LEARNER CENTERED ACTIVITIES AND MATHEMATICS COMPETENCE AMONG CHILDREN IN PUBLIC PRESCHOOLS IN MUTHA ZONE, KITUI COUNTY, KENYA

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DECLARATION

This report is my original work and has not been presented for any academic award in any other university

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DEDICATION

I dedicate this study to my dear wife Lilian Salome and our children David, Carol, Benard, Charles, Ruth, Agnes, Jack, James and Rose for their encouragement during the course of my studies. May God bless you all.

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ABBREVIATION AND ACRONYMS

CFS	**:**	Child Friendly School
ECD	**:**	Early Childhood Development
ECDE	**:**	Early Childhood Development and Education
ECE	**:**	Early Childhood Education
EFA	**:**	Education For All
GOK	**:**	Government of Kenya
KICD	**:**	Kenya Institute of Curriculum Development
MOE	**:**	Ministry of Education
MOEST	**:**	Ministry of Education Science and Technology
NACECE	**:**	National Center for Early Childhood Education
NACOSTI	**:**	National Commission of Science Technology and Innovation
REMA	**:**	Research based Learner centered activities and mathematics Assessment
SPSS	**:**	Statistical Package for Social Science

OPERATIONAL DEFINITIONS OF TERMS

Aids: Materials used as learning resources.

Arranging block: Matching or putting together two objects or blocks of the same color, size, appearance or shape intending to use them together in one-to-one correspondence.

Arranging blocks: To put blocks in a particular order like size, shape or color.

Competence: The ability to perform Learner centered activities and mathematics in the right way.

Leaner centered activities: A teaching methodology whereby the learner is involved in the teaching and learning process by doing some activities.

Learner Skipping: To jump over rope that one or two other people swing.

Learning: The process of learners acquiring knowledge on mathematics.

Molding: To shape or form by using a mold such as clay or wax to make a soft substance into a particular shape.

Performance: Ability portrayed by a learner in doing the Learner centered activities and mathematics.

Pre-school learner: Learner of between the ages of three and five or seven prior to the commencement of compulsory basic education attending pre-school classes.

ABSTRACT

Learner centered activities and mathematics have been found to be very poorly performed when compared to other activity areas such as language competence, outdoor and creative arts competence. This has caused lot of worry and anxiety among curriculum implementers and parents; hence, the purpose of the study was to establish the learners centered activities on developing mathematics competence among pre- school learners in Mutha Zone, Mutomo Sub County. The study was guided by the following objectives ; to establish the molding numbers on developing mathematics competence among preschool learners, to determine the arranging blocks in order of sizes on developing mathematics competence among pre-school learners, to examine pairing objects with correct number flash card on developing mathematics competence among preschool learners and establish the learners skipping as they count on developing mathematics competence among pre-school learners in Mutha Zone , Kitui County. The target population was comprised of 60 pre-school head teachers in Mutha Zone, 60 pre- school teachers and 450 learners. A sample of 18 head teachers, 18 pre-school teachers and 150 pre-school learners participated in the study. This was done through simple random sampling procedure where each respondent had equal chances of being selected for the study. Data were collected through the use of questionnaires and observation checklist. Before data collection, the researcher secured an introductory letter from the Board of Post graduate Studies, South Eastern Kenya University to act as an identity and obtain a research permit from the National Commission for Science, Technology and Innovation. Data analysis was done using the SPSS software version 25. Data were then cross-examined to determine their accuracy, and results presented in frequencies (f) and percentage (%) obtained from the output. The findings of the study were; there is a statistically significant association between molding numbers and Learner centered activities and mathematics competence among pre-school learner ($\chi^2_{(1,4)} = 41.429$, $p = .000$), there is a strong positive relationship r (15) = 0.664, $p<0.05$ between arranging blocks in order of size and development of Learner centered activities and mathematics competence among pre-school learners, there is a moderate strong positive relationship r (15) = 0.546, $p<0.05$ between pairing objects with correct numbers flash card and developing Learner centered activities and mathematics competence among pre-school and . This tells us that there is a statistically significant association between rope skipping and Learner centered activities and mathematics competence among preschool learner ($\chi^2_{(1,4)} = 25.221$, $p = .000$). These results were also supported by the interview schedule and observation checklist. The recommendations of the study were; the Ministry of Education must sensitize all the pres-school teachers to teach Learner centered activities and mathematics using both indoor and outdoor activities and supervise learners as they perform these activities, the schools should provide plasticine to their learners since it was established that most schools were using clay which was making the learners to be dirty. The parents can also be encouraged by head teachers to buy plasticine for the learners so that they can also continue molding at home, the teachers should involve the learners in variety of activities which enhance learning and the learners should be encouraged to continue doing the various activities while at home. The study concluded that; Molding, arranging blocks in order of sizes, pairing objects with correct number flash card and skipping as they count helps in developing Learner centered activities and mathematics competence among pre-school learners.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the study

In early childhood education, Learner centered activities and mathematics are not simply "a static network of terms, rules and procedures that are conveyed by teachers and absorbed by children for recall upon demand" (Scadamalia, 2006). Learner centered activities and mathematics is a way of thinking about relationships, quantity and pattern via the processes of modeling, inference, analysis, symbolism and abstraction (Mwangi, 2009). Learning Learner centered activities and mathematics is understood as a constructive process of conceptual growth, often involving the reorganization of concepts and growth of general cognitive abilities, such as problem solving and met cognitive processes.

In their daily activities children develop numeracy, reasoning, thinking skills and problem-solving through the learning and application of Learner centered activities and mathematics. We also believe that Learner centered activities and mathematics is a subject of enjoyment and excitement offering the children opportunities for creative work and moments of enlightenment and joy (Scadamalia, 2006). Learner centered activities and mathematics ideas are in children's play and everyday experiences. Young children develop some Learner centered activities and mathematics concepts through self-guided discoveries. Adult support is essential to maximize learning (Engle, 2006). In United Kingdom learners use various items like; bicycles, swings and clay among others. The other activities done by kids include; skipping ropes, hoping, balancing and playing footballs (Zins, 2004).

In South Africa the pre-school learners are taught Learner centered activities and mathematics skills through practical are which include molding number. Through this the pre-school learners begin to develop an understanding of shapes, space and number. This helps them to gain confidence in their ability to control their own learning and become familiar with all the aspects of Learner centered activities and mathematics (Smith, 2002).

In Uganda the preschool children develop the main skills for Learner centered activities and mathematics by learning how to pair and match objects. This is therefore an important part of developing early Learner centered activities and mathematics skills because these skills help preschool learners identify and describe objects thus developing interest in Learner centered activities and mathematics (Godfrey, 2006).

In Malawi the level of numeracy in most counties is very low although the application of Learner centered activities and mathematics in various fields like science, economics and others, cuts across all areas of human knowledge. Despite these wide applicability and importance of Learner centered activities and mathematics many pupils are still not finding their feet in the subject as a result of the many challenges they still encounter in the subject.

Early childhood activities should be practical with plenty of manipulative such as models that include stones, blocks, bottle tops, and flash cards among others (Mwangi, 2010). These activities should enable children to expand their understanding of number, shape, size and patterns as they have a meaning in the world around them. Models are three dimensional simplified representation of a real object. When used in the teaching of Learner centered activities and mathematics, being three dimensional models give a feeling of substance and depth of the real object and can be manipulated by children thus motivating and stimulating them in the teaching and learning process. Other activities like rope skipping also promote counting knowledge of children during classroom instruction of Learner centered activities and mathematics thus making the concepts and special features being explained easy to understand.

The major aspects taught in preschool include: arranging blocks and pairing objects that involves children picking objects which look the same in one way or the other in a given group comprising different types of objects. This is aimed at developing in the child skills of discriminating and estimating sizes, Learner centered activities and mathematics vocabulary and reasoning and thinking logical thinking. In this case models such as wooden blocks of different shapes and sizes, paper cut outs of different shapes, will be

the most appropriate teaching resource because it gives the child an opportunity to differentiate objects practically. Therefore, a wider range of materials must be provided in Pre-school to enable the children to engage in various learning activities. This should be joint effort involving the teacher, children and the local community especially parents. (Kenya Pre-school Teachers Activities Guide Series Book 3, 2006).

The Curriculum Support Officer, Mr Ndonyi (2017) report further indicates that many teachers have certificate level qualification in Early Childhood Development Education, with a few who have pursued Diplomas in the same field, since many teachers have the needed methodologies and activities for ECDE. However, there is still an alarming rate of learners starting Grade One, without adequate skills of tackling Learner centered activities and mathematics problems, as compared to other subject areas.

According to the Curriculum Support Officer, Mr. Ndonyi (2017) many ECDE centers in Mutha Zone lack adequate teaching materials due to poverty levels, ignorance and lack of know how among teachers making or acquiring the materials. Again lack of Government active involvement in ECDE learning has attributed to inadequate acquisition of skills. Due to scarcity of resources in public ECDE centers and their unavailability, caused by mismanagement of funds, poor monitoring, poor maintenance and equipping of schools, compounded with inadequate materials like textbooks, chalks, teaching and learning equipment & materials, is a major setback in Learner centered activities and mathematics performance in many schools. Parents in the home environment also play a major role in offering education support for children. However, a big population of parents have little know how on Learner centered activities and mathematics and are unlikely to help their children at home.

Due to teachers' dictation, a data collection in the Zonal Education office (2017), ECDE schools' performance in the previous years, indicate that Mutha Zone has been performing poorly in Learner centered activities and mathematics. When compared to other activity areas such as language competence, physical/outdoor competence and Creative Art competence, Learner centered activities and mathematics Competence

among pre-school learners has been experiencing poor performance. As a result, many people are worried and this has led to the investigation of if learners centered activities have any influence on mathematics competence.

1.2 Statement of the Problem

In child classroom activities, the national ECD curriculum contains sufficient information for correct pedagogy (The ECDE Syllabus-Kenya, 2000). It emphasizes on child classroom interaction and holistic development. This approach tends to suffocate learning (Gichuba, 2009). The teacher dictates the choice of the content, the methodology, activities to be carried out and the learning resources without involvement of the learner.

In the consecutive, three years, Mutha Zone has been registering a consistent deteriorating in Learner centered activities and mathematics competence in its preschools. When compared to other activity areas such as language competencies, physical/outdoor competencies and creative art competencies, Learner centered activities and mathematics competency has been very poorly performed in most Preschools and need to improve. The poor results have raised concerns to very many stakeholders in the sub county. That is why the researcher was prompted to carry out a study to find out whether learner centered activities have influence on mathematics competency among pre-school learners.

1.3 General Objective of the Study

To investigate the influence of learner centered activities on mathematics competence among children in public pre-schools in Mutha Zone, Kitui County-Kenya.

1.3.1 Specific Objectives

The study was guided by the following specific objectives:

i. To establish the influence of molding numbers on developing mathematics competence among children in public pre-schools in Mutha Zone, Kitui County, Kenya.

ii. To determine the influence of arranging blocks in order of sizes on developing mathematics competence among children in public pre-schools in Mutha Zone, Kitui County, Kenya.

iii. To examine the influence of pairing objects with correct number flash card on developing mathematics competence among children in public pre-schools in Mutha Zone, Kitui County, Kenya.

iv. To establish the influence of learners skipping as they count on developing mathematics competence among children in public pre-schools in Mutha Zone, kitui County, Kenya.

1.4 Research Hypotheses

This study was guided by the following hypothesis:

H_{01}: There is no statistically significant association between molding numbers and development of mathematics competence among children in public pre-schools in Mutha Zone, kitui County, Kenya.

H_{02}: There is no statistically significant association between arranging blocks in order of size and development of mathematics competence among children in public pre-schools in Mutha Zone, kitui County, Kenya.

H_{03}: There is no statistically significant association between pairing objects with correct numbers flash card and developing mathematics competence among children in public pre-schools in Mutha Zone, kitui County, Kenya.

H_{04}: There is no statistically significant association between learners skipping as they count and development of mathematics competence among children in public pre-schools in Mutha Zone, kitui County, Kenya.

1.5 Significance

The results of this study are hoped to be important to teachers because it may enable them acquire a deep and thorough understanding of how the learner centered activities influence the development of mathematics competence. The findings are hoped to help teachers learn how to keep learners busy, happy and relaxed as they make their own knowledge. The findings may also be significant to Early Childhood Education field

officer because it may facilitate proper decision making on how to guide ECDE teachers in leaner-centered approach when teaching Learner centered activities and mathematics. The findings may motivate the policy makers on the need to formulate policies on quality early childhood programs that help leaner reach key developmental milestones and close learning gaps as well as seeing the need to formulate policies on procurement of teaching/learning materials and motivation of teachers.

1.6 Limitations of the Study

One of the limitations of this study was congestion in the school time table which could not allow enough time to desired activities. To overcome this limitation, the researcher coordinated with respondents and the school administration to create time outside the normal time table. Another limitation encountered was that, some school administrators were reluctant to provide full information on their program for fear of victimization. This was limitation was overcome by creating rapport with the administrators and assuring them of their confidentiality. Another challenge to this study was lack of adequate Mathematical activities in some schools. To overcome this, the researcher had to make prior arrangement with the teachers on the activities to be observed.

1.7 Assumptions of the Study

The study assumed that the learner centered, the learning occurs when learners are actively involved in a process of learning and knowledge construction as opposed to passively receiving information. The study also assumed that leaner centered activities such as molding arranging blocks, pairing and skipping while counting have an influence on developing Learner centered activities and mathematics competence to pre-school learners. The study assumed that, the learner learns through discovery, involvement of varied activities where the pre-school teacher is directed to guide the learner through questions and activities to discover, discuss and appreciate new knowledge.

1.8 Organization of the study

The report is organized into six chapters where the proposal was organized into three chapters. Chapter one highlights the background of the study, objectives of the study,

research questions, significance of the study, limitation of the study, delimitations of the study, assumptions of the study, definitions of the significant terms, organization of the study. Chapter two is the literature review which also discusses the summary of literature review, theoretical framework, and conceptual framework. Chapter three is on methodology and it highlights research design, target population, sampling techniques and sample size, research instruments, validity of research instruments, reliability of research instructions, data collection procedures, data analysis techniques and considerations. Chapter four presents data analysis and results while chapter five presents discussion of the findings. Chapter six presents conclusions and recommendations of the study.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This section presented literature on learners centered activities and their influence on developing Learner centered activities and mathematics competence which include counting, numbers recognition, number value and ordering. It also presented the theoretical and conceptual framework and relate it with the current study. The section also presented review of literature in developing mathematics competence.

2.1.1 Developing Learner centered activities and mathematics Competences

Learner centered activities and mathematics is a basic tool in the development of science and technology, commerce, industry and hence the economic development of a modern society. There has been an interest in the development of desirable attitudes towards Learner centered activities and mathematics and improved performance. In the current 21st century, individuals have to deal with overwhelming information generated from computers and calculators to that of mental estimations of daily purchases and it is imperative that students become proficient in Learner centered activities and mathematics. Not only must learners deal with a wide range of operational skills, such as computing decimals, they must also understand underlying numerical concepts in order to succeed in a variety of day-to-day commercial and work place situations. However, attitudes towards Learner centered activities and mathematics and associated anxiety have been known to affect students with diverse socio-economic backgrounds. A number of studies have been carried out in various domains in the effort for the search for solutions to the problems facing Learner centered activities and mathematics as a crucial and important subject.

2.2 Molding Numbers and Developing mathematics Competence

Pre-school teaching materials must be available in pre-school most of the days to enhance learning of Learner centered activities and mathematics and other subjects. These include housekeeping materials, puppets, puzzles books science materials and trucks.

In Israel, the Ministry of Education employ preschool supervisors, construct class rooms and equips classrooms with a variety of teaching materials.

Learners need many opportunities to learn the words for numbers to count things and learn to read and write numbers. A study carried by Boardman (2006) in Oklahoma, US concludes that children develop their understanding of problem solving, reasoning and numeracy in a broad range of contexts in which they can explore, enjoy, learn, practice and talk about. Hence providing them with opportunities and materials like plasticine and clay will enable them develop Learner centered activities and mathematics competence through playing with clay and plasticine, as they mould different numbers and shapes. In Boardman's study two groups of preschool learners were separated, where one group received a treatment of molding materials such as plasticine and clay, while the other group only received direct instruction from the teacher, and it was only the teacher who handled the plasticine and demonstrated the activity. The group called group one, thoroughly interacted with the material and was given a large block of time to mould different numbers and shapes. Later, the study concluded that those learners who interacted more in molding activities were able to solve problems involving shapes and number recognition faster than their counterparts who did not receive moulding materials, hence showing that children need to hear, see, touch, manipulate and practice things a lot in order to learn them. Cass (1990) conducted a research with 400 preschool teachers in London on their role in schools to provide the child with a live day where he can be living learning and growing all the time. From the preschool teachers' responses, they all agreed that the children benefit, greatly from the active methods found in the child centered teaching methods. Teachers responded that children have the opportunity to develop at their own rate, gain confidence independence and prepared for all round development.

Smith (2002) in his study done in Kwa Zulu Natal University in south Africa on skills for Learner centered activities and mathematics competency in pre-school learners indicates that, through moulding number, pre-school-learners begin to develop an understanding of shapes, space and number. They also gain confidence in their ability to control their own

learning and becoming familiar with numbers with the help of the learners understanding all the aspects of Learner centered activities and mathematics.

A study carried in Meru South by Waigwa (2012) states that molding numbers shapes with clay and plasticine by early learners helps in enhancing their memory. They are able to remember these numbers long afterwards, and can identify and pick a particular number from a group. According to the Handbook by Kenya Institute of education (2008), learner needs many activities in classification skills before they can count (Kenya Institute of Education, 2008). However, from early age, learner may count without understanding and without keeping the number sequence. This is rote counting Kenya Institute of Education handbook (2008) encourages teachers to provide plenty of activities and materials to help learner to learn how to count in sequence and provide the foundation for counting with understanding. When doing so, the learners may be asked to jump, skip, clap and mold numbers (Yea, 2008).

Although molding is an activity that enhances learners' competence in Learner centered activities and mathematics, the availability of the materials used in molding which include plasticine and clay is questionable. Yeap (2008) found out that most of the schools abroad do not have difficulties in acquiring palsticine and also found out that many teachers were well trained on how to teach using it. According to the Curriculum Support Officer's report, Mr. Ndonyi (2017) shows that many of our schools here in Mutha Zone due to economic challenges do not buy plasticine hence use clay as alternative, teachers cite insecurity and inadequate time as the factor hindering acquisition of clay for molding, and hence the study sought to fill this gap by finding out the possible solution to these challenges.

2.3 Block arranging Activities and Developing mathematics Competence

Lidsay (2013) in her study carried in the United Kingdom, argues that when young children remove neatly stacked and shelved blocks and begin to build, the block often engage children's creativity, captivity and curiosity, as they learn Learner centered activities and mathematics naturally. Heather (2009) notes that experiences gained

through life, education and work, plays a central role in the process of learning and this perspective of learning is called experiential learning or learning by doing. The method also enhances psychomotor skills, helps pupils distinguish Learner centered activities and mathematics relationships in objects and concretizes Learner centered activities and mathematics concepts asserts Githua (2002).

The study in conformity with Heather (2009) and Githua (2002) observed that the method improves psychomotor skills and assists preschool children to discern Learner centered activities and mathematics associations in items and concretizes the concepts. The study also concurred with Njoroge (2004) observing that learning by doing elevates children's level of recall and relation of Learner centered activities and mathematics contents in long term memory. The study observed that the method was having an edge over non interactive methods in stimulating interest, and the response of the learners revealed that the method creates chances for deeper understanding as they involve the senses of touch, feel, smell, hearing, and sight in stage-managing objects. It is revealed that the learners taught by interactive methods of learning performed better than those taught by other methods.

Godfrey (2006) in his study in Kampala Uganda on developing main skills for Learner centered activities and mathematics observes that teaching young children how to pair and match objects in an important part of developing early Learner centered activities and mathematics skills because these skills help preschool learners identify and describe objects.

As learner engage in orderings activities, they are helped to acquire a vocabulary of comparative words such as "Longer than, shorter than, order than and taller than" (Wambiri, 2005). National centre for early childhood Education (2008) argues that ordering helps learners to realize later that number are always put in order of sequence.

According to NACECE, (2008) teachers should observe learners very closely as they carry out activities since this helps the teacher to be able to assist and encourage those

who need help thus helping them to acquire the concept faster. However, the block arranging activity requires allocation of a lot of time, enough for the teachers to closely observe the learners one by one as they undertake the ordering and arranging activities. The early year framework (2008), argued that the time allocated for the ECDE Activities is not adequate to allow extra time for more ordering, hence this study sought to fill the gap in finding out how the ordering activity can be successfully taught in our preschools.

2.4 Pairing Objects and Developing mathematics Competence

According to Brooks and Atkins (2002), an aspect of school management that is generally overlooked is the physical facilities maintenance. Brooks and Atkins (2002) noted that school managers and teachers constantly use play facilities but ignored facilities maintenance. Repairs take place only when problems arise. According to Betsy (2004), the administrator should put in place guidelines and rules to be followed by both teachers and children on use of play materials. Teachers need to facilitate play by working with children to develop rules for safe indoor and outdoor play. No matter how careful the child, teacher and administrators are to follow rules, sometimes children are bound to get hurt. According to Safety Standards Manual for Schools in Kenya (SMSK, 2008), adult supervision can help prevent injuries by ensuring children safely use the play materials and engage in safe play. The playground should be designed in a way that from whichever position the children and adults are where they can clearly see each other while playing. This can help reduce injuries or accidents that are bound to happen during play. The playground should be free from stagnant water, sharp objects and stones to allow relaxed movement of children during play. For children to reach their potential, they should feel comfortable in a safe context of the world around them (Maslow, 1943). Safety measures will ensure effective use and manipulation of play materials that will enhance development of fine and gross motor skills hence the development of writing skills in language.

Weiss (1994) asserts that number value is the quantity of any number for example, four means -Four objects, five- means five objects. Even though learners can do rote counting in a sequence, they do not often know the value of the number they count. The concept of

number value is very important because it is the foundation of such operations in Learner centered activities and mathematics as addition, subtraction, division and multiplication. The teacher should therefore provide appropriate materials and activities which will help learners to acquire the concept of number value n properly (NACECE, 2008).

An intuitive sense of number begins at a very early age. Learners as young as two years of age can confidently identify one, two or three objects they can actually count with understanding (Gelman&Gellistel, 1978). Piaget (1983) called this ability to instantaneously recognize the number of objects in a small group subsidizing. A group of learners were called forward to identify the number of object in each pair, within a specific period of time. Eighty percent of the Children were able to identify and name the numbers less than five faster that the number starting from six and above. Those who has often interacted with counters in counting activities easily recognized the amount of paired objects as compared to those who never used counter in counting activities Gichuba (2009). Lipton &Sperke (2003), In their study on early learner in Canada, established that classifying involves finding things that are the same, a like and grouping them by specific traits.

A report given by MOE in 1999 in Malawi indicated that application of Learner centered activities and mathematics in various fields like science, economics and others, cuts across all areas of human knowledge. Despite these wide applicability and importance of Learner centered activities and mathematics many pupils are still not finding their feet in the subject as a result of the many challenges they still encounter in the subject.

Schaefer, Stephanie and Cohen (2000) asserts that much of what pre-school-learner know about number is bound up in their developing understanding and mastery of counting. Counting a set of objects is a complex task involving thinking, perception and movement, with much of its complexity obscured by familiarity. Consider what you need to do to count a set of objects. The items to be counted must be identified and distinguished from items not to be counted, as well as from those that have already been counted. However, the report by the zonal Curriculum Support officer Mr. Ndonyi (2017) in Mutha Zone

indicates that teachers tend not to be familiar with these teaching strategies that expose the learner to thorough objects pairing activities, hence this study aimed at to investigating ways in which theses teachers can be helped to acquire these skills so that they may be able to assist the learners.

2.5 Learners Skipping Activities and Developing mathematics Competence

Learner centered activities and mathematics teachers use different discourse patterns in presentation of their work. Yavoz (1991) carried out a study to investigate the effects of different teaching methods on immediate and retained attitude towards Learner centered activities and mathematics and the topic of Learner centered activities and mathematics achievement level of tenth grade students. The research was conducted on 120 tenth grade students and the topic selected was areas of polygonal regions. Quasi experiment design was employed and yet purposely sampling was used to select the 120 students. The study did not have a control group but gave treatment to all the sampled students. The data was analyzed by analysis of variance, two- way classification. The results of the study revealed that the interest (attitude) level of students taught by discovery method showed significantly higher attitudes towards Learner centered activities and mathematics than the students taught by lecture method. However, the researcher didn't say how he controlled the other extraneous variables like high achievement in the Learner centered activities and mathematics test scores of the students, private coaching and hence validity of the results is questionable.

Traditional instructional practices that center on teacher dominated pedagogy predominates our schools (Changeiywo, 2001). The author observes that learning activities in most secondary schools' center on the textbook and past examination papers. Linder (2000) argues that student's perceptions of Learner centered activities and mathematics may be affected negatively by the way the subject is presented. The author observes that this applies to all other subjects. Research on teaching behavior indicates that there are teaching methods that influence student's attitude more positively than others.

Helt (1991) in his study carried out in the United States of America on the relationship between Learner centered activities and mathematics and cognitive growth concluded that, in order to build Learner centered activities and mathematics readiness skills, preschool learner should be involved in a wide variety of activities aimed at developing number recognition sequence and one to one correspondence. Hoff (2013) in his study on Finland children in pre-school in Finlad cites that some of the skills like rote counting are perfected by children when they are involved in play activities like skipping ropes as they count number and in this way, they were able to remember these numbers for a long time. Smith further found out that learners who played skipping games way before they joined preschool were able to count easily in their preschool number recognition.

A study carried by National Centre for Early Childhood Education (2008) in Kenya, asserts that to help learner to recognize numbers easily, the teachers were also advised to use as many activities and materials as possible in order to ensure that all the learners develop the concept (NACECE), 2008). It is important that the learner is able to recognize the numbers at a time. Most learners learn best by doing. For this reason, early childhood education teachers see that the learner engage in hand- on –experience and other interactive activities. Recognizing the importance of play, teachers guide the learner to help them from learner –centered activities.

The teacher also provides the learner with opportunities to observe, question and investigate (Gottfredson, 2009). In symbolic knowledge, learners are able to use abstract symbols to represent objects relations or operations in problem solving process. The child uses numerals rather than the objects to experience Learner centered activities and mathematics ideas or to solve problems.

Many of the earlier studies in this area of Learner centered activities and mathematics competence have been done in western countries and no single study has been carried in Kenya, more so in Mutha zone to establish how teacher and learner activities like skipping while counting enhance learning and how the challenges met can be overcome, hence the researcher identified this gap.

2.6 Summary of the Literature Review

Learner centered activities and mathematics learning begins from birth as learners explore the world around them. As they develop, they are supported in their learning by the people and the environment around them. However, due to the rigidity of the current 8-4-4 and early childhood education curriculum where most concentration and concern is on the syllabus coverage, many children are not getting enough opportunity to develop their full potential in Learner centered activities and mathematics. However, most of the teachers are not very familiar with the skills and activities that pre-scholars need to be involved in, since there are only small number of teachers who have trained in certificate and diploma course.

According to the Curriculum Support Officer's report (2017) materials which include plasticine and clay for molding and modeling are not readily available in most of the Public preschools in Mutha zone because some like plasticine can only be bought in the shops, hence unaffordable to most parents. However, clay is cheaper to get, but many teachers are not willing to engage their pupils to engage with it for fear of soiling their clothes, or even worse, an order from parents that they don't make their children getting dirty. Much time has been allocated for class activities and syllabus coverage, where else limited time is allocated to engage learners in exhaustive hands on activities, hence the course for incompetence in Learner centered activities and mathematics.

2.7 Theoretical Framework

This study was guided by the constructivist theory by (Bruner & Vygotsky, 1980). The theory is based on observation and scientific study about how people learn. It's says that people construct their own understanding and knowledge of the World, through experiencing things and reflecting on those experience. Learning is a constructive process in which the learner is building an internal illustration of knowledge and a personal interpretation of experience. This constructivist theory by Brunner and Vygotsky, (1980) is continually open to modification, its structure and linkages forming the ground to which are generated through play from infancy to adulthood which are necessary for learning in all subjects including Learner centered activities and mathematics.

Constructivist learning theory says that all knowledge is constructed form a base of prior knowledge. This theory was adopted in this study because constructivist believe that learner learn well when they are actively involved in the learning activities. They need a conducive environment where the teacher facilitates a process of learning in which learners are encouraged to be responsible and autonomous.

In learner centered activities, teachers support learning by providing activities and materials that find engaging by facilitating learning, supplying a developmentally appropriate environment and interesting materials and adequate time to explore play and interact. The national ECD curriculum in Kenya contains sufficient information for correct pedagogy (The ECD syllabus, 2000). This curriculum emphasizes on learner centered interaction and holistic development. Providing the learners with the right materials and creating quality time for the learner to interact with these materials is one sure way of developing these skills. Again, the teacher and the parents play a very focal point to guide during these activities by showing how, giving instruction on activities to be engaged in, and encouraging and correcting learners where necessary is very important. Since Bruner and Vygosky (1980) argues that learners construct knowledge through experiences, it is very advisable to provide learners with as many experience as possible and to make these activities learner centered by varying them and guiding facilities and providing materials for activities like, pairing, skipping, sorting and molding, in order to develop Learner centered activities and mathematics efficiently.

2.8 Conceptual Framework

Independent Variables

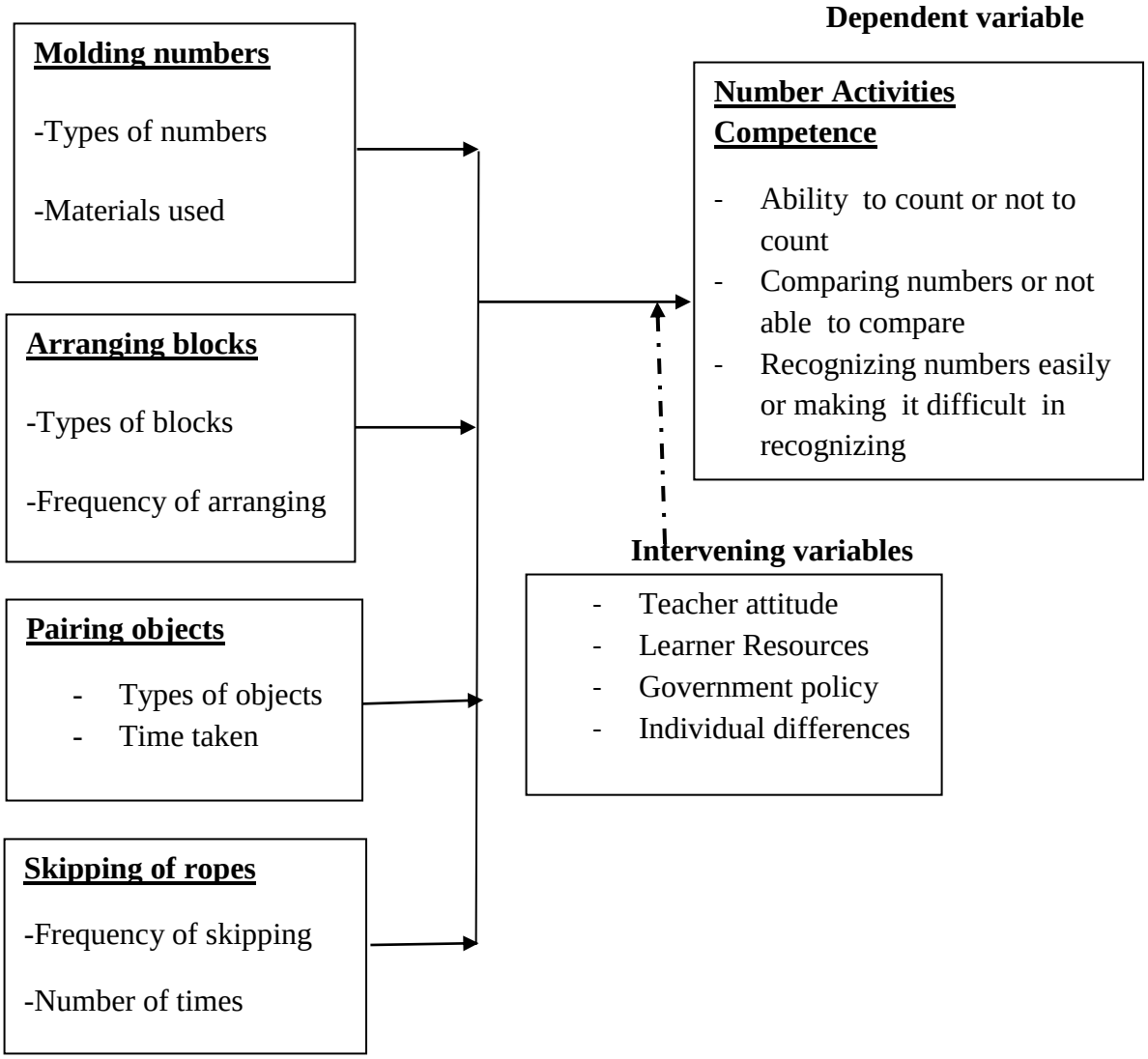

Figure 2.1: Conceptual framework

Figure 2.1 above shows the input and the process involved in developing Learner centered activities and mathematics competence. The independent variables are; Molding numbers, arranging blocks, pairing objects with correct number flash cards and learners skipping as they count. When learners are fully involved and engaged into these activities and with reduced interference of the intervening variables which include teacher attitude , learner resources , Government policies and individual differences , then the learns was able to impart or develop high Learner centered activities and mathematics competence more learning resources need to be provided to enhance learning development to pre-school learners and arouse their curiosity , happiness and interest in the learning process at large

CHAPTER THREE

3.0 METHODOLOGY

3.1 Introduction

This chapter discussed the research design, target population, sampling techniques and sample size, research instruments, validity of research instruments, reliability of instruments, data collecting procedures, data analysis techniques and ethical considerations.

3.2 Research Design

The study employed a descriptive survey design. Descriptive survey design is a good way of measuring characteristics of large population (Orodho, 2010). According to Kothari (2008), descriptive survey design maintains a high level of confidentiality; it is convenient, enables the researcher to collect satisfactory data and enables the researcher to ask one-on-one questions in an interview or interact with the respondents through questionnaires about things which cannot be observed easily. The descriptive survey design gives the study an opportunity to get accurate view of response to issues. On the other hand, descriptive survey design helped me to go round the schools interacting with the respondents and acquiring information given in details directly.

3.3 Target population

There are 60 public preschools in Mutha Zone. The study targeted all the 60 public preschool head teachers, 60 preschool teachers and 450 preschool leaners in Mutha Zone, making a total population of 570 respondents.

3.4 Sampling Techniques and sampling size

According to Patton (2006) sampling means selecting a given number of subjects from a defined population to represent the population. In order to ensure that different categories of the sample population were represented, the research employed simple random sampling technique in selecting 30% of each category (Mugenda & Mugenda 2003). This gave a sample of 18 head teachers, 18 pre-school teachers and 135 pre-school learners who were selected to participate in the study. This has been shown in Table 3.1.

Table 3.1: Sampling Matrix

Respondents	Population	Sample	Percentage
Head teachers	60	18	30%
Pre-school teachers	60	18	30%
Learners	450	135	30%
Total	**570**	**171**	**30%**

3.5 Research Instruments

The study used three research instruments namely; questionnaires, observation schedule and interview schedule.

3.5.1 Questionnaires

The questionnaires were used to gather information from teachers regarding thematic areas aiding in answering the research questions. According to Kombo and Tromp (2006), questionnaires are useful in gathering information from many respondents scattered over vast area, and can reach a large group of respondents who are able to read and write. The questionnaires were administered to pre-school teachers who were able to give clear information of their findings since they are in direct conduct with pre-school learners. The questionnaire contained two sections A and B where section A discussed the demographic information about the respondent while section B contains open and closed ended questions to collect information on Learner centered activities and mathematics competence among learners.

3.5.2 Observation Schedule

The observation schedule was a checklist for evaluation of available learning activities in the preschool. The respondents were assured of privacy and confidentiality in the information they will provide for the study. Observation schedule was done on pre-school learners. The observation schedule enabled the pre-school learners to portray their learning development. The pre-school learners were exposed to a variety of Learner centered activities and mathematics activities and then the researcher will make

observation on their involvement an interaction with materials and activities promoting Learner centered activities and mathematics competency among them.

3.5.3 Interview Schedule

Interview schedule, according to Weiss (1994), is where interviewer asks the interviewee one –on –one question or does it over the phone. First, a rapport has to be created between the two, so that there is ease during the interview, and the interviewer asks probing questions geared towards providing the required answers. The interview schedules were administered to the head teachers by the researcher. The interview schedule enhanced a clear and ample communication with the head teachers in providing the desired information.

3.6 Validity of the Research Instruments

Validity refers to the extent to which a test measures what the researcher actually wishes to measure (Kothari, 2008). To ensure that the instruments are valid that is, whether they measure what they ought to measure, the researcher sought assistance from his supervisors. The researcher ensured content validity of this study by constructing a questionnaire with items covering all aspect of research questions. Construct validity ensured by constructing questionnaire items that measured all indicators of specific skills and knowledge acquired after training. Criterion validity was ensured by constructing items that measured performance of principals' due to application of skills and knowledge acquired. The researcher, experts and professionals in the Department of Educational management, Policy and Curriculum Studies went through the questionnaire systematically comparing the items with the study objectives. Afterwards items that do not measure the intended variables will be identified and modified or discarded where necessary for the improvement of the instruments.

3.7 Reliability of Research Instruments

Reliability of instruments refers to the consistency of an instrument to yield similar results at different times. The researcher contacted a pilot study in order to pre-test the instruments just before the actual data collection; the researcher visited 3 preschools

which were not involved in the main study. The pilot study was carried prior to the actual study, in order to establish the weakness in the tool used so that they can be addressed before the actual study. Then the researcher used the re-test method in order to establish the reliability of the instrument. The re-test method is applied where a test is given to respondent's reliability coefficient was established as 0.86 which was sufficient according to Mungenda and Mugenda (2003).

3.8 Data Collecting Procedures

Data were collected through administering questionnaires to teachers of preschools. Each teacher was handed questionnaires and was required to fill the questionnaires alone to avoid duplication of information and ensure originality. The researcher however allowed giving a clarification in cases of language use or terminologies to the respondents. The researcher also ticked the checklist through a way of observation in each preschool visited. After handling these questionnaires to teachers, the researcher gave time to fill in the questionnaires regarding on agreement with respondents on the time span then he/she set a date on which to come over and collect the filled in questionnaires. An interview schedule was conducted on the head teachers.

3.9 Data Analysis Techniques

Data analysis involves making deductions and inferences from data collected in a survey or experiment. It involves uncovering facts, detecting patterns, anomalies, developing explanations and testing hypothesis (Orodho, 2009). Both descriptive and inferential techniques of data analysis were employed in analysis of both demographic and data covering the four research objectives of the study using SPSS software version 25.

3.10 Ethnical Considerations

Before data collection, an introductory letter was obtained from the University. On the production of introductory letter, permission to carry out research will be sought from the National Commission of Science, Technology and Innovation (NACOSTI). After getting permission letter the researcher further sought permission from the District Education

Officer's Office, the head teachers and parents of the schools to be involved in the study. The researcher ensured that that confidentiality is honored and information obtained used only for the purpose of this study. Informed consent was sought in acquiring participants for the study, and all participants were expected to participate willingly, and were not required to include their names in the questionnaires for confidentiality purposes. The dignity, privacy and interests of participants was respected and protected. Data obtained remained confidential and participants will remain anonymous.

CHAPTER FOUR

4.0 RESEARCH RESULTS

4.1 Introduction

This chapter presents the research results. The purpose of the study was to investigate the influence of learners centered activities on developing Learner centered activities and mathematics competence among pre- school learners in Mutha Zone, Mutomo Sub County. The study was guided by the following objectives ; to access the influence of molding numbers on developing Learner centered activities and mathematics competence among preschool learners, to determine the influence of arranging blocks in order of sizes on developing Learner centered activities and mathematics competence among pre-school learners to examine the influence of pairing objects with correct number flash card on developing Learner centered activities and mathematics competence among preschool learners and access the influence of learners skipping as they count on developing Learner centered activities and mathematics competence among pre-school learners in Mutha Zone , Kitui County.

4.2 Questionnaires Return Rate

According to (Mugenda & Mugenda, 2003), questionnaire return rate refers to the number of respondents who returned usable instruments for the study out of the total number contacted for study. The respondents for this study include; 18 head teachers, 18 pre-school teachers and 150 pre-school learners. The questionnaires were administered to pre-school teachers, interview`s schedules were administered to the head teachers and checklists were used on the pre-school learners. The results were presented in Table 4.1.

Table 4.1: Questionnaires Return Rate

Category	**Frequency**	**Percentage**
Returned	15	83.3
Not returned	3	16.7
Total	**18**	**100.00**

From Table 4.1, it can be observed that 83.3% of pre-school teachers returned their questionnaires while 16.7% were not returned hence not included in the study. The return rate became possible because the researcher personally took the questionnaires to the sampled respondents. This was sufficient according to Mugenda and Mugenda (2003) who observed that a response rate of 70 percent and over is very good. Since the response rate was more than 70 percent, it was considered adequate. This would provide the required information for purposes of data analysis.

4.3Demographic Information for the Respondents

The respondents who included were requested in the questionnaires to indicate their demographic characteristics.

4.3.1Distribution of Respondents by Gender

The information on gender distribution helped the researcher to ascertain the real representation in the study in terms of the gender. The results on gender for head teachers and preschool teachers were shown in Table 4.2.

Table 4.2: Gender Distribution of Respondents

	Frequency	**Percent**
Male	3	20.0
Female	12	80.0
Total	**15**	**100.0**

Table 4.2 shows that majority 80% of the pre-school teachers were female. This shows that most of Pre-school teachers were female teachers.

4.3.2 Distribution of Respondents by Age

The respondents requested to indicate their age and the results are shown in table 4.3.

Table 4.3: Age Distribution of Pre-school Teachers

Age in years	Frequency	Percent
Below 30	3	20.0
30 – 40	3	20.0
41-50	9	60.0
51-60	0	0.0
Total	**15**	**100.0**

Table 4.3 shows that, majority (60%) of pre-school-teachers were both aged 41 – 50 years. It was also observed that, those who were 51 – 60 years were 0.0%. This shows that the pre-school-teachers seemed to reduce as they advance in age as most young teachers seems to be pre-school-teachers.

4.3.3 Distribution of Respondents by Academic Qualification

Academic qualification determines the professional development of a teacher. The respondents were required to indicate their highest academic qualification. The analysis is as shown in Table 4.4.

Table 4.4: Academic Qualification Preschool Teachers

	Frequency	Percent
ECDE certificate	9	60.0
P1	3	20.0
Diploma	3	20.0
Degree	0	0.0
Masters	0	0.0
Total	**15**	**100.0**

Table 4.4 shows that majority (60%) of pre-school teachers had ECDE certificate respectively. It was also established that 20% of the pre-school teachers had diplomas and P1 certificate. However, none of the teachers had a degree or a master's degree. This shows that there is need to encourage more pre-school teachers to do degree courses.

4.3.4 Distribution of respondents by experience

The experience of teachers is determined by the number of years worked. The respondents were requested to indicate their working experience. The analysis was presented in Table 4.5.

Table 4.5: Pre-school Teachers Experience

Number of years	Frequency	Percent
Less than 3 years	3	20.0
3- 4	9	60.0
5 – 6	3	20.0
More than 6	0	0.0
Total	**15**	**100.0**

Table 4.5 shows that majority (60%) of pre-school teachers had an experience of 3-4 years. This shows that most had enough experience to provide reliable information. The more experienced the teachers are the better they are likely to be effective in teaching preschools learners.

4.4 Molding Numbers and Developing Learner centered activities and mathematics Competence Among Preschool Learners

The first objective of this study was to access the Influence of molding numbers on developing Learner centered activities and mathematics competence among preschool learners in Mutha Zone, Kitui County. To achieve this objective, the respondents were requested to indicate their molding activities. The analysis results were presented in Table 4.6.

Table 4.6: Things Used in Molding

Response	Frequency	Percent
Clay	12	80.0
Plasticine	3	20.0
Total	**15**	**100.0**

From Table 4.6, it was established that, majority (80%) of the respondents were using clay to do their molding with only 20% using plasticine. This might be because plasticine is expensive to acquire unlike clay which is obtained freely from the rivers. However, what the learners used had no effect on the analysis.

The respondents were requested to indicate their level of agreement with the statements in Table 4.7, using a 5-Likert scale as; SA for Strongly Agree, A for Agree, N for Neutral, D for Disagree and SD Strongly Disagree. The analysis were presented in Table 4.7

Table 4.7: Molding Numbers and Developing Learner centered activities and mathematics Competence Among Preschool Learners

Statement	SA F (%)	A F (%)	N F (%)	D F (%)	SD F (%)	Total F (%)
Most schools provide learners with molding opportunities	6 40.0	4 26.7	2 13.3	2 13.3	1 6.7	**15 100.0**
Providing learners with opportunities plasticine and clay will enable them develop Learner centered activities and mathematics skills	8 53.3	3 20.0	1 6.7	2 13.3	1 6.7	**15 100.0**
Molding activities help learners to solve problems involving shapes	9 60.0	2 13.3	2 13.3	1 6.7	1 6.7	**15 100.0**
Molding helps early learners helps in enhancing their memory	7 46.7	3 20.0	1 6.7	3 20.0	1 6.7	**15 100.0**
Most schools in rural areas have difficulties in acquiring plasticine	8 53.3	4 26.7	1 6.7	1 6.7	1 6.7	**15 100.0**

Table 4.7 shows that majority (60%) of the respondents strongly agreed with the statement that, molding activities help learners to solve problems involving shapes. This was followed by 53.3% who strongly agreed that, providing learners with opportunities plasticine and clay will enable them develop Learner centered activities and mathematics skills and most schools in rural areas have difficulties in acquiring plasticize. On the other hand, 46.7% of the respondents strongly agreed that molding helps early learners in enhancing their memory and 40% strongly agreed that most schools provide learners with molding opportunities.

Further, the researcher tested the hypothesis, below;

$H_{01:}$ There is no statistically significant association between molding numbers and Learner centered activities and mathematics competence among pre-school learner in Mutha Zone, Kitui County. Since this hypothesis was about association, Chi-square test was the most appropriate statistical too hence it was used to test the hypothesis. The analysis was presented in Table

Table 4.8: Chi-Square test for molding numbers and Learner centered activities and mathematics competence among preschool learner

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	41.429(a)	4	.000
Likelihood Ratio	58.869	4	.000
Linear-by-Linear Association	35.210	1	.000
N of Valid Cases	15		

a 23 cells (92.0%) have expected count less than 5. The minimum expected count is .05.

Table 4.8 shows that the Pearson Chi-Square is $\chi^2_{(1,4)} = 41.429$, $p = .000$. This tells us that there is a statistically significant association between molding numbers and Learner centered activities and mathematics competence among pre-school-learner. We do therefore reject $H_{01.}$

4.5 Arranging Blocks in Order of Sizes and Developing Learner centered activities and mathematics Competence among Pre-school-Learners

The second objective for this study was to determine the influence of arranging blocks in order of sizes on developing Learner centered activities and mathematics competence among pre-school-learners in Mutha Zone, Kitui County. To achieve this objective, the respondents first were requested to indicate the Learner centered activities and mathematics activities the learners were engaged in. The responses were presented in Table 4.9.

Table 4.9: Place of Learner centered activities and mathematics Activities

Response	Frequency	Percent
Classroom activities	6	40.0
Outdoor activities	9	60.0
Total	**15**	**100.0**

Table 4.9 shows that majority (60%) of the respondents indicated that most Learner centered activities and mathematics were outdoor activities. The respondents were further required to indicate the respondent's agreement with the statements given in Table 4.10 using a 5-Likert scale as; SA for Strongly Agree, A for Agree, N for Neutral, D for Disagree and SD Strongly Disagree. The analysis was presented in Table 4.10.

Table 4.10: Arranging Blocks in Order of Sizes and Developing Learner centered activities and mathematics Competence Among Pre-school Learners

	SA		A		N		D		SD		Total	
	F	(%)	F	(%)	F	(%)	F	(%)	F	(%)	F	(%)
i. Young children are always taught how to pair and match objects during Learner centered activities and mathematics lessons	4	26.7	7	46.7	0	0.0	3	20.0	1	6.7	**15**	**100.0**
ii. Preschool learners can learn Learner centered activities and mathematics by flipping cards and comparing them	7	46.7	5	33.3	1	6.7	2	13.3	0	0.0	**15**	**100.0**
iii. Ordering helps learners to know that number are always put in order of sequence	3	20.0	8	53.3	1	6.7	2	13.3	1	6.7	**15**	**100.0**
iv. Teachers should always observe learners as they carry out activities	6	40.0	6	40.0	1	6.7	1	6.7	1	6.7	**15**	**100.0**
v. Learners enjoy ordering objects	2	13.3	8	53.3	3	20.0	0	0.0	2	13.3	**15**	**100.0**

Table 4.10 shows that majority (53.3%) agreed that ordering helps learners to know that number are always put in order of sequence and learners enjoy ordering objects. This was followed by 46.7% of the respondents agreed and strongly agreed that they always teach young children how to pair and match objects during Learner centered activities and mathematics lessons and pre-school learners can learn Learner centered activities and mathematics by flipping cards and comparing them respectively.

The research further sought to establish the relationship between family size and implementation of re-admission policy of girls after teenage pregnancy by testing hypothesis three (H_{02}) using Pearson's correlation analysis. Finally, 40% of the respondents agreed that, teachers should always observe learners as they carry out activities.

Further, the researcher sought to test hypothesis H_{02} using Pearson's correlation analysis since the hypothesis was about relationship.

$H_{02:}$ There is no statistically significant relationship between arranging blocks in order of size and development of Learner centered activities and mathematics competence among preschool learners. The results were presented in Table 4.11.

Table 4.11: Correlation for Arranging Blocks in Order of Sizes and Developing Learner centered activities and mathematics Competence Among Pre-school-Learners

		Arranging blocks in order	Developing Learner centered activities and mathematics competence
Arranging blocks in order	Pearson Correlation	1	0.664(**)
	Sig. (2-tailed)		.000
	N	15	15
Developing Learner centered activities and mathematics competence	Pearson Correlation	.664 (**)	1
	Sig. (2-tailed)	.000	
	N	15	15

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

Table 4.11 shows that there is a strong positive relationship r (15) = 0.664, $p<0.05$ between arranging blocks in order of size and development of Learner centered activities and mathematics competence among pre-school learners. We therefore reject H_{02} and conclude that there is a statistically significant relationship between arranging blocks in order of size and development of Learner centered activities and mathematics competence among pre-school learners.

4.6 Pairing Objects With Correct Number Flash Card and Developing Learner centered activities and mathematics Competence Among Preschool Learners

The third objective for this study was to examine the influence of pairing objects with correct number flash card on developing Learner centered activities and mathematics competence among preschool learners in Mutha Zone, Kitui County. To achieve this objective the respondents were required to indicate how often they interacted with learner during activities. The responses were presented in Table 4.12.

Table 4.12: Teachers Interaction with Learner During Activities

Response	Frequency	Percent
All times	4	26.7
Sometimes	9	60.0
Never	2	13.3
Total	**15**	**100.0**

Table 4.12 revealed that, majority (60%) of the respondents only interacted with learners during activities sometimes. This is an indication that most teachers were giving learners activities and leaving them a lone to do their work alone.

The respondents were also requested to indicate their level of agreement with the statements given in Table 4.13 using a 5-Likert scale with; SA for Strongly Agree, A for Agree, N for Neutral, D for Disagree and SD Strongly Disagree, The results were presented in Table 4.13.

Table 4.13: Pairing Objects With Correct Number Flash Card and Developing Learner centered activities and mathematics Competence Among Preschool Learners

Statement	SA	A	N	D	SD	Total
	F (%)	F (%)	F (%)	F (%)	F (%)	F (%)
i. I always teach young children how to pair and match objects during Learner centered activities and mathematics classes	4 26.7	4 26.7	3 20.0	2 13.3	2 13.3	**15 100.0**
ii. Preschool learners can learn Learner centered activities and mathematics by flipping cards and comparing them	8 53.3	3 20.0	1 6.7	2 13.3	1 6.7	**15 100.0**
iii. Ordering helps learners to know that number are always put in order of sequence	4 26.7	6 40.0	1 6.7	2 13.3	2 13.3	**15 100.0**
iv. Teachers should always observe learners as they carry out activities	6 40.0	6 40.0	1 6.7	1 6.7	1 6.7	**15 100.0**
v. Learners enjoy ordering objects	2 13.3	6 40.0	3 20.0	2 13.3	2 13.3	**15 100.0**

Table 4.13 revealed that majority (53.3%) of the respondents strongly agreed with the statement that pre- school learners can learn Learner centered activities and mathematics by flipping cards and comparing them. This was followed by 40% of the respondents who agreed that; teachers should always observe learners as they carry out activities, ordering helps learners to know that numbers are always put in order of sequence and Learners enjoy ordering objects.

The research further sought to test hypothesis H_{03}using Pearson's correlation analysis.

$H_{03:}$ There is no statistically significant relationship between pairing objects with correct numbers flash card and developing Learner centered activities and mathematics competence among preschool. The results were presented in Table 4.14.

Table 4.14: Correlation for Pairing Objects With Correct Number Flash Card and Developing Learner centered activities and mathematics Competence

		Pairing objects	Developing Learner centered activities and mathematics competence
Pairing objects	Pearson Correlation	1	0.546(**)
	Sig. (2-tailed)		.000
	N	15	15
Developing Learner centered activities and mathematics competence	Pearson Correlation	.546(**)	1
	Sig. (2-tailed)	.000	
	N	15	15

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

Table 4.14 shows that there is a moderate strong positive relationship r (15) = 0.546, $p<0.05$ between pairing objects with correct numbers flash card and developing Learner centered activities and mathematics competence among pre-school. We therefore reject H_{03} and conclude that there is a statistically significant relationship between pairing objects with correct number flash card and developing Learner centered activities and mathematics competence among pre- school.

4.7 Influence of Learners Skipping as they Count and Developing Learner centered activities and mathematics Competence Among Pre-school Learners

The last objective for this study was to assess the influence of learners skipping as they count on developing Learner centered activities and mathematics competence among pre-school learners in Mutha Zone, Kitui County.

The statements below relate to the influence of pairing objects with correct number flash card non developing Learner centered activities and mathematics competence. Using a 5-Likert scale as; SA for Strongly Agree, A for Agree, N for Neutral, D for Disagree and SD Strongly Disagree, the respondents were requested to indicate their level of agreement with the given statements. The results were presented in Table 4.15.

Table 4.15: Skipping on Developing Learner centered activities and mathematics Competence Among Pre-school Learners

Statement	SA		A		N		D		SD		Total	
	F	(%)	F	(%)	F	(%)	F	(%)	F	(%)	F	(%)
Skipping activities helps learners to recognition sequences and one to one correspondence	7	46.7	4	26.7	0	0.0	2	13.3	2	13.3	**15**	**100.0**
Counting skills are perfected by children when they are involved in play activities.	6	40.0	3	20.0	3	20.0	2	13.3	1	6.7	**15**	**100.0**
Most learners learn Learner centered activities and mathematics best by doing.	9	60.0	3	20.0	1	6.7	1	6.7	1	6.7	**15**	**100.0**
In symbolic knowledge, learners are able to use abstract symbols to represent objects.	6	40.0	6	40.0	1	6.7	1	6.7	1	6.7	**15**	**100.0**
Skipping activities helps learners in developing Learner centered activities and mathematics competence	8	53.3	4	26.7	1	6.7	1	6.7	1	6.7	**15**	**100.0**

Table 4.15 revealed that majority (60%) of the respondents strongly agreed that most learners learn Learner centered activities and mathematics best by doing. This was followed by 53.3% who strongly agreed that skipping activities helps learners in developing Learner centered activities and mathematics competence and 46.7% who strongly agreed that skipping activities helps learners to recognition sequences and one to

one correspondence. Finally 40% of the respondents counting skills are perfected by children when they are involved in play activities and that in symbolic knowledge, learners are able to use abstract symbols to represent objects.

Further, the researcher tested the hypothesis, below;

$H_{04:}$ There is no statistically significant association between rope skipping and Learner centered activities and mathematics competence among pre-school learner in Mutha Zone, Kitui County. Since this hypothesis was about association, Chi-square test was the most appropriate statistical too. The results were presented in Table 4.16.

Table 4.16: Chi-Square test for molding numbers and Learner centered activities and mathematics competence among pre-school learner

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	25.221(a)	4	.000
Likelihood Ratio	15.874	4	.000
Linear-by-Linear Association	24.112	1	.000
N of Valid Cases	15		

a 23 cells (92.0%) have expected count less than 5. The minimum expected count is .05.

Table 4.16 shows that the Pearson Chi-Square is $\chi^2_{(1,4)} = 25.221$, $p = .000$. This tells us that there is a statistically significant association between rope skipping and Learner centered activities and mathematics competence among pre-school-learner. We do therefore reject H_{04} and conclude that there is a statistically significant association between rope skipping and Learner centered activities and mathematics competence among pre-school-learner.

4.8 Interview Schedule Report

The Interview schedule was used to collect data from the head teachers. The head teachers reported that learners construct their own meaning through continuous and active interaction with their environment. This involves both indoor and outdoor activities. A lot of materials are required for these activities. These include clay and

plasticine for molding, block for ordering and skipping ropes among others. It is evident that Early Learner centered activities and mathematics skills and concepts are not only critical to ensuring that young children begin school with the tools they need to perform well academically, but they are also the foundation for development of rational and logical thought processes.

4.8.1 Molding Numbers and Developing Learner centered activities and mathematics Competence Among Preschool Learners

The interview schedule was administered to the head teachers. It was reported that molding numbers significantly influenced developing Learner centered activities and mathematics competence among pre-school learners. One of the head teachers said,

Although molding enhances learning of Learner centered activities and mathematics, lack of availability of teaching materials like plasticine for molding has also been a major concern in most of the ECDE centers in Mutha Zone, due to poverty levels. Most schools only use clay and some learners have never seen plasticine.

It was reported that clay was the major molding material used in most schools though there was still need to include plasticine though this was not likely to influence the learning process.

4.8.2 Arranging Blocks in Order of Sizes and Developing Learner centered activities and mathematics Competence among Pre-school Learners

It was also reported that pairing objects with correct number flash card influenced developing Learner centered activities and mathematics competence among pre-school learners. One of the respondents said,

A lot of Learner centered activities and mathematics skills are learned when ordering of items is done by the young learners which include arranging objects or sets of objects so as to have an origin, a direction and to reflect on some rules.

Teachers should observe learners very closely as they carry out activities since this helps the teacher to be able to assist and encourage those who need help thus helping them to

acquire the concept faster. However, the block arranging activity requires allocation of a lot of time, enough for the teachers to closely observe the learners one by one as they undertake the ordering and arranging activities.

4.8.3 Pairing Objects With Correct Number Flash Card and Developing Learner centered activities and mathematics Competence Among Preschool Learners

It was reported by one head teacher that, *pairing objects by learners helps in developing Learner centered activities and mathematics competence.*

4.8.4: Influence of Learners Skipping as they Count and Developing Learner centered activities and mathematics Competence Among Pre-school-Learners

Finally, it was reported by another head teacher that, *learner skipping activities influence developing Learner centered activities and mathematics competence.* It is important that the learner is able to recognize the numbers at a time of skipping activities. This is because most learners learn best by doing. For this reason, early childhood education teachers see that the learner engage in hand- on –experience and other interactive activities. Recognizing the importance of play, teachers guide the learner to help them from learner –centered activities.

4.9 Observation Schedule Report

The researcher observed the learners during the Learner centered activities and mathematics lesson and made the following observation. To observe the Learner centered activities and mathematics competence the learners were observed and rated during Learner centered activities and mathematics activities rate the child's. The rating was categorized as Very good, good or fair. It was established that only 48% of the learners were good in recognizing number symbol 1-20 and 40% were good in sorting and grouping number cut outs in ones, twos, three in separate groups. Among the learners 38% were good in recognizing number symbols in finishing games while only 36% were good in fixing puzzles of number symbols.

On number values, only 25% of the learners were good in matching items with the number corresponding to their value and make sets of objects. During Learner centered activities and mathematics activities it was also established that only 28% of the learners were good in counting number symbol 1-20 with correct correspondence. However, 48% of the learners were very good in arranging other learner in a row according to their height.

CHAPTER FIVE

5.0 SUMMARY, DISCUSSION AND INTERPRETATION OF THE RESEARCH FINDINGS

5.1 Introduction

This chapter presented a summary of the findings of the study and interpretation of research findings.

5.2 Summary of the Findings

In this section the summary of the study findings was presented. This study sought to investigate the influence of learner centered activities on developing Learner centered activities and mathematics competence among pre-school-learners in Mutha Zone, Kitui County.

5.2.1 Molding Numbers and Learner centered activities and mathematics Competence

This study established that the majority (60%) of the respondents strongly agreed with the statement that, molding activities help learners to solve problems involving shapes. It was however noted that most schools in rural areas had difficulties in acquiring plasticine hence most learners were using clay which was making them very dirty. On the other hand, 46.7% of the respondents strongly agreed that molding helps early learners in enhancing their memory.

The study also established there is a statistically significant association between molding numbers and Learner centered activities and mathematics competence among pre-school learner as shown by Pearson Chi-Square results ($\chi^2_{(1,4)} = 41.429$, $p = .000$). These results agree with Boardman (2006) who argued that, through molding children develop their understanding of problem solving, reasoning and numeracy in a broad range of contexts in which they can explore, enjoy, learn, practice and talk about. Hence providing them with opportunities and materials like plasticine and clay will enable them develop Learner centered activities and mathematics competence through playing with clay and plasticine, as they mould different numbers and shapes. According to Sylvia (2012),

preschool teaching materials must be available in preschool most of the days to enhance learning of Learner centered activities and mathematics and other subjects. These include housekeeping materials, puppets, puzzles books science materials and trucks. Furthermore, in Israel, the Ministry of Education and the culture employ preschool supervisors, construct class rooms and equip classrooms with a variety of teaching materials. This is because Learners need many opportunities to learn the words for numbers to count things and learn to read and write numbers. Smith (2002) in his study done in Kwa Zulu Natal University in south Africa on skills for Learner centered activities and mathematic competency in pre-school-learners indicates that, through moulding number, pre-school learners begin to develop an understanding of shapes, space and number. They also gain confidence in their ability to control their own learning and becoming familiar with numbers with the help of the learners understanding all the aspects of Learner centered activities and mathematics. A study carried in Meru South by Waigwa (2012) states that molding numbers shapes with clay and plasticine by early learners helps in enhancing their memory. They are able to remember these numbers long afterwards, and can identify and pick a particular number from a group.

5.2.2Arranging Blocks in Order of Sizes and Developing Learner centered activities and mathematics Competence

The study established that 53.3% of the respondents agreed that ordering blocks in different sizes helps learners to acquire Learner centered activities and mathematics skills and the learners enjoy ordering objects. Most teachers always teach young children how to pair and match objects during Learner centered activities and mathematics lessons and preschool learners can learn Learner centered activities and mathematics by flipping cards and comparing them.

It was also established that there was a strong positive relationship $r(15) = 0.664$, $p<0.05$ between arranging blocks in order of size and development of Learner centered activities and mathematics competence among pre-school-learners. These results agree with Lidsay (2013) who argued that when young children remove neatly stacked and shelved blocks and begin to build, the block often engage children's creativity and curiosity, as they

learn Learner centered activities and mathematics naturally. Ordering by the young learners means arranging objects or sets of objects so as to have an origin, a direction and to reflect on some rules.

According to Godfrey (2006), when young children remove neatly stacked and shelved blocks and begin to build, the block often engage children's creativity, captivity and curiosity, as they learn Learner centered activities and mathematics naturally. Ordering by the young learners means arranging objects or sets of objects so as to have an origin, a direction and to reflect on some rules. Godfrey (2006) in his study in Kampala Uganda on developing main skills for Learner centered activities and mathematics observes that teaching young children how to pair and match objects in an important part of developing early Learner centered activities and mathematics skills because these skills help preschool learners identify and describe objects. The study in conformity with Heather (2009) and Githua (2002) observed that the method improves psychomotor skills and assists preschool children to discern Learner centered activities and mathematics associations in items and concretizes the concepts. The study also concurred with Njoroge (2004) observing that learning by doing elevates children's level of recall and relation of Learner centered activities and mathematics contents in long term memory.

5.2.3 Pairing Objects With Correct Number Flash Card and Learner centered activities and mathematics Competence

The study established that 53.3% of the respondents strongly agreed that pre-school-learners can learn Learner centered activities and mathematics by flipping cards and comparing them and teachers should always observe learners as they carry out activities. Ordering helps learners to know that number are always put in order of sequence and Learners enjoy ordering objects.

The study also established that, there is a moderate strong positive relationship $r(15) = 0.546$, $p<0.05$ between pairing objects with correct numbers flash card and developing Learner centered activities and mathematics competence among preschool. The results agree with Lipton and Sperke (2003), who argued that, learning Learner centered

activities and mathematics involves classifying and finding things that are the same, a like and grouping them by specific traits. Anything can be paired including blocks, leaves, plates or toys. Once they have paired objects, children can compare items further to learn more specific similarities and differences between items, both within and between matched groups.

According to Betsy (2004), the administrator should put in place guidelines and rules to be followed by both teachers and children on use of play materials. Teachers need to facilitate play by working with children to develop rules for safe indoor and outdoor play. No matter how careful the child, teacher and administrators are to follow rules, sometimes children are bound to get hurt. According to Safety Standards Manual for Schools in Kenya (SMSK, 2008), adult supervision can help prevent injuries by ensuring children safely use the play materials and engage in safe play. The playground should be designed in a way that from whichever position the children and adults are where they can clearly see each other while playing. This can help reduce injuries or accidents that are bound to happen during play. The playground should be free from stagnant water, sharp objects and stones to allow relaxed movement of children during play. For children to reach their potential, they should feel comfortable in a safe context of the world around them.

5.2.4: Influence of Learners Skipping as they Count and Learner centered activities and mathematics Competence

The study established that, majority 53.3% of the respondents strongly agreed that skipping activities helps learners in developing Learner centered activities and mathematics competence. This is because skipping activities helps learners to recognize sequences as one to one correspondence.

It was finally established that, that there is a statistically significant association between rope skipping and Learner centered activities and mathematics competence among pre-school learner ($\chi^2_{(1,4)} = 25.221$, $p = .000$). These results agree with Hoff (2013) who argued that the skills like rote counting are perfected by children when they are involved

in play activities like skipping ropes as they count number and in this way, they were able to remember these numbers for a long time. Smith further found out that learners who played skipping games way before they joined preschool were able to count easily in their preschool number recognition.

A study carried by National Centre for Early Childhood Education (2008) in Kenya, asserts that to help learner to recognize numbers easily, the teachers were also advised to use as many activities and materials as possible in order to ensure that all the learners develop the concept (NACECE), 2008). It is important that the learner is able to recognize the numbers at a time. Most learners learn best by doing. For this reason, early childhood education teachers see that the learner engage in hand- on –experience and other interactive activities. Recognizing the importance of play, teachers guide the learner to help them from learner –centered activities. The teacher also provides the learner with opportunities to observe, question and investigate (Gottfredson, 2009). In symbolic knowledge, learners are able to use abstract symbols to represent objects relations or operations in problem solving process. The child uses numerals rather that the objects to experience Learner centered activities and mathematics ideas or to solve problems.

CHAPTER SIX

6.0 CONCLUSIONS, RECOMMENDATION AND SUGGESTION FOR FURTHER RESEARCH

6.1 Introduction

This chapter presented the conclusions drawn from the findings, recommendations made from findings and suggestions for further research.

6.2 Conclusions of the Study

Based on the findings of this study, the researcher concluded that;

Molding of numbers, arranging blocks in order of sizes pairing of objects with the correct number flashcard and skipping and they count help in developing mathematics competence among preschool learners. All this was determined by use of relevant use of learning materials and good use of pedagogical skills in the teaching development.

6.3 Recommendations of the Study

Based on the findings of this study, the researcher recommended that;

1. The government through the MOE needs to come up with clear policy guidelines regarding play in preschool centers and clearly define the play activities according to the developmental stages of children.
2. The government should enhance provision of early childhood play materials to enable preschool children develop holistically.
3. The supervision of ECE centers' need to be enhanced to ensure teachers allocate adequate time and play materials to enable children develop language skills for holistic development of children.
4. The Ministry of Education should sensitize all the pres school teachers to teach Learner centered activities and mathematics using both indoor and outdoor activities and supervise learners as they perform these activities.
5. The schools should provide plasticine to their learners since it was established that most schools were using clay which was making the learners to be dirty.
6. The parents should be encouraged to buy plasticine for the learners so that they can also continue molding at home.

7. It is recommended that In-Service Teacher Education and Training (INSET) program be in cooperated so as to augment teacher's competence, more so in teaching methods for the duration of their time of service.

6.4 Suggestions for Further Research

This study investigated the influence of learner centered activities on developing Learner centered activities and mathematics competence among preschool learners in Mutha Zone, Kitui County. Further research can be done on the following;

1. The influence of learner centered activities on science competence among pre-school-learners, Comparative study on the influence of learner indoor and outdoor activities on Learner centered activities and mathematics competence among pre-school learners
2. The influence of materials used in molding on developing Learner centered activities and mathematics competence among pre-school learners.

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APPENDIX 1: Introduction Letter to the Respondents

William Kiema Kimanzi
South Eastern Kenya University
Department of Educational Psychology
P.O BOX 1094.
Kitui

To whom it may concern
Dear Respondent,

RE: REQUEST TO FILL A QUESTIONNAIRE

I am a university student pursuing a research study for Master in Early childhood Education (ECDE). The title of my project proposal is influence of learner centered activities in developing Learner centered activities and mathematics competence among pre-school learner aged 3-8 years of Mutha Zone, Mutomo sub –county in Kitui County.

The purpose of this letter is to request you to take part in this research study by filling in the questionnaire attached. I take this early opportunity to assure you that the information hereby collected will only be used purely for this academic purpose and not for any other purpose whatsoever.

Kindly note, any information given here will be treated with utmost confidentiality
Thank you
Yours faithfully

William Kiema Kimanzi

Appendix II: Questionnaire for pre-school teacher

There will be involvement of pre-school teachers through questionnaires to develop Learner centered activities and mathematics competence to learners

SECTION A: Teacher Characteristics

1. Indicate your gender
    a) Male ( )
    b) Female ( )
2. What is your age bracket
    a) Below 30 years ( )
    b) 30 – 40 years ( )
    c) 41-50 years ( )
    d) 51 -60 ( )
3. What is your highest level of education?
    a) ECDE certificate ( )
    b) P1 ( )
    c) Diploma ( )
    d) Degree ( )
    e) Masters ( )
4. Our teaching experience?
    a) Less than 3 years ( )
    b) 3 - 4 years ( )
    c) 5 – 6 years ( )
    d) More than 6 years ( )

SECTION B: Molding Numbers and Developing Learner centered activities and mathematics Competence among Preschool Learners

5. Do your learners do molding activities?
    a) Yes ( )
    b) No ( )

6. What do your learners use in molding activities?
   a) Clay ( )
   b) Plasticine ( )

7. The statements below relate to molding numbers and developing Learner centered activities and mathematics competence among preschool learners. Using a 5-Likert scale as; SA for Strongly Agree, A for Agree, N for Neutral, D for Disagree and SD Strongly Disagree, indicate your level of agreement with the given statement.

Statement	SA	A	N	D	SD
Most schools provide learners with molding opportunities					
Providing learners with opportunities plasticine and clay will enable them develop Learner centered activities and mathematics skills					
Molding activities help learners to solve problems involving shapes					
Molding helps early learners helps in enhancing their memory					
Most schools in rural areas have difficulties in acquiring plasticine					

SECTION C: Arranging Blocks in Order of Sizes and Developing Learner centered activities and mathematics Competence among Pre-school Learners

8. During Learner centered activities and mathematics lessons, do learners arrange blocks in order of sizes
   a) Yes ( )
   b) No ( )

9. Which activities do your learners enjoy most?
    a) Classroom activities ( )
    b) Outdoor activities ( )
10. The statements below relate to arranging blocks in order of sizes and developing Learner centered activities and mathematics competence among pre-school learners. Using a 5-Likert scale as; SA for Strongly Agree, A for Agree, N for Neutral, D for Disagree and SD Strongly Disagree. Indicate your level of agreement with the given statement

Statement	**SA**	**A**	**N**	**D**	**SD**
We always teaching young children how to pair and match objects					
Pre-school learners can learn Learner centered activities and mathematics by flipping cards and comparing them					
Ordering helps learners to know that number are always put in order of sequence					
Teachers should always observe learners as they carry out activities					
Learners enjoy ordering objects					

SECTION D: Pairing Objects with Correct Number Flash Card and Developing Learner centered activities and mathematics Competence among Preschool Learners

11. How often do you interact with learner during activities?
    a) All times ( )
    b) Sometimes ( )
    c) Never ( )

12. The statements below relate to pairing objects with correct number flash card and developing Learner centered activities and mathematics competence among preschool learners. Using a 5-Likert scale as; SA for Strongly Agree, A for Agree, N for Neutral, D for Disagree and SD Strongly Disagree, indicate your level of agreement with the given statement.

Statement	SA	A	N	D	SD
Learners who often interacted with counters in counting activities easily recognized paired objects					
Learners should be trained how to pair any objects like; blocks, leaves, plates or toys					
Outdoor activities which include pairing objects are interesting to pupils.					
When learners are presented with more than five objects to pair other mental strategies must be utilized.					
Pairing objects helps learners in developing Learner centered activities and mathematics competence					

SECTION E: Influence of Learners Skipping as they Count and Developing Learner centered activities and mathematics Competence among Pre-school Learners.

13. Do your learners skip ropes during Learner centered activities and mathematics lessons?
    a) Yes ( )
    b) No ( )

14. The statements below relate to pairing objects with correct number flash card and developing Learner centered activities and mathematics competence among preschool learners. Using a 5-Likert scale as; SA for Strongly Agree, A for Agree, N for Neutral, D for Disagree and SD Strongly Disagree, indicate your level of agreement with the given statement.

Statement	SA	A	N	D	SD
Skipping activities helps learners to recognition sequences and one to one correspondence					
Counting skills are perfected by children when they are involved in play activities.					
Most learners learn best by doing.					
In symbolic knowledge , learners are able to use abstract symbols to represent objects					
Skipping activities helps learners in developing Learner centered activities and mathematics competence					

Appendix III: Interview for the preschool head teacher

There was the process of interviewing preschool head teacher to assist development of Learner centered activities and mathematics competence.

SECTION A. Teacher Characteristics

1. Name of the preschool…….
2. Name of the school head teacher …….
   a) Are learner active makers of meaning and knowledge?
   b) How do learners learn more actively when engaged in the learning process?
   c) How does a learner learn by relying on some form of guided discovery?
   d) In which ways do teachers facilitates a process of learning in which learner are encouraged to be responsible and autonomous?
   e) How do teachers integrate Learner centered activities and mathematics with other content areas?
   f) Are culturally relevant materials used in Learner centered activities and mathematics?
   g) What do learners learn through peer training?

Appendix IV : Observation Schedule for learner

There will be observation of pre-school learners without their awareness on enhancing Learner centered activities and mathematics competence

1. Name of preschool……..
2. Category of preschool Public ( ) Private ( )

Section A. Learner centered activities and mathematics Competence

a) Number recognition

Tick the rating number appropriately in the box under each category

During Learner centered activities and mathematics rate the child's ability to recognize number symbol 1-20.

Very good Good Fair

Sort and group number cut outs in ones, twos, three in separate groups

Very good Good Fair

Recognize number symbols in finishing games

Very good Good Fair

Fix puzzles of number symbols

Very good Good Fair

Subtotal score

b) Number value

Tick the rating number appropriately in the box under each category

During Learner centered activities and mathematics rate the child's ability to

Match items with the number corresponding to their value

Very good Good Fair

Make set of objects e.g. there bottles, three glasses

Fix puzzles of number symbols

Very good Good Fair

Subtotal score

c) Counting

Tick the rating number appropriately in the box under each category

During Learner centered activities and mathematics activities rate the child's ability to

Count number symbol 1-20

Very good Good Fair

Count with correct correspondence

Very good Good Fair

Subtotal score

d) Ordering

Tick the rating number appropriately in the box under each category

During Learner centered activities and mathematics rate the child's ability to

Arrange other learner in a row according to their height

Very good Good Fair

Arrange pencils of different lengths from the shortest to the longest

Very good Good Fair

Subtotal score

SECTION B. Observation Schedule for Learner centered activities and mathematics Ordering

School ……

Childs name ……

Skill/concept	Action to be observed			
Ordering and sequencing objects		Not able	Attempted	Able
	Gives an origin			
	Giving directions			
	Follow rules			
	Acquisition of vocabulary			
Subtotal score				

SECTION C. LEARNER -CENTERED ACTIVITIES

Tick the rating number appropriately in the box under each category

During Learner centered activities and mathematics rate the child's activities approach used in the lesson development

	Very good	Good	Fair
Teacher child interaction			
Involvement of learner in learning activities			
Sequencing of activities			
Use of scaffolding			
Use of peer tutoring			
Use of learning materials			
Subtotal score			

SECTION D Teaching /Learning materials

Tick the rating number appropriately in the box under each category

Teaching/ learning materials	Available	Available but not enough	Not available
Counting			
Number recognition			
Number value			
Ordering			
Subtotal score			

Appendix VII: Permission to proceed with Collection

SOUTH EASTERN KENYA UNIVERSITY
OFFICE OF THE DIRECTOR
BOARD OF POST GRADUATE STUDIES

P.O. BOX 170-90200
KITUI, KENYA
Email: info@seku.ac.ke

TEL: 020-4213859 (KITUI)
Email: directorbps@seku.ac.k

Our Ref: E56/KIT/20126/2012

DATE: 27th April 2021

William Kiema Kimanzi
Reg. No. E56/KIT/20126/2012
Masters of Education in Early Childhood Development Education
C/O Dean School of Education, Humanities and Social Sciences

Dear Kimanzi,

RE: PERMISSION TO PROCEED FOR DATA COLLECTION

This is to acknowledge receipt of your Masters of Education in Early Childhood Development Education Proposal document titled: *"Influence of Learner Centered Activities on Developing Mathematics Competence among Public Pre-School Learners om Mutha Zone, Kitui County"*.
Following a successful presentation of your Masters Proposal, the School of Education, Humanities and Social Sciences in conjunction with the Directorate, Board of Postgraduate Studies (BPS) have approved that you proceed on and carry out research data collection in accordance with your approved proposal.

During your research work, you will be closely supervised by Prof. Jonathan Mwania and Dr. Rose Mwanza. You should ensure that you liase with your supervisors at all times. In addition, you are required to fill in a Progress Report *(SEKU/ARSA/BPS/F-02)* which can be downloaded from the University Website.

The Board of Postgraduate Studies wishes you well and a successful research data collection exercise as a critical stage in your Master of Education in Educational Administration and Planning.

Prof. David M. Malonza
Director, Board of Postgraduate Studies

Copy to: Deputy Vice Chancellor, Academic, Research and Students Affairs (Note on File)
Dean, School of Education, Humanities and Social Sciences
Chairman, Department of Educational Psychology
Prof. Jonathan Mwania
Dr. Rose Mwanza
BPS Office - To file

Appendix VIII: Research Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: 673241

Date of Issue: 11/May/2021

RESEARCH LICENSE

This is to Certify that Mr.. WILLIAM KIEMA KIMANZI of South Eastern Kenya University, has been licensed to conduct research in Kitui on the topic: INFLUENCE OF LEARNER CENTERED ACTIVITIES ON DEVELOPING MATHEMATICS COMPETENCE AMONG PUBLIC PRE-SCHOOL LEARNERS IN MUTHA ZONE, KITUI COUNTY for the period ending : 11/May/2022.

License No: NACOSTI/P/21/10437

673241

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

Appendix IX: Research Authorization 1

MINISTRY OF EDUCATION
State Department for Basic Education

Telegrams "EDUCATION"
Kitui
Telephone: Kitui 22759
Fax :04444-22103
E-Mail :
cde.kitui@gmai.com

REPUBLIC OF KENYA

COUNTY EDUCATION OFFICE
KITUI COUNTY
P.O BOX 1557-90200
KITUI

When replying please quote;

Ref. No: KTIC/ED/Res/Vol. I/22/116

Date: 19th May 2021

William Kiema Kimanzi
South Eastern Kenya University
P.O. Box 170-90200
KITUI

RE: RESEARCH AUTHORIZATION

Following your application for authority to conduct a research on **"Influence of Learner Centered Activities on Developing Mathematics Competence among Public Pre-School Learners in Mutha Zone, Kitui County"**, I am pleased to inform you that permission has been granted to you to undertake research in Kitui County for the period ending **11th May 2022.**

You are advised to liaise with the respective Sub County Directors of Education before embarking on the exercise and a copy of the research report should be forwarded to this office.

COUNTY DIRECTOR OF EDUCATION
KITUI
P. O. Box 1557, KITUI.

Mirriam Matheka
For: County Director of Education
Kitui County

Appendix X: Research Authorization 2

THE PRESIDENCY
MINISTRY OF INTERIOR AND COORDINATION OF NATIONAL GOVERNMENT

Telegrams.....
E-mail: *cckitui@gmail.com*
When replying please quote Ref. and date

OFFICE OF THE
COUNTY COMMISSIONER
P.O.BOX 1-90200
KITUI.

K.C. 603/III/112

19th May, 2021

William Kiema Kimanzi
P.O. BOX 170 - 90200
KITUI.

RE: RESEARCH AUTHORIZATION

Reference is made to a letter from the National Commission for Science, Technology and Innovation Ref. No. 673241 dated 11th May, 2021 on the above subject matter.

You are authorized to carry out a research on **"Influence of learner Centered Activities on Developing Mathematics Competence Among Public Pre- School Learners In Mutha Zone, Kitui County"** for the period ending 11th May, 2022.

Please accord him any necessary assistance.

WILLIAM MAINGI
FOR: COUNTY COMMISSIONER
KITUI COUNTY

CC
Deputy County Commissioner
Mutomo Sub County

Appendix XI: Research Authorization 3

COUNTY GOVERNMENT OF KITUI

Cell Phone:
0705615888/0705615444
0731717100
Email: Kituicounty@kenya.go.ke

Tanathi Water Services Board
Building, Ground Floor
P.O BOX 33 – 90500
KITUI

MINISTRY OF EDUCATION, ICT AND YOUTH DEVELOPMENT

REF : CGOK/MEIYD/ADM/33/01 **DATE :** 19th May, 2021

William Kiema Kimanzi
South Eastern Kenya University
P.O. Box 170 – 90200
Kitui

RE: RESEARCH AUTHORIZATION

Following your application for authority to conduct a research on "**Influence of Learner Centered Activities on Developing Mathematics Competence among Public Pre-School Learners in Mutha Zone, Kitui County**", I am pleased to inform you that permission has been granted to you to undertake the research in Kitui County for the period ending 11th May, 2022.

We wish you all the best in your research undertaking.

Emmanuel Kalunda
For: Chief Officer
Ministry of Education, ICT and Youth Development

Appendix XII: Research Authorization 4

MINISTRY OF EDUCATION,

STATE DEPARTMENT OF EARLY LEARNING AND BASIC EDUCATION.

Office of the Sub County Director of Education
Mutomo-Kitui south

SUB COUNTY EDUCATION OFFICE,
MUTOMO SUB COUNTY,
P.O. BOX 15 - 90201
MUTOMO
Date:19/05/2021.

Tel:
Email:mutomo.education@yahoo.com
RE: *MOE.HQS/3/18/2/VOL11/129*

WILLIAM KIEMA KIMANZI
P.O BOX 15-90201
MUTOMO.

RE: RESERCH AUTHORIZATION

Following your application for Authority to conduct a research on "influence of leaner centered Activities on developing **Mathematics competence among public pre-school in Mutha Zone, Kitui County**", I am pleased to inform you that permission has been granted to you to undertake research in **Mutomo Sub-county** for the period ending 11th , May, 2022.

We wish all the best in your research under taking and call for any necessary assistance to be accorded genuinely and precisely .

SUB-COUNTY DIRECTOR OF EDUCATION * MUTOMO SUB-COUNTY * 19 MAY 2021 * Sign..... * P.O. Box 15-90201, MUTOMO *

MUTISO J.K
SUB COUNTY DIRECTOR OF EDUCATION
MUTOMO -SUB COUNTY