenced that children's exposure to shared book reading is related to receptive vocabulary whereas word-focused instruction by parents correlates with the acquisition of decoding skills (Evans, Shaw, & Bell, 2000). However, these studies focused on children's home literacy experiences. Yet other studies suggest that the strength of the effect vary for different disciplines (Fan and Chen 2001; Patall, Cooper & Robinson, 2008). We realize that little information is available on home numeracy experience which is in line with LeFevre et.al (2009) finding that there is less documentation of the specific experiences through which mathematical knowledge is acquired outside of school. This creates a gap in the body of knowledge.

According to Graves and Wright (2011) European American parental participation at school and home improved learners' mathematics performance

but for the African American learners, only involvement at home enhanced mathematics scores. This suggests that different people's academic achievement is enhanced by a particular type of involvement. Therefore this created a gap for further research to identify and examine the specific community activities pupils in Nansana Municipal Council participate in.

2.3 Relationship between Pupils' Participation in Numeracy Related Activities in the Community and their Performance in Numeracy at School

Evidence shows that when communities involve in their children's education, children improve their numeracy scores (Abuya, et. Al, 2014; Mahuro & Hungi, 2016). A study by Topor, Keane, Shelton, and Calkins (2010) after controlling for children's intelligence, found out that parental involvement was significantly related to academic performance and children's perception of cognitive competence. However, Wilder (2014) noted that this particular study parental involvement was measured by teachers' perceptions of positive attitudes parents might have had toward their children's education, teachers, and schools. It never considered any parental involvement in school or at home. This attracts doubt on validity of the results.

The findings of Jeynes (2003) meta-analysis indicated that community involvement had a significant positive impact on academic achievement, regardless of the ethnicity of students and type of academic achievement measures. The components of community involvement included, parental expectations for the academic success of children, the extent to which parents communicated with their children about school, checking children's

homework, attending school functions, and enforcing rules regarding school and leisure activities. Also in respect to the measures of academic achievement, grade point average had the least effect size in comparison to others such as teacher ratings. This may be explained by the belief that teachers' evaluations of students' performance and attitudes may be affected by "teacher perceptions of the level of cooperation exhibited by the child and the family as a whole" (Jeynes, 2003, 213).

Although there is overwhelming evidence which shows that community involvement improves learners' academic achievement, some research gaps have been identified. According to Wilder (2014) the impact of community involvement on student academic achievement depends upon the definition of community involvement. For example the result was weakest if parental involvement was defined as homework assistance. This created a gap in knowledge which this study sought to bridge by examining the relationship between pupils participation in particular community activities and their performance in numeracy at school.

Generally, most research on community involvement was based on Epstein (1995) community involvement model. Little information is available on community involvement in terms of every day practices and activities that provide practical learning experiences in numeracy.

Chapter Three

Methodology

3.0 Introduction

This chapter focuses on the methodology that was used to carry out this study. It includes, research design, methodology, location of the study, target population, sample and sampling technique, research instruments, measurement, validity and reliability, data collection procedure, data processing and analysis, as well as ethical issues.

3.1 Research Design

This study used a cross-sectional survey design. This design is the most appropriate in a descriptive research where manipulation of variables does not occur (Cherry, 2018). This study sought to find out what exists in the community and to make inferences about possible relationship between community involvement in teaching through practices and activities and pupils' numeracy skills development. It also collected data at one point in time.

3.2 Research Methodology

This study used mixed methods because it sought to collect both quantitative and qualitative data to gain in-depth knowledge and to increase the readers understanding of the phenomenon under study (McMillan & Schumacher, 2010). According to Creswell (2009), the combined use of both quantitative and qualitative methods provides an expanded understanding of the research problem.

Five methods were used to collect data for purpose of triangulation as one way of ensuring credibility of the results (Shenton, 2004). The

questionnaire method was used to collect qualitative data from teachers to gain an understanding of their experiences and perspectives on the topic of study (Johnson & Christensen, 2010).

Interview method was chosen to collect qualitative information from the parents because it is an appropriate method for gathering qualitative data (Creswell, 2009) and also to cater for both categories of parents including those who could not read or write.

Observation method was used to gather quantitative data from the pupils in the context. Neuman (2000) posits that when an event, social action, answer to question, or conversation is removed from its social context, or ignores the context, meaning and significance are distorted.

Document review method was used to establish the pupils' numeracy scores. The documents included mathematics monthly test scores and end of term report cards.

Focus group discussion was used to collect information from the community elders in order to gather extensive information on the topic.

3.3 Location of the Study

This study was conducted in selected government aided primary schools in Nansana Municipal Council, Wakiso District found in the Central Region of Uganda. Nansana Municipal Council was chosen because reports have consistently indicated that children in Wakiso district find difficulty in additions, subtractions, multiplication and division tasks (UWEZO, 2015). Nansana Municipal Council comprises of four Divisions namely; Nansana, Nabweru, Busukuma and Gombe. These divisions have got both urban and

peri-urban settings. Its population comprises of both low and high socioeconomic categories of people.

3.4 Target Population

The target population of this study was parents with pupils in lower primary, community elders who comprise of persons of 60 years of age and above, teachers of lower primary and pupils.

Parents and Community elders were chosen because they engage in different practices and activities in the community that enhance the development of numeracy skills in pupils therefore could provide data from the informed point of view. The teachers of lower primary were chosen because they interact with parents in the school and are the ones responsible for teaching numeracy at school, while the pupils in lower primary classes are at the centre of the problem whose numeracy skills need to be developed.

3.5 Sample Size and Sampling Techniques

This section presents the sample size that was used in the study and the sampling techniques that were applied.

3.5.1 Sample Size

A sample of 11 out of 49 government aided schools was selected for this study. For purposes of balanced representative, schools were sampled as 4, 3, 2 and 2 from the divisions of Gombe, Busukuma, Nabweru and Nansana respectively.

A total of 28 teachers out of 147 were sampled (19%). Thirty two parents (11%) were selected from the population of 291. While 113 Pupils (10.3%) out of 1100 were sampled. These percentages were chosen because

according to Gay and Diehl (1992) a sample size of 10% of the total population is adequate for a study in descriptive research.

In addition 20 community elders were sampled based upon data saturation. Moser & Korstjens (2018) expressed that data saturation can be used to determine the sample size depending on the broadness of the research question and data collection method.

3.5.2 Sampling Technique

Since this study used mixed methods, both qualitative and quantitative sampling techniques were used. A stratified sampling technique was used to sample schools. Each of the divisions was regarded as a stratum where a list of all schools for each division was made and from the list, 4 schools from Gombe Division, 3 schools from Busukuma division and 2 schools each from Nabweru and Nansana Division were selected using a simple random technique. This technique was used to provide equal opportunities for all schools to participate such that the selected schools could constitute a representative sample whose results may be generalized for the whole population (Neuman, 2006).

All teachers in the selected schools were purposively sampled. In this sampling technique, the sample is purposely pre-specified from a group that the researcher is concerned with and is capable of giving the researcher information of interest (Gerrish & Lacey, 2010). Purposive sampling was thus used because the teachers were pre-specified based on the classes they teach.

From each sampled school, pupils were sampled according to the population within the school, a total of 113 pupils were selected using a simple

random technique so as to eliminate bias in selection (Neuman, 2006). While parents were a functioning sample in accordance with the pupils sampled.

Five community elders from each division were conveniently selected based on their willingness to participate and their availability. This is because according to Given (2008) convenience sampling consists of choosing participants that are accessible and available (Given, 2008) and have knowledge of the setting (Hesse-Biber & Leavy, 2010).

3.6 Research Instruments

The following research instruments were used to collect data.

3.6.1 Questionnaire Guide

An open-ended questionnaire was used to collect qualitative data on the numeracy related activities in the community that develop pupils' numeracy skills from the teachers. Johnson and Christensen (2013) stated that questionnaires that contain open-ended questions are called qualitative questionnaires, which the researcher can use to find out how participants experience a phenomenon or why participants believe something happens.

The tool had four sections, Section A had four items to look for demographic information particularly the age, gender, qualification, and class taught. This part had close ended questions giving participants a chance to select what is most suitable to them. Section B sought suggestions of the participants on community practices that support development of numeracy skills in pupils of lower primary, had two items. Section C was intended to establish the numeracy related activities in the community that pupils participate in to develop their numeracy skills had five items. While Section D

which sought to establish community practices that support development of numeracy skills in pupils had one item.

3.6.2 Interview Guide

Interview guide was used to collect qualitative information from parents who had children in lower primary. It is a primary source of gathering in-depth information (Creswell, 2009). It had unstructured questions to allow participants express themselves freely and give more information on the topic. It also allowed the researcher to explain and expand on questions in order to ensure that participants understand the question (Walliman, 2006).

It comprised of four sections. Section A had four items to look for demographic information particularly the age, gender, economic activity, and interest in numeracy. Section B intended to establish the community practices that are used to develop numeracy skills in pupils of lower primary had four items. Section C sought for suggestions of the participants on community numeracy related activities that develop numeracy skills in pupils of lower primary had five items. While Section D sought to establish the relationship between pupils' participation in numeracy related activities in the community and their performance in numeracy which had five items.

3.6.3 Observation Guide

The observation guide was used to collect quantitative data from the pupils of lower primary in order to gather information in their natural setting (Amin, 2005). It consisted of a list of eight activities that were ticked when observed or not observed. For purpose of collecting quantitative data, each activity was given a scale of one to five and from the eight activities the

maximum possible total score that could be obtained was 40 while the lowest was eight. The scores of the observation tool were aggregated for each participant to obtain a score on participation in numeracy related activities in the community.

3.6.4 Document Review Guide

The document review guide was used to obtain quantitative data on pupils' numeracy scores (Amin, 2005). The documents reviewed included, monthly tests result sheets, mid-term result sheets and end of term report cards. In this study the end of term one numeracy exams scores were used because all schools had the same exam set by the district, it was assumed to be standardized as compared to other school designed tests. The highest possible score was one hundred and the lowest possible score was 0.

3.6.5 Focus Group Discussion Guide

Finally, FGD was used to gather qualitative information on the topic from community elders (Marshall & Rossman, 2011). Six open-ended questions that allowed participants to describe their views were used per focus group discussion session. The questions were carefully predetermined and sequenced in an understandable and logical way, so as to facilitate the natural, spontaneous discussion of events or experiences by the participants. This enhanced the validity of the findings.

3.7 Measurement

In the study there are two variables, community involvement in teaching and numeracy skills development which were measured as follows:

3.7.1 Community Involvement in Teaching

Community involvement in teaching was measured as follows. Eight activities that show community involvement in teaching were used. Each activity was given a scale of one to five. Five shows maximum involvement in that activity while one was the minimum. From the eight activities the maximum possible total score that could be obtained was 40 while the lowest was eight. A score of between 30-40 indicated high involvement, between 20-30 moderate involvement and between 8-20 low community involvement.

3.7.2 Numeracy Skills Development

Measuring numeracy skills development, end of term exams scores were obtained from schools. Since schools from the Municipality do uniform exams for end of term, the scores obtained were assumed to be reliable since it is standardized. The highest possible score was one hundred and the lowest possible score was 0.

3.8 Validity and Reliability

The validity and reliability of the instruments in this study were checked as follows:

3.8.1 Validity

The validity of the instruments was established by conducting item analysis. The researcher used ten people who are competent and have expertise in research methodology to judge the items whether they are appropriate to answer the intended questions. Using the formula adopted from Amin (2005), the Content Validity Index (CVI) for each item was calculated.

$$CVI = \frac{\text{Total number of judges judging right}}{\text{Total number of judges}}$$

The results of the analysis are shown in Table 3.1.

Table 3.1:

Content Validity Results for the Instruments

Instrument for:	Section A	Section B	Section C	Section D	Average
Teachers	1.0	0.9	0.8	0.8	0.875
Parents	0.9	1.0	1.0	1.0	0.975
Pupils	0.9				0.900
Community members	1.0	0.8			0.900

Source: Primary data, 2019

Table 3.1 shows that the lowest CVI was 0.8. This means that sections in the instrument were valid. This is because validity index of 0.8 is acceptable (Amin, 2005).

3.8.2 Reliability

The reliability of the contents in the instruments was tested before proceeding for data collection. A pilot research for instruments was conducted and those questions found to be misplaced were removed and those that were not accurate were modified to fit the intended purpose.

3.9 Data Collection Procedure

The researcher first visited Nansana Municipal Council, education department to get the list of government aided primary schools within the Municipality. She then proceeded to the selected schools and talked to the head teachers and teachers of lower primary for purposes of getting permission and fix appointments. Then the researcher went back at the agreed time to the teachers.

Teachers were provided with an open-ended questionnaire which did not have the predetermined yes-no answers. They provided their own responses to the questions. This encouraged them to recount their experiences and offer an understanding of how they see the world around them (Lankshear & Knobel, 2004). These questionnaires were filled in and returned to the researcher at their convenience.

Parents were interviewed individually. The interviews lasted between 20-40 minutes, varying with each participant. Most of the interviews took place at the participant's chosen convenient place. All interviews were done in the language the participant had stated that he/she understood better. Each participant was asked a set of questions from an interview guide (Appendix II). These questions were guiding questions which were further elaborated on during each interview. The guiding questions were aimed at eliciting information about community involvement through practices and activities to support numeracy learning.

Four focus groups were used one per division. These were deemed to be sufficient "to balance the characteristics of individual focus group sessions" (Bryman, 2004:349). Each group comprised five people which was small enough to allow all the participants to have the opportunity to share insights and sufficiently large to provide diversity of perception (Marshall & Rossman, 2011). Throughout the focus group discussions, the researcher was aware and brought it to the attention of the focus group members that focus group members needed not reach consensus, but emphasis was put on finding out as much as possible about the topic in social reality. When a session elicited little

or no new information, it signaled that data generation had reached saturation point.

Children were observed from their homes and in the community using an observation checklist comprising eight activities which had a scale of one to five. The observed activities were ticked and the scores were computed for each participant to obtain the total score for participation in community activities. Pupils' end of term one numeracy exam scores was used to determine their performance in numeracy at school. All participants were thanked for participating in the study.

3.10 Data Processing and Analysis

Content analysis was used to analyze data obtained in respect of objective 1 and 2 which sought to collect qualitative data. Content analysis was used because there was need to identify group qualitative data into themes and summarize findings (Pope, Mays & Popay, 2007). After getting the themes all the information was coded accordingly to fit the identified themes. From the themes, it was entered into SPSS where data was summarized into tables and a descriptive technique to get their frequencies and percentages was used. Also an analytic narrative was integrated to give a detailed insight about the topic in context.

For objective 3, statistical analysis was used to test the alternate hypothesis that,

H_1 *There is significant relationship between pupils' participation in numeracy related activities in the community and their performance in numeracy at school at P=0.05 level of significance.*

The parametric Pearson Product Moment Correlation Coefficients was used to test the above hypothesis. This is because it meets the Pearson's assumptions of having continuous random variables (Amin, 2005).

3.11 Ethical Considerations

In research, before data generation occurs, ethical considerations must be catered for (Bean, 2005). To fulfill this requirement, a permission letter from Graduate School, Kyambogo University was sought which was used to introduce the researcher to Nansana Municipal Council, the selected schools and individual participants in this study. The participants were told the purpose of the study and their consent sought as noted by Nojaja (2009), that research participants should be given a choice to participate and have the right to withdraw from the study. Only those who gave consent to participate in the study were involved. All information collected was handled with the maximum confidentiality it deserved. Also child assents in conjunction with parental consent were used to protect children from psychological or other harm and to enjoy the benefit of knowing what was happening (Miller & Nelson, 2006). No participants were harmed in this study and no identifying information about each participant was revealed.

Chapter Four

Data Presentation, Analysis and Interpretation

4.0 Introduction

This chapter presents findings; using tables for quantitative and verbatim narrations for qualitative. It also presents data analysis and interpretation. This study aimed at establishing the community involvement practices used to support pupils' numeracy skills development; identifying numeracy related activities in the community that pupils participate in to enhance their numeracy skills development; and to establish the relationship between pupils' participation in numeracy related activities in the community and their performance in numeracy at school. The findings are presented in three sections according to research objectives after presenting the demographic information.

4.1 Demographic Information

In order to understand the nature of the participants it was necessary to first establish their gender. This was done as shown in Table 4.1 below.

Table 4.1:

Gender of Respondents

Participant	**Frequency**		**Percentage**	
	Female	Male	**Female**	**Male**
Teachers	24	4	86	14
Parents	24	8	75	25
Community Elders	10	10	50	50
Pupils	63	50	56	44
Total	**146**	**67**	**69**	**31**

Source: Summary of data from field, 2019

Table 4.1 shows that there were more females (69%) as compared to only 31% of the males. This means that more females participated in this study than the males.

This study also gathered information about the occupation of the parents and other community members. Collecting information on the occupation of the respondents was necessary because the occupation of the respondent relates much with his/her ability to possess adequate information on practices and activities in the community and pupils' numeracy performance in schools. The results are shown in Table 4.2.

Table 4.2:

Occupation of Respondents

Occupation	Frequency	Percent
Selling groceries	23	54.8
Transportation	5	11.9
Poultry Keeping	4	9.5
Teaching	3	7.1
House wife	3	7.1
Nurse	2	4.8
Peasant farmer	1	2.4
Herbalist	1	2.4
Total	42	100.0

Source: Summary of data from field, 2019

Table 4.2 shows that 54.8% of the participants were involved in selling groceries while 2.4% were herbalists. This means that generally most participants engage in business but most of them sell groceries and a few are herbalists.

4.2 Objective 1: Community Involvement Practices used to Support Pupils' Numeracy Skills Development at home

In this objective the researcher sought to establish the community involvement practices used to support pupils' numeracy skills development at home in Nansana Municipal Council. This information was gathered from community members. These community members included teachers, parents, and elders. Information was got from them through questionnaire to the teachers, unstructured interview to parents and focus group discussions with community elders. The teachers' responses are presented first as summarized in Table 4.3.

Table 4.3:
Community Involvement Practices as given by Teachers

SN	Community Involvement Practice	Frequency	Percentage
1.	Involving children in doing home chores	14	19.7
2.	Provide mathematics materials at home	13	18.3
3.	Involving children in doing shopping	13	18.3
4.	Encouraging children to share different items	10	14.0
5.	Helping children with homework	9	12.8
6.	Seeking help from resource persons	6	8.5
7.	Involving children in home businesses	4	5.6
8.	Teaching children at home	2	2.8
	Total	**71**	**100**

Source: Summary of data from field, 2019

Table 4.3 shows that the most commonly used community involvement practice to support pupils numeracy skills development is 'involving children in doing home chores' (19.7%), while the least used community involvement practice for developing children's numeracy skills is 'teaching children at home' (2.8%). This implies that most times community members engage children in home chores most of which are numerical.

For more information on community involvement practices, the opinion of parents was also sought through in-depth interviews. Most parents interviewed reported that involving children in doing different home chores is a common practice. Some parents said that they train their children in home chores according to their age and capability to do different tasks which require different skills. Others highlighted that they start training children on relatively simple skills with adult support before exposure to more challenging ones. One parent pointed out that training a child requires some patience and insistence to ensure that they master the skill. She said:

> "If I want my child to master doing something, I make sure that he/she does it every day. For example when my young son in primary two when he comes back from school, he knows the routine that he is supposed to wash plates and his school uniform every day. At first he could not do perfectly but now he washes them clean" (A Female parent from Nabweru).

This implies that when a child does something every day, she/he is able to master the skill.

Parents in this study mentioned the practice of sending their children to nearby retail shops to buy groceries and to run errands. They believed that sending their children to buy groceries exposed their children to counting money and learning how to budget, plan and spend money. A parent from Nabweru noted:

> "I normally send my child to buy things from the shop. I can give her one thousand shillings and tell her to buy tomatoes

of five hundred, Royco of two hundred and may be onions for two hundred shillings. At first I could tell her how much change she should bring back. But now she has learnt the value of money, a number of items it can buy and how much change" (Female parent from Nabweru).

This statement showed that in the process of sending children to nearby shops, children are able learn planning and budgeting skills that require numeracy skills.

Sharing items was another community practice parents stressed. They pointed out that it is part of African culture to share things and to train their children to share for social reasons but also noted that there is some numeracy involved. They indicated that they share virtually everything right from food, drinks and material things as one parent narrated:

"Sharing is part of our culture and we encourage our children to share for example, when you give them to serve food, even if it is little they serve and ensure that everybody gets something. A child is able to estimate and measure equal shares so that no one misses or complains." (Female Parent from Nansana Division).

This indicated that a child learns the concept of measurement and proportions if is engaged in the practice of sharing.

Parents also reported the practice of involving their children in family business. They revealed that they always engaged in small businesses around home or within the community which they use to develop business skills in

their children at an early age. They noted that business requires numeracy skills which their children could learn if given early training. One parent said:

> "I involve my child in my charcoal selling business, I can measure the charcoal as she counts the money this automatically trains him to count money and the tins of charcoal sold" (Female Parent from Nansana Division).
>
> "We keep chicken at home and always involve him in the process, he picks the eggs, arranges them on trays and counts them. This is good to the child because he is able to learn business skills which also require the knowledge of numeracy. This provides an opportunity to the child to apply what he/she learns from school into business like addition, subtraction and multiplication" (Male Parent from Nabweru Division).

These statements by the parents showed that they involve children in family businesses that make use of different numeracy skills which include counting, addition, and subtraction.

Parents also reported the practice of giving children responsibilities. They noted that for someone to become a responsible person she/he needs to be trained early. It requires mentorship, coaching and opportunities to practice that help them to develop many skills such as financial management and also to build honesty and integrity in children. One parent noted that children need to be given opportunities to learn certain skills. He narrated:

> "When am going away from home, I give money for up-keep to one child to take care of the siblings and they are now used, they do it very well, I don't need to worry. I keep on

> alternating the responsibilities each time I am going away so that each child can get a chance to learn. In doing that each child gets opportunity to learn and master the skills" (Male Parent from Gombe Division).

This statement implies that children are capable of developing skills if they are given opportunity to practice.

Physical teaching of numeracy to children was another practice some parents reported. All parents who have had formal education reported that they help their children with numeracy homework. Other parents including those who had not attended school indicated that they can also teach their children from home. A female parent narrated:

> "I teach my children number names and counting using a number chart. Then those who cannot write the numbers, I teach them how to write by holding her hand and we write the symbols together, afterwards she practices until she is perfect" (Parent from Busukuma).

> "I playfully give him numeracy activities written down in the soil or I spread ash around, then he does the exercise in his book made of banana leaves and I mark him using a stick" (Male Parent from Busukuma).

These statements clearly showed that the parents who had knowledge of numeracy actually passed it on to their children through teaching and demonstrations.

Other parents mentioned the practice of saving money. They noted that everything to do with money, a child needed numeracy skills. They

revealed that to expose their children to the world of numeracy, they normally gave them a chance to collect and control their own money. One parent narrated:

> "I got for my child a saving box where she saves her money from the pocket money, and she is very sharp. She recalls every coin she puts into it and would be aware of the amount inside. When time for opening comes, we open and she decides on what to buy with the money" (Female Parent from Gombe Division).

This statement indicated that the child was not only trained to save and budget but also memorized the amounts kept.

The opinion of community elders on the practices was also sought through FGD. They reported similar practices like the teachers and parents but added the following.

Community elders in this study reported that it was a common practice for each parent to provide for the needs of their children. They specifically pointed out that some parents provide shelter, food, clothes, scholastic materials while others provide parental guidance and time for study. In one FGD an elder said:

> "In our community here, every parent at least gives the child books and pencil when going to school then at home they ensure that children eat some food because no one learns on an empty stomach. Some parents and us the elders also encourage them to study hard so as to change our economic status also" (Male elder from Nansana Division).

This statement showed that parents provide for their children's needs to support their learning.

The elders in this study cited that use of resource persons was another community practice commonly found in Nansana. They pointed out that it was common practice for parents to seek for help from other people whom they believed were more knowledgeable to help their children with school work. These persons include older siblings in higher classes, neighbours and teachers. In one focus group an elder said that parents normally sent their children for more support even during holidays in order to help their children get better grades at school and also to avoid children loitering around. He said:

> "I see parents looking for people to teach their children in the holidays. The parents are not comfortable letting their children sit idle during holidays. This helps children to get more knowledge in case there was something he/she missed during school time" (Male elder from Busukuma Division).

This statement indicated that parents continuously look for extra support to make their children improve in numeracy.

Elders in this study also expressed the practice of allowing children to play with others in the community. They pointed out that play was important to children because children are able to learn from each other what is acceptable and unacceptable in our community. They highlighted that, different life skills that could be beneficial to their future adult life are developed. One elder went ahead to cite that when children are given chance to play together they also discuss school. She said:

> "We allow children to play together, for example, you can find a number of children from within all gathered in my home playing different games. Sometimes you see them role playing their teachers which I feel is a good thing because they all participate willingly and learning takes place" (Female elder from Gombe Division).

This response strongly indicated that when children play together especially numeracy related games, they are able to learn different skills from one another.

4.3 Objective 2: Numeracy Related Activities in the Community Pupils Participate in to Develop their Numeracy Skills.

This study sought to identify and examine activities in the community that pupils participate in to develop their numeracy skills. Information for this objective was got from teachers, parents, community elders and pupils. A questionnaire was given to the teachers and their responses are summarized in Table 4.4.

Table 4.4:
Numeracy Related Activities in the Community pupils participate in to enhance their numeracy skills as given by teachers

SN	Community Involvement numeracy Activities	Frequency	Percentage
1.	Verify items	20	27.8
2.	Buying groceries	16	22.2
3.	Measuring and distributing items	8	11.1
4.	Playing counting games	7	9.7
5.	Selling in family business	7	9.7
6.	Sorting domestic items and foods	7	9.7
7.	Budgeting	5	6.9
8.	Planting seeds	2	2.8
	Total	72	99.9

Source: Summary of data from field, 2019

Table 4.4 shows that verifying items is the numeracy related activity in the community that pupils participate in most (27.8%). While planting seeds (2.8%) is the least activity engaged in. This indicated that more families engaged in business and household activities as compared to garden work.

Besides what was reported by teachers, pupils were observed to see what activities they participate in. Boys were observed to see what numeracy related activities they engage in most. The findings from the observations are summarized in Table 4.5.

Table 4.5:

Numeracy Related Activities in the Community Boys Participate in

Activities Boys participated in (n=50)	Frequency	Percent	Valid Percent
Buying groceries	38	20.9	20.9
Playing mathematical games	37	20.3	20.3
Lesson by parent	30	16.5	16.5
Arrange different items	28	15.4	15.4
Serving Food	22	12.1	12.1
Selling items	17	9.3	9.3
Budgeting	6	3.3	3.3
Digging	4	2.2	2.2
Total	182	100.0	100.0

*Σf is greater than the N because one participant engaged in more than one Activity

Source: Summary of data from field, 2019

Table 4.5 shows that buying groceries (20.9%) was the most common numeracy related activity in the community boys participated in, while digging (2.2%) was the least common numeracy related activity boys participated in. This means that boys are more engaged in business transactions than any other numeracy related activity in the community.

In regards to girls, the activities they participate in most are summarized in Table 4.6.

Table 4.6:

Community Involvement Activities Girls Participate in

Activities Girls participate in (n=63)	Frequency	Percent	Valid Percent
Arranging domestic items	46	20.3	20.3
Buying groceries	46	20.3	20.3
Serving Food	44	19.4	19.4
Teaching other children	41	18.1	18.1
Selling items	22	9.7	9.7
Playing mathematical games	14	6.2	6.2
Budgeting	12	5.3	5.3
Planting seeds	2	.9	.9
Total	227	100.0	100.0

*Σf is greater than the N because one participant engaged in more than one Activity

Source: Summary of data from field, 2019

Table 4.6 shows that arranging domestic items had the highest frequency of 20.3% while planting seeds was the least with 0.9%. This means that girls participate more in arranging domestic items which exposes them to the concept of sets than planting seeds which is more of counting.

To establish more numeracy related activities in the community pupils participate in, parents were interviewed and their responses were as follows.

All parents interviewed accepted that their children participate in shopping at home. They noted that involving children in buying items provides them with the opportunity to learn simple calculations of addition, subtraction and multiplication which are vital skills used in the daily experiences including business. This finding indicates that pupils' involvement in buying things exposes them to business transactions which help them to develop the numeracy skills of addition, counting, subtraction and division. One parent revealed that besides numeracy, participation in buying instills honesty in children. She further pointed out that it was

convenient for her to send a child to buy things because sometimes she would be busy doing other things and yet sending the child would be faster. She said:

> "When I need small items used at home, I normally send my child to buy who just runs to the nearby shop. I don't need to go by myself because sometimes I would be busy with doing things. Another thing is, children need early training to learn about money" (Female parent from Nansana Division).

This finding reveals that parents engage children in shopping for various purposes like teaching them honesty, training them in business and developing numeracy skills.

Many parents said that their children participate in selling items. Some said that this activity is purely mathematical in nature and requires numeracy skills of counting, addition, subtraction, division and subtraction. Others pointed out that, children who participate in selling items receive better training for mental work in addition and subtraction. For example, a parent reported that her child is good at giving back change to customers without the use of a calculator. She said:

> "We sell water at home and sometimes over the weekends, when customers come, he sells to them but he is able to calculate the change mentally. And when I verify it would be correct" (Female Parent from Nansana Division). Another parent felt the same when he narrated: "… my shop is in front of our residence, so when I have many customers and my son passes by he helps me to sell. When he had just started could ask me how much change to give to the customer but now I

even wonder how he calculates the change so fast without use of the calculator" (Male parent from Gombe Division).

These statements indicate that children who participate in selling activity are able to develop numeracy skills of counting, addition, and subtraction which they use in their everyday experiences.

Parents in this study also reported that children participate in fetching water at home. Some said that they give their children smaller containers to fetch water and fill the bigger containers and their children are able to identify the capacities of the containers like 20-litre jerrican, 10-litre jerrican, 5-littre jerrican and 3-litre jerrican. Some parents felt that in the process of fetching water, their children actually learn counting and measuring. One parent gave an example that they always agree with her child on how many small jerricans of water he should fetch. She said:

"When my child comes back from school, he fetches water from small jerricans while pouring into the big one. He counts each small jerrican he empties to the bigger one to ensure that he has brought the agreed number of jerricans" (Female Parent from Busukuma Division).

This finding implies that in fetching water the concepts of measuring, capacity and numeracy language such as bigger than, more than, among others are involved.

Parents pointed out that washing as another activity pupils participate in. Some parents noted that there are a number of mathematical concepts involved in the process of washing different items found at home. They cited an example of kitchen utensils where their children are made to sort and wash

them separately like glasses, cups, plates and saucepans. One parent pointed out that washing involved measurement and estimation. She gave an example of the amount of water and soap needed to do the washing has to be estimated and measured. Another parent narrated that in the process of teaching her child to wash clothes, she tells her to separate different colors and wash them separately. She said:

> "I don't allow the house help to wash clothes for my daughter who is in primary three, she does it by herself. I have trained her that the socks, dresses and nickers are washed separately then also not mix colours. She now knows it" (Female Parent from Nansana Division).

This finding indicates that in the process of washing, children learn to categorize different items and to estimate the amount of water required.

Parents reported cooking as another activity pupils participate in. One parent explicitly explained that the cooking process has got different activities in which children engage such as sorting the food, measuring water, salt and other ingredients and also estimating the cooking time. When asked whether she uses this activity to support their children in numeracy learning, she said no but acknowledged to have realized from the interview that cooking provides opportunities that can be used to develop numeracy skills. She added that it does not matter whether a parent has had formal education or not. This finding indicates that parents know that in the cooking process numeracy skills are used but are not aware how it can be used to support children's numeracy learning.

From the FGD with the community elders, the following numeracy related activities in the community were reported.

Elders reported that in their communities, pupils participate in serving food and other edible items at home. Some pointed out that involving children in serving food trained them how to calculate. Others explained that the aspect of numeracy comes in by children ascertaining for example, how many people were supposed to share the food, how many were present and those away, how many plates needed to be prepared and so on. A female member in one of the FGD expressly noted that children's participation in serving food exposes them to a number of skills. She explained:

> "… for example when we are having breakfast, my grandchild always distributes pancakes, bans, cassava whatever is available at that time to all members and equally. I feel this is mathematics, not so!" (Female elder from Gombe Division).

This finding shows that parents give their children different roles which expose them to utilize different numeracy skills but unknowingly.

Community elders also pointed out playing board games as numeracy related activity pupils participate in. They gave examples of games like, draft, ludo, card game, seven stones, among others. One elder noted that those games are numerical in nature because they involve a lot of counting and believed they could be used to develop numeracy skills. He said:

> "I normally see children busy playing board games like Ludo with their mothers and hear them counting and recounting which is a clue that there could be mathematics in playing those games" (Male elder from Nabweru Division).

This statement indicated that probably, it is possible to teach counting to children using games.

Garden work is among the activities expressed by the community elders. They specifically cited digging, planting, weeding and harvesting as the activities children participated in. When asked whether they involved children in these activities with intention of teaching numeracy skills. They replied that children could be learning some numeracy skills, but their major is to prepare them for adulthood. Others said they do it increase manpower to provide enough food for the family. One female elder said much as she involves children for support, in the process they learn numeracy. She said:

> "For me I am old now and becoming weak. My grandchildren have to help me dig and plant the food for us to have enough food in the home. But they also learn measure length and width of the lines if it is maize or cassava. Yah I think they are able to learn mathematics" (Female elder from Busukuma).

4.4 Objective 3: Relationship between Pupils' Participation in Numeracy Related Activities in the Community and their Performance in Numeracy at School

This objective was meant to establish whether any significant relationship existed between pupils' participation in numeracy related activities in the community and their performance in numeracy at school. Collection of data on pupils' participation in numeracy related activities in the community was based on a rating scaled observation tool comprised of eight activities namely, buying groceries, verifying things, selling items, sorting

items, budgeting, serving food, planting seeds and playing board and/or card games. Each activity was given a scale of one to five. Five showed maximum participation in that activity while one was the minimum. From the eight activities the maximum possible total score that could be obtained was 40 while the lowest was eight. The scores of the observation tool were aggregated for each participant to obtain a score on participation in numeracy related activities in the community. While collecting data on pupil's numeracy performance at school, the end of term one exams scores were used. Since schools from the Municipality do uniform exams for end of term, the scores obtained were assumed to be reliable since it is standardized. The highest possible score was one hundred and the lowest possible score was 0.

Using the Descriptive Statistics, pupils' mean scores in numeracy and participation in community numeracy related activities as well as the standard deviation were established for each class as presented in Table 4.7.

Table 4.7:
Showing Mean Scores by Class

Class		Numeracy Score	Participation in community activities
Primary one	Mean	81.68	20.36
	N	28	28
	Std. Deviation	14.415	3.413
Primary two	Mean	52.88	18.62
	N	26	26
	Std. Deviation	24.742	4.759
Primary three	Mean	57.83	17.80
	N	59	59
	Std. Deviation	22.150	3.609
Total	Mean	62.60	18.62
	N	113	113
	Std. Deviation	23.785	3.965

Source: Summary of data from field, 2019

Table 4.7 shows the overall mean score for performance in numeracy is $\overline{X}$=62.6, SD=23.8. The most contribution to this mean score was coming

from primary one pupils and the lowest was coming from primary three pupils. This means that primary one pupils were performing better in numeracy than primary three pupils. Then in terms of participation in community numeracy related activities $\overline{X}$ = 18.6, SD=4.0. Primary one pupils contributed most to this over all mean score, while primary three pupils contributed the least. This means that primary one pupils participate more in community numeracy related activities than any other class.

Pupils' performance mean scores in numeracy and participation in community numeracy related activities were established between the two gender as shown in Table 4.8.

Table 4.8:
Pupils' Numeracy and Participation in Community Activities Scores

Gender		Numeracy Score	Participation in community activities
Female	Mean	66.62	19.79
	N	63	63
	Std. Deviation	22.068	3.552
Male	Mean	57.54	17.14
	N	50	50
	Std. Deviation	25.099	3.995
Total	Mean	62.60	18.62
	N	113	113
	Std. Deviation	23.785	3.965

Source: Summary of data from field, 2019

Table 4.8 shows that the mean score of females performance in numeracy is $\overline{X}$66.6, SD=22.1, while for males is $\overline{X}$=57.5, SD=25.1. This means that girls perform better in numeracy than the boys. The table also shows that for participation in community activities, mean score for females is $\overline{X}$=19.8, SD=3.6, while for males is $\overline{X}$=17.1, SD=4.0. This means that girls participate more in community numeracy related activities than boys.

These scores were plotted in a scatter plot to show whether they show any possible relationship between participation in numeracy related activities and performance in numeracy. Results are shown in Figure 4.2.

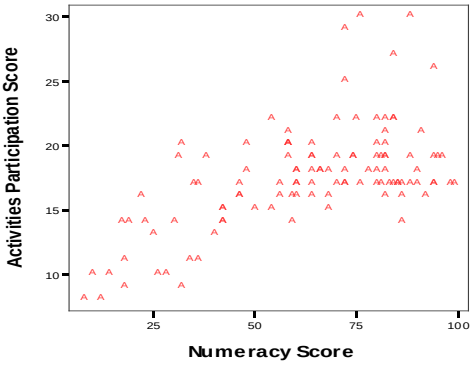

Figure 4.2:
Scatter plot for Participation in community activities and numeracy performance

Figure 4.2 shows a linear line. This means that there is a positive relationship between participation in numeracy related activities in the community and the numeracy performance of pupils. The more pupils participate in activities in the community the better their performance in numeracy at school.

From the scatter plot, the actual relationship was calculated. The following alternate hypothesis was used to test the relationship.

H_1 *There is a significant relationship between pupils' participation in community involvement activities and their performance in numeracy at school at p=.05 level of significance.*

This hypothesis was set to test whether a statistically significant relationship existed between pupils' participation in community involvement activities and their performance in numeracy at school. The results of the test is summarized in Table 4.9.

Table 4.9:
Participation in numeracy related activities in community and performance in numeracy

Correlations

		Numeracy Score	Community numeracy Activity Participation
Numeracy Score	Pearson Correlation	1	.577(**)
	Sig. (2-tailed)		.000
	N	113	113
Community Activity Participation	Pearson Correlation	.577(**)	1
	Sig. (2-tailed)	.000	
	N	113	113

** Correlation is significant at the 0.01 level (2-tailed).

Source: Summary of data from field, 2019

Table 4.9 shows that the relationship between participation in numeracy related activities in community and numeracy is r = .577, P = .000. This means that there is a moderate relationship between pupils' participation in community activities and their performance in numeracy at school. The correlation is positive meaning that the more pupils participate in the community numeracy related activities the more they perform better in numeracy at school. Since the P-value is less than the level of significance, we can say that the correlation is statistically significant as it did not happen by chance. We now accept the hypothesis that proposed that "*There is a statistically significant relationship between pupils' participation in community involvement activities and their performance in numeracy at school.*

The effect of pupils' participation in numeracy related activities in the community on their performance in numeracy is $(.577)^2 = 33.2\%$. This means that participation in activities in the community contributes 33.2% to pupils' numeracy performance at school. The 66.8% is contributed by other factors yet to be established.

Chapter Five

Discussion, Conclusion and Recommendations

5.0 Introduction

This chapter focuses on discussion of results that are presented in chapter four. The discussion is according to the themes that relate to the objectives. The conclusion and recommendations that come from the study findings are presented.

5.1 Discussion

Discussion is presented in line with the objectives. They include; community involvement practices used to support pupils' numeracy skills development; numeracy related activities in the community that pupils participate in to enhance their numeracy skills development; and relationship between pupils' participation in numeracy related activities in the community and their performance in numeracy at school.

5.1.1 Community Involvement Practices Used to Support Pupils' Numeracy Skills Development

Involving children in doing home chores was one of the common practices used by the community to engage their children at home and community. This practice helps those engaged in it to do numeracy in context and in the process, children develop some numeracy skills spontaneously. For example, a child who is given a home chore of serving food will learn to distribute the food in equal portions that brings in the idea of using fractions and division concepts. This supports the finding by LeFevre, Skwarchuk, Smith-Chant, Fast, and Kamawar (2009) who found that children develop

numeracy skills incidentally when their parents involve them in doing real-world tasks.

This study established that sending children to nearby retail shops to buy groceries is another common practice in the community. The process of buying groceries involves children in practical addition, subtraction and multiplication in order to get the right change. This result is consistent with that of LeFevre, et al, (2009) that established that Children's indirect experiences with number, particularly in motivating contexts such as games, and talking about money while going for shopping may be important contributors to their preparation for numeracy experiences in the early grades.

This study also established that encouraging children to share different items is another common practice in the community. In doing this a child ensures that each member gets a piece which exposes him/her to fractions and division concepts which are mathematical.

Involving children in family businesses was another practice established. In doing business, children are exposed to numeracy activities of money, counting, addition, subtraction, division and multiplication. This result supports the research by Marphatia, Edge, Legault, & Archer (2010) which revealed that parents in Masindi, Uganda and Mchinji, Malawi involve their children in small businesses from which children learn mathematics.

Giving child responsibilities was another practice cited by the community. A child can be given money to be used to take care of siblings at home in the absence of parents. This practice trains a child to plan, budget and buy the home necessities as required.

Direct teaching of numeracy related skills to children is another practice communities engage in. Elders physically teach skills as if they are in class. This finding is in line with Hoover-Dempsey et al. (2005), who highlighted that modeling of appropriate school-related skills such as showing the child how to solve a specific type of math problem improved their academic performance.

Saving money culture was also reported among the community practices. This practice introduces children on how to make financial decisions which requires performing a variety of calculations. This finding is similar to Baker, Street and Tomlin (2003) who established that cases where parents expose financial decisions provide the context against which their children come to experience numeracy and financial literacy.

It was also found that communities have put in place provision that could be physical, moral or social to support children in different ways. These provisions ensure that there is conducive environment for learning different numeracy concepts. This finding is in line with other studies that found out that provision of conducive learning environment, appropriate structure, and materials, had a significant positive effect on academic achievement (Hill & Tyson, 2009; Olatoye & Agbatogun, 2009).

This study established that use of resource persons was another community practice that enhances pupils' numeracy skills development. Extra support in numeracy from more knowledgeable people helps children to improve their performance in numeracy. This finding links to that of Erion (2006) that established that tutoring by parents and other family members at home had a positive effect on children's academic achievement. Similarly

Ghazala and Rao (2012) also argued that communities can contribute to improved service delivery and can increase the availability of resources.

The practice of allowing children to play was also established in this study. In doing this, children are allowed to be children, play together and learn from each other. If it is numeracy related games, they will be able to develop different numeracy skills naturally. This finding supports the study by Tudge and Doucet (2004) who established that children's development of mathematical understandings frequently occurs in social settings.

5.1.2 Numeracy Related Activities in the Community that Pupils Participate in to Develop their Numeracy Skills

This study established that counting objects was an activity children participate in. This involves counting money, animals and birds kept at home, other items such as utensils, snacks to be shared, among others. Counting objects exposes children to number values, counting and addition. This finding supports the study by Yıldız, Sasanguie, De Smedt, & Reynvoet (2018), whose results indicated that the children who carried out more home numeracy activities with their parents, such as counting objects or learning simple sums, showed better performance in enumeration and symbolic number line estimation tasks.

This study also identified buying groceries activity that children participated in. Before buying, a child need to know the number of items required, cost per item, total cost, amount of money given and the change if any. This exposes children to the concepts of addition, subtraction, division and multiplication being practiced in context. This supports Victoria State

Government (2018) who observed that shopping helps ground your child's mathematics learning in the real world while also developing their social skills.

Sorting domestic items and foods was also established as another activity in the community which pupils participate in. Parents engage their children in sorting clothes, utensils and food items. In the process, the concept of sets and children are able to understand the concepts of same, different, more than, less than, which are vital to make decisions in life.

This study also established that selling items is a numeracy related activity carried out in the community which pupils participate in. In selling, the concepts of money, counting, number value, addition, subtraction, division and multiplication are applied by children in real-life situations. This provides an opportunity for practice and mastery. This finding is in line with Baker, et.al (2003) who established that cases where parents expose domestic accounting procedures as those relating to business transactions, provide the context against which their children come to experience counting and numeration.

Another activity established by this study was fetching water. Parents send their children with small jerricans to fetch water and fill the bigger ones. In doing this, the child learns the concept of measurement and capacity practically in addition to mathematics language. This finding is similar to LeFevre, et al, (2009) who noted that there are many indirect activities children engage in that support their incidental learning of numeracy.

This study established washing as another numeracy related activity in the community pupils participate. This included washing clothes and kitchen

utensils. After washing the children are made to pack them according to categories such as plates, cups, folks, glasses and spoons. This is a practical lesson for learning the concept of sets. This finding supports Goos, et. al (2007) who stated numerate practice requires contextual knowledge and emphasized that numeracy is context-specific because mathematics is embedded in everyday situations.

This study also found out that cooking is another numeracy related activity in the community pupils participate in. In cooking one needs to know how much food to prepare, the amount of water, salt and other ingredients needed. To do this perfectly, numeracy skills are vital. This is in line with Yıldız, Sasanguie, De Smedt, & Reynvoet (2018) who indicated that the children who carried out more home numeracy activities were able to develop different numeracy skills.

Playing games is another activity in the community children participate in. Such games include board games, football, Ludo and chess. Most of these games are mathematical in nature and help children to practice counting, targeting, addition and subtraction play way method. This is similar to Niklas and Schneider (2014) who established that playing games, such as Ludo with dice predicted kindergartners' composite mathematics score.

This study revealed that garden work is another numeracy related activity in the community pupils participated in. Communities work together with their children in gardens. Garden work involves digging and planting seeds. This is an indirect practical way of learning the concept of area, counting and estimation. This finding is similar to that of Zippert & Rittle-

Johnson (2018) that indicated that involving children in numeracy indirect activities increases their numeracy skills development.

5.1.3 Relationship between Pupils' Participation in Numeracy Related Activities in Community and their Performance in Numeracy at School

In this study, it was established that pupils of primary one were engaged more in community numeracy activities, followed by primary three then primary two. The possible reason for this is that primary one pupils are available at home from lunch time to be engaged while the primary three pupils stay at school up to late. The primary two children are sent for coaching in preparation for primary three.

For the same primary one pupils, the study found that they performed better in numeracy than their counterparts in primary two and primary three. The possible reason for their performance could be related to their participation in community numeracy activities.

In terms of gender female pupils were more engaged in numeracy activities in the community than the males. This can be attributed to socialization process that is common in many African communities where girls are expected to do more than the boys.

In terms of performance in numeracy at school girls outcompeted boys in performance in numeracy. This good performance by the girls may be attributed to their level of participation in numeracy related activities in the community. This result supports the finding that parents who were encouraged to participate with their children in home-learning activities reported improved

percentages of students who were proficient in mathematics from 1 year to the next (Starkey & Klein, 2000).

In general, there was a positive but moderate relationship between pupils' participation in numeracy related activities in the community and their performance in numeracy at school. The finding shows that the more one participates in the activities the better one performs in numeracy.

Whereas there was a common believe that those who are engaged in numeracy related activities would also do better in numeracy, this study found that participation in numeracy related activities in the community only contributed 33.2%. The remaining 66.8% was contributed by any other factors yet to be investigated.

The study revealed that pupils of primary one perform better than the other classes. One possibility is that these being younger, they are exposed more to direct home activities that involved direct number specific skills that parents are well conversant with. This was also noted by LeFevre, et al, (2009) that parents became less frequent in involving in activities involving number skills as grade increased.

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5.2 Conclusion

This study established a number of practices community members engage children in that are mathematical in nature and provide opportunity to teach numeracy to their children. However many of them are not aware that in carrying out these practices children can actually learn numeracy skills. In their minds numeracy is only learned at school not at home or community. In conclusion therefore the community involvement practices used in Nansana Municipal Council can develop children's numeracy skills but community members and parents need to be empowered and sensitized on how to use these practices to support numeracy skills development in their children.

This study also identified many numeracy related activities in the community that pupils participate in at home and community. While boys participated more in buying groceries which involves addition, subtraction, division and multiplication, girls participated mostly in arranging domestic items which involves the concept of sets. It is therefore, presumed that boys could be performing better in calculations while girls are better in sets. This is yet to be confirmed. However, it was generally concluded that the numeracy related activities pupils of Nansana Municipal Council participate in, support their numeracy skills development. However, communities need to be encouraged to link these activities with what children learn at school to help pupils see relevance of school knowledge in the community.

While there was a moderate relationship between pupils' participation in numeracy related activities in the community and their performance in numeracy at school, the effect of participation in numeracy activities is low, the larger proportion is contributed by the other factors that could be the

teacher factor in school, level of support given to a child by siblings and personal interest in learning mathematics. Therefore, this study concluded that pupils' participation in numeracy related activities needs to be supported by other factors for pupils to acquire full development of numeracy skills.

5.3 Recommendations

From the conclusion, the following recommendations are derived.

1. It was established that although parents engage children in different practices that are numerical in nature, they do not use those opportunities to teach children numeracy skills. It is recommended that head teachers in Nansana Municipal Council should use parents' meetings to sensitize the communities how the numeracy related practices they engage in can be used to promote pupils' numeracy skills development.
2. This study identified many numeracy related activities in the community that pupils participate in which involve addition, subtraction, division, multiplication, and sets among others. It is recommended that teachers in Nansana Municipal Council start working with parents to show them how their daily activities have rich mathematics experiences that they can explore to develop their children's numeracy skills.
3. The Mayor of Nansana Municipal Council creates community centres for numeracy at every parish where community members may gather and engage in different numeracy related activities with the intention of developing specific numeracy skills in pupils.
4. This study established that there is a moderate relationship between participation in numeracy activities in the community and pupils' performance in numeracy at school. It is recommended that NCDC which

is mandated with curriculum development compiles numeracy skills to be learnt by children from the curriculum and link them to the numeracy related activities in the community which can develop them to provide a framework for the stakeholders.

5.4 Suggestions for Further Research

1. This study identified a number of community numeracy related activities that can support the development of numeracy skills in pupils, but establishing either the most important activities or the optimal mixture of activities will require further research.
2. This study established that the effect of participation in numeracy activities to pupils' performance in numeracy is low. There is need for further research to find out which other factors could lead to improvement in performance in numeracy at school.
3. This study was conducted in selected government aided primary schools in Nansana Municipal Council and the findings generalized to other parts of the country. There is need for another study to be conducted in other geographical areas that were not the focus of this study to get better picture of community involvement in teaching and numeracy skills development in pupils.

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APPENDICES

APPENDIX I: QUESTIONNAIRE FOR TEACHERS

Dear Teacher,

This study is about how community participation in teaching is used to enhance pupils' numeracy skills development in lower primary classes. It is aimed at helping parents to support their children in the development of numeracy skills.

You have been identified as one of the participants in this study, please I request you to spare some time to answer the following questions. It is meant for academic purposes only and all responses shall be treated with confidentiality.

SECTION A: DEMOGRAPHIC INFORMATION (Tick what is most appropriate)

1. **Age**: 18-25, 26-35, 36-45, 46-55, 56 and above
2. **Gender**: Female Male
3. **Qualification:** Certificate Diploma Degree Others
4. **Class Taught:** Primary one Primary two Primary Three

SECTION B: COMMUNITY INVOLVEMENT PRACTICES AND PUPILS' NUMERACY SKILLS DEVELOPMENT

5. What common things do you see parents do with their children in your class that encourage them to learn numeracy? ……..…….

   ……

6. What things do you see parents do that can discourage their children from learning numeracy?

   ……

SECTION C: NUMERACY RELATED ACTIVITIES IN THE COMMUNITY AND PUPILS NUMERACY SKILLS DEVELOPMENT

7. Do you agree that children do not learn mathematics from school only but also at home?

   Yes No

8. Do you think parents can be able to teach their children numeracy even when they have not gone to school? Yes No

9. What activities in the community do you think can develop pupils' numeracy skills?

   ……

10. How do those activities mentioned above make the child learn numeracy?

    ……

11. What do you think schools benefit when they involve community in teaching numeracy to their children?

    ……..

SECTION D: RELATIONSHIP BETWEEN PUPILS' PARTICIPATION IN NUMERACY RELATED ACTIVITIES IN THE COMMUNITY AND THEIR PERFORMANCE IN NUMERACY AT SCHOOL

12. How do children whose parents are more involved in their children's learning perform in numeracy?

    ……

Thank you for sparing your precious time.

APPENDIX II: INTERVIEW GUIDE FOR PARENTS

Dear Parent,

This study is about community participation in teaching and pupils' numeracy skills development in lower primary classes. It is aimed at helping parents to support their children in the development of numeracy skills.

You have been identified as one of the participants in this study, please I request you to spare some time of answer the following questions. It is meant for academic purposes only and all responses shall be treated with confidentiality.

SECTION A: DEMOGRAPHIC INFORMATION

1. **Age**: 18-25, 26-35, 36-45, 46-55, 56 and above
2. **Education**: Primary, Secondary, Tertiary, University, None
3. **Economic Activity**……
4. **Do you like mathematics?** Yes/No

SECTION B: COMMUNITY INVOLVEMENT PRACTICES AND PUPILS' NUMERACY SKILLS DEVELOPMENT

5. What things do you do with your child that help him/her to learn numeracy?
6. What do you do at home that encourages your child to learn numeracy?
7. What other things have you seen other parents do that you think has helped their children to learn numeracy?
8. What things do you see other parents do that can discourage their children from learning numeracy?

SECTION C: NUMERACY RELATED ACTIVITIES IN THE COMMUNITY AND PUPILS' NUMERACY SKILLS DEVELOPMENT

9. What home chores do you give to your child when s/he comes back from school?
10. From the above activities mention which one do you think can develop numeracy?
11. How do those activities make the child learn numeracy?
12. Which income generating activity do you do?
13. Do you involve your child in doing them also? Yes/No
14. If Yes, which specific activity do you give him/her to do?
15. How do those things help your child to learn numeracy?

SECTION D: RELATIONSHIP BETWEEN PUPILS' PARTICIPATION IN NUMERACY RELATED ACTIVITIES IN THE COMMUNITY AND THEIR NUMERACY SKILLS DEVELOPMENT

16. Do you talk with your child about school work?
17. How do you help your child with numeracy at home?
18. Are you a member of any community association?
19. Which activities are done there that can promote numeracy skills?
20. Do you talk with your child about those activities?

Thank you for sparing your precious time.

APPENDIX III: OBSERVATION CHECKLIST FOR PUPILS

Community activities children engage in that promote numeracy skills development.

Activity	**RATING SCALE**				
	5	**4**	**3**	**2**	**1**
Buying groceries	Buys more items with change	Buy one item with change	Buy more than one item with no change	Buy one item with no change	Goes to pick items with no money
Verifying things	Tells how many they: were, are, and missing.	Tells how many are missing.	Identifies some are missing.	Tells how many they are.	Sees they are there.
Selling items	Sells more than one item to customer and gives change	Sells one item and gives change	Sells more than one item without change	Sells only one item without change	Just sends items to customers
Sorting items	Makes equal groups and counts them	Makes groups of equal numbers	Makes different Groups	Puts in one group	Arranges single items
Budgeting	More than one item with cost	One item with cost	More than one item without cost	More than one item	one items
Serving food	Serves for some people and leaves for others	Serves all people present	Serves one person	Gets enough plates	Just gets plates
Planting seeds	Puts equal number of seeds and does not jump any hole	Puts equal number of seeds but jumps some holes	Does not jump any hole but puts more than required seeds	Jumps some holes	Plants with an adult
Play board games	Very sure and fast	Sure but slow	Plays alone but not sure	Helped by adult	Watches

APPENDIX IV: FOCUS GROUP DISCUSSION GUIDE

Dear Respondents,

We are carrying out a survey on community involvement in teaching and pupils' numeracy skills development. You have been chosen to be part of those persons who have got very important information that will lead to the success of this study. Please be assured that the information you give will be treated as confidential.

SECTION A: COMMUNITY INVOLVEMENT PRACTICES AND PUPILS' NUMERACY SKILLS DEVELOPMENT

1. Do you agree that children do not learn mathematics from school only but also at home?
2. What things have you seen parents do that you think help their children to learn numeracy?

SECTION B: NUMERACY RELATED ACTIVITIES IN THE COMMUNITY AND PUPILS' NUMERACY SKILLS DEVELOPMENT

3. What home chores do you give to your child when s/he comes back from school?
4. From the above activities mention which one do you think can develop numeracy?
5. How do those activities make the child learn numeracy?
6. How do you help your child with numeracy at home?

Thank you for sparing your precious time.

APPENDIX V: DOCUMENTARY ANALYSIS GUIDE

This documentary analysis guide was used by the researcher to obtain pupils' numeracy scores. The main focus of the analysis includes:

- How many sets of numeracy assessment exercises have been conducted this academic term?
- What is the score for each pupil in each set?

APPENDIX VI: PUPILS' SCORES

S.N.	Gender	Numeracy Score	Participation in Community Activity	Class
1	2	98	21	1
2	2	88	20	1
3	2	86	21	1
4	1	95	22	1
5	2	82	18	1
6	1	60	16	1
7	1	86	17	1
8	1	80	18	1
9	1	88	28	1
10	1	84	27	1
11	1	60	20	1
12	2	46	16	1
13	2	42	15	1
14	1	92	24	1
15	1	86	25	1
16	2	94	23	1
17	1	90	19	1
18	2	96	21	1
19	1	81	17	1
20	1	94	17	1
21	2	85	25	1
22	2	82	20	1
23	1	94	18	1
24	2	83	17	1
25	2	81	24	1
26	1	80	21	1
27	1	90	20	1
28	1	64	20	1
29	1	76	20	2
30	2	30	17	2
31	1	18	23	2
32	2	14	20	2
33	1	12	17	2
34	1	8	16	2
35	2	10	15	2
36	1	80	28	2
37	1	64	18	2
38	2	46	13	2
39	1	42	15	2
40	2	32	10	2
41	1	78	24	2

42	2	85	25	2
43	2	82	18	2
44	2	64	15	2
45	2	68	20	2
46	1	72	24	2
47	2	60	15	2
48	1	42	14	2
49	1	72	23	2
50	1	70	23	2
51	1	60	16	2
52	2	70	25	2
53	1	64	20	2
54	2	56	10	2
55	1	54	18	3
56	1	48	16	3
57	2	32	15	3
58	2	48	16	3
59	1	35	20	3
60	2	42	15	3
61	2	17	20	3
62	2	25	16	3
63	2	12	14	3
64	1	19	17	3
65	1	94	21	3
66	1	80	19	3
67	1	72	22	3
68	1	88	18	3
69	1	84	25	3
70	2	84	15	3
71	1	82	21	3
72	2	82	25	3
73	2	58	17	3
74	1	80	21	3
75	2	84	15	3
76	1	58	16	3
77	2	72	18	3
78	1	74	25	3
79	2	72	19	3
80	1	58	20	3
81	1	66	22	3
82	1	70	22	3
83	1	64	20	3
84	2	68	18	3
85	2	60	16	3

86	1	54	15	3
87	2	40	13	3
88	2	64	16	3
89	2	50	15	3
90	2	59	16	3
91	2	56	16	3
92	1	34	15	3
93	2	28	13	3
94	2	26	14	3
95	1	59	21	3
96	1	75	22	3
97	2	82	22	3
98	1	74	21	3
99	1	99	20	3
100	1	76	22	3
101	1	91	27	3
102	1	58	18	3
103	2	36	12	3
104	1	58	15	3
105	1	66	18	3
106	1	68	15	3
107	1	82	18	3
108	1	35	15	3
109	2	36	15	3
110	2	46	13	3
111	2	18	9	3
112	1	22	15	3
113	1	38	17	3

NOTE:

Class: 1 = Primary one, 2: Primary two, 3: Primary three

Gender: 1 Female, 2: Male

APPENDIX VII: PARENTAL CONSENT FORM

PARENTAL PERMISSION FOR CHILDREN PARTICIPATION IN RESEARCH

Title: Community Involvement in Teaching and Pupils Numeracy Skills Development in Lower Primary in Nansana Municipal Council.

Introduction

The purpose of this form is to provide you (as the parent of a prospective research study participant) information that may affect your decision as to whether or not to let your child participate in this research study. The person performing the research will describe the study to you and answer all your questions. Read the information below and ask any questions you might have before deciding whether or not to give your permission for your child to take part. If you decide to let your child be involved in this study, this form will be used to record your permission.

Purpose of the Study

If you agree, your child will be asked to participate in a research study about **Community involvement in teaching their children numeracy through everyday practices and activities**. This study will find out which practices do communities engage in that develop numeracy skills in their children. It will also identify and examine the activities children participate in that support their numeracy learning.

What is my child going to be asked to do?

If you allow your child to participate in this study, the researcher will observe and see the activities he/she participate in at school and also check her/his numeracy scores at school.

Note: Your child may be video recorded.

What are the risks involved in this study?

There are no foreseeable risks to participating in this study.

What are the possible benefits of this study?

Your child will receive no direct benefit from participating in this study; however, parents and community members will learn how to use the everyday practices and activities to support their children develop numeracy skills. this will help children to relate what is learnt from school to what is done in the community.

Does my child have to participate?

No, your child's participation in this study is voluntary. Your child may decline to participate or to withdraw from participation at any time. Withdrawal or refusing to participate will not affect their relationship with his/her teachers or school in anyway. You can agree to allow your child to be in the study now and change your mind later without any penalty.

This research study will take place after school when the child is at home.

What if my child does not want to participate?

In addition to your permission, your child must agree to participate in the study. If your child does not want to participate they will not be included in the study and there will be no penalty. If your child initially agrees to be in the study they can change their mind later without any penalty.

Will there be any compensation?

Neither you nor your child will receive any type of payment participating in this study.

How will your child's privacy and confidentiality be protected if s/he participates in this research study?

Your child's privacy and the confidentiality of his/her data will be protected by not inserting his/her name anywhere. In case of any video recordings they will be stored securely and only the researcher will have access to the recordings. Recordings will be kept for four months and then erased.

Whom to contact with questions about the study?

Prior, during or after your participation you can contact the researcher NANDERA MIRIA at 0753570585or send an email to mirianander@gmail.com for any questions or if you feel that you have been harmed. This study has been reviewed and approved by Kyambogo University Faculty Graduate Board, see letter from Kyambogo Universty attached.

Whom to contact with questions concerning your rights as a research participant?

For questions about your rights or any dissatisfaction with any part of this study, you can contact, Kyambogo University, Faculty Graduate Board or Early Childhood Education Department Graduate Board, at P.O. Box 1, Kyambogo University.

Signature

You are making a decision about allowing your child to participate in this study. Your signature below indicates that you have read the information provided above and have decided to allow them to participate in the study. If you later decide that you wish to withdraw your permission for your child to participate in the study you may discontinue his or her participation at any time. You will be given a copy of this document.

_____ My child MAY be **video** recorded.

_____ My child MAY NOT be **video** recorded.

_____
Printed Name of Child

_____ _____
Signature of Parent(s) or Legal Guardian Date

_____ _____
Signature of Investigator Date

APPENDIX VIII: CHILD ASSENT FORM

CHILD ASSENT FORM ((age 7-12)

I am MIRIA NANDERA from Kyambogo University. I am doing a study on how parent or other adults in the community can help you to learn numeracy through use of practices and activities engaged in the community. We are asking you to take part in the research study because your teacher recommended you to participate in this study.

For this research, I will observe what activities you participate in at home. I will keep all your answers private, and will not show them to anybody else. Only people from Kyambogo University working on the study will see them.

I don't think that any problems will happen to you as part of this study.

This study will help you and other children in lower primary to learn more numeracy skills.

You should know that:

- You do not have to be in this study if you do not want to. You won't get into any trouble with anybody whether your teacher or the school if you say no.
- You may stop being in the study at any time.
- Your parent(s)/guardian(s) were asked if it is OK for you to be in this study. Even if they say it's OK, it is still your choice whether or not to take part.
- You can ask any questions you have, now or later. If you think of a question later, you or your parents can contact me on Telephone number 0753570585.

Sign this form only if you:

- have understood what you will be doing for this study,
- have had all your questions answered,
- have talked to your parent(s)/legal guardian about this study, and
- agree to take part in this research

_____

Your Signature Printed Name Date

_____

Name of Parent(s) or Legal Guardian(s)

_____

Researcher explaining study

Signature Printed Name Date

APPENDIX IX: LETTER OF INTRODUCTION