INFLUENCE OF INSTRUCTIONAL RESOURCES ON PRESCHOOL CHILDREN'S PERFORMANCE IN NUMBER WORK IN KAIRURI ZONE, EMBU COUNTY, KENYA.

BY

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DECLARATION

This project report is my original work and has not been presented for a degree or other award in any other University.

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DEDICATION

This research project report is dedicated to my beloved wife Eunice and my children, Olive, Victor and Edwin for their prayers, support and encouragement during this study. I also extend my special thanks to my brother Peterson for his patience and understanding at times when progress seemed impossible.

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ABBREVIATIONS AND ACRONYMS

ECD	Early Childhood Development
ECDE	Early Childhood Development Education
ECEC	Early Childhood Education and Care
ECTAC	Early Childhood Technical Assistance Center
EFA	Education for All
HFRP	Harvard Family Research Project
ICT	Information and Communication Technology
IGBC	Indian Green Building Council
IR	Instructional Resources
K.E.M.I	Kenya Education Management Institute
KICD	Kenya Institute of Curriculum Development
MOEST	Ministry of Education Science and Technology
NACECE	National Centre for Early Childhood Education
NAEYC	National Association for the Education of Young Children
NCCAS	National Coalition for Core Arts Standards
OECD	Organization for Economic Cooperation and Development
UK	United Kingdom
UNCRC	United Nations Convention for Rights of Children
UNESCO	United Nations Educational, Scientific and Cultural Organization

ABSTRACT

The earliest years of the life of a child are pivotal in forming the foundations for healthy development and providing children and their societies the opportunity to reach their full potential. Instructional resources entice learners to observe, actively participate, make choices and experiment which results in acquisition of additional knowledge thus improves children's performance in number work. The purpose of this study was to investigate the influence of instructional resources on preschool children's performance in number work in Kairuri Zone, Embu North District, Embu County. The study used a descriptive survey design and the theoretical framework of this study was constructivists' theory. The sample of the study was 297 respondents picked using stratified sampling and proportionate sampling. Research instruments used to collect data were questionnaires, observation schedule and number work test. Data analysis was done using Statistical Package for Social Sciences, descriptive statistics computed and data presented using tables and themes drawn from objectives. The study shows that preschools have different types of instructional resources; concrete (79%), visual (62%), audio (4%) and audio visual materials (2%). The study indicated that 71.4% of preschool teachers had taught for 8-15 years and teaching experience assist the preschool teachers to be conversant with the problems encountered during learners' participation in number work lessons. The study also showed that there is need to involve parents in making instructional resources through workshops as shown by 64.3% of the respondents. The study showed that funds for purchase of instructional resources in preschools come from parents and county government as indicated by 42.9 % of the respondents. Instructional resources influence children's performance in number work. The study findings will be useful to future scholars as it will add to the existing body of knowledge and this will improve provision of education in preschools and hence achieve the vision 2030.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Globally, education is a fundamental human right (United Nations Convention for Rights of Children (UNCRC, 2000). Unprecedented attention has been focused on literacy among children (Early Childhood Technical Assistance Center, 2012). Jomtien World Conference on Education for all (EFA) of 1990 and Dakar Conferences (2000) under scored the importance of instructional resources in ECE for the purposes of improving children's learning. Omaiyo, 2013 suggested that good instructional resources stimulates ideas and demand active response from the children. Kate (2006) reported that learners must be provided with different types of instructional materials to improve learning by enabling them to recognize number symbols, shapes and their value. Kate (2006) further stated that learning of basic number work vocabulary and the ability to observe and discover new ideas in number work involve the children engaging with the instructional materials.

Effective teaching and learning does not only depend on children's cognitive abilities but also the learning environment. Learning environment includes availability and effective use of sufficient activities and institutional resources organized in number work corner in an attractive manner. The fundamental elements of quality preschool teaching and learning practice include well-

organized and managed learning environments, responsive social and emotional supports, and use of curricula materials and meaningful instructional interactions to facilitate children's thinking and skill development (Omaiyo, 2013).

Implementation of curricula, lesson planning, interactions and instruction are informed by on-going assessment of children's progress towards early learning and development standards and kindergarten readiness goals. Professional development and continuous improvement of instructional practice occurs through embedded routines of peer-to-peer technical assistance that incorporates discussion of data (children's progress, learning environments, and teacher-child interactions), examination of practice, and collaboration to improve teaching and learning (Early Childhood Technical Assistance Center (ECTAC), 2000). Studies provide evidence which shows that various types of ECD interventions like provision of learning resources when targeted to the most vulnerable, yield significant benefits to both individuals and society (Engle., Fernald, Alderman., Berham, O'Gara., Yousafzai., Cabral de Mello., Hidrobo., Ulkuer., Ertem and Iltus; 2011). ECD interventions like provision of learning resources enhances school readiness and related educational outcomes, improve physical and mental health, and reduce engagement in high-risk behaviors (Nores and Barnett, 2010).

In most developing countries, the universities and colleges produce inadequate mathematics teachers and therefore the colleges and universities are being encouraged to pursue these courses purposely to fill this gap (World Bank Report,

2012). The Ministry of Education, Science and Technology (MOEST) officials in Kenya revealed that most teachers do not have the expertise in their subjects and learners fail examinations and few of them pursue mathematics courses at tertiary level leading to even greater shortage of mathematics teachers (Omaiyo, 2013). Number work is considered a core subject throughout the school years of each child but most Kenya pre-school teachers are not trained hence they do not have the knowledge of the types of instructional resources to be used in number work lessons. As a result there is a poor foundation for preschoolers in number work which leads to low performance from pre-schoolers to higher levels of learning (Waithaka, 2005). Omaiyo (2013) reported that early intervention program like provision of learning resources had a positive influence on children's number work achievement. Children enrolled in pre-school with adequate instructional resources and trained teachers have an advantage of acquiring number work concepts and skills (Omaiyo,2013).

In Kenya, research on how instructional resources influence preschoolers' performance in number work has been low. This could be attributed to the fact that instructional resources are not as widely used in the pre-schools as in the upper classes and thus there is need to do research to find out how instructional resources influence preschool children's performance in number work.

1.2 Statement of the problem

The government of Kenya, parents and the community at large have invested much on early childhood development despite challenges especially in the provision of instructional resources. Instructional resources are vital in helping learners acquire concepts and skills among pre-school children since it encourages learning by doing. Children learn better by manipulating available materials. Kibe (2011) argued that while some educators have been fascinated by the potential of instructional materials to enhance teaching and learning, teachers lag behind in using instructional materials, especially in teaching of number work. Though instructional materials facilitate learning process in the classrooms, only a few instructional resources are provided to pre-schools and some pre-school teachers are not trained to use instructional resources. The pre-school curriculum is thus designed to include learning of number work since it has emerged that the best time to introduce instructional resources in number work to a learner is at the pre-school age (Omaiyo, 2013).

Instructional resources enhance the understanding of difficult material concepts. Demonstrate concepts to learners and make concepts easier to preschoolers. The preschoolers master concepts, thus improve their performance in number work from an early stage. Wambugu (2014) reported that academic performance in Kairuri Zone is an issue of concern to all education stake holders following declining academic performance in the Kenya Certificate of Primary Education

(KCPE) as it was recorded that in 2009, the mean score in the Zone was 227.30 which declined to 211.65 out of 500 marks in 2013. Wambugu (2004) further reported that in 2009 the mean score for mathematics in KCPE was 48.39 which declined to 47.50 in 2013. There is a need to carry out a study to establish the cause of this low performance. This study therefore will focus on the influence of instructional resources on preschool children performance in number work in Kairuri Zone, Embu County.

1.3 Purpose of the study

The purpose of this study was to investigate the influence of instructional resources on preschool children's performance in number work in Kairuri Zone, Embu County.

1.4 Research objectives

The study was guided by the following research objectives:-

i. To establish the types of instructional resources influencing children's performance in number work.
ii. To determine how teacher's experiences on use of instructional resources influence children's performance in number work.
iii. To establish how parent's ability to provide instructional resources influence children's performance in number work.
iv. To establish how availability of finances for provision of instructional resources influence children's performance in number work.

1.5 Research questions

The following research questions were used in the study:-

i. How do different types of instructional resources influence children's performance in number work?
ii. To what extent do teacher's experiences on the use of instructional resources influence children's performance in number work?
iii. How does parent's ability to provide instructional resources influence children's performance in number work?
iv. To what extent does the availability of finances for provision of instructional resources influence children's performance in number work?

1.6 Significance of the study

The study findings generated will be used by the Ministry of Education to improve allocation of funds to preschools for acquisition of instructional resources. The information will be useful to Kenya Institute of Curriculum Development (KICD) in improving teacher training curriculum in handling instructional resources thus enhancing children's performance in number work. The findings of this study will also help to sensitize parents and community on the importance of providing instructional resources for their children. The findings will enable the government to enrich the current policies and device ways of improving children's academic outcomes through use of instructional resources. The generated information will add to the body of knowledge for future scholars

to benefit from.

1.7 Limitation of the study

The use of questionnaires as a data collection instrument had the inherent demerit of the researcher's inability to elicit respondent's honesty and sincerity. The researcher's availability of funds was limited and therefore the researcher focused on public preschools.

1.8 Delimitation of the study

The study used descriptive research design. This design was used because it accommodates large sample sizes and it enhances generalization of the results. The target population was 1300 respondents which comprised of 28 preschool teachers and 1272 ECE children aged 3-6 years drawn from the 18 public preschools in Kairuri Zone, Embu North District.

1.9 Basic assumptions

The researcher assumed that all the sampled pre-schools units in Kairuri Zone, Embu North Sub County have adequate instructional resources for use in teaching number work. The assumption was that all pre-school teachers are academically qualified and trained to use instructional resources. The researcher assumed that respondents of the study would be available, co-operate and answer the questions truthfully.

1.10 Definitions of the significant terms

Influence refers to have an effect or impact on someone or something.

Instructional Resources refers to materials that assist the teacher in the teaching process. They can be concrete objects, improvised or commercially produced to meet the desirable objective.

Number work is the basic skills in mathematics. It is a science of numbers, quantity, space and their interrelationships.

Organization is the way different parts are arranged in a particular field or subject. It's the action, orderliness or process of planning and arranging something.

Performance is the process of taking part in a particular activity and achieving results.

Pre-school refers to institution where young children of age 3-6 years are introduced to the school environment.

Preschoolers refers to children who are young (aged 3-6 years) but who need to be guided, instructed, moulded and prepared to join pre-primary classes.

1.11 Organization of the study

This study has five chapters. Chapter One covers the background of the study, statement of the problem and purpose of the study. This was followed by research objectives and questions, justification, limitations, delimitations and significance of the study, definition of significant terms and concludes with the organization of

the report.

Chapter Two entails literature review from various sources to establish work done by other researchers, their findings, conclusions and identification of knowledge gaps which forms the basis of setting objectives and research questions of the study. The theoretical and conceptual frameworks were also explained.

Chapter Three covers the research design, target population, sample size and sampling procedures. This was followed by data collection procedures, data collection instruments, validity and reliability of instrument, data analysis techniques, ethical considerations and concludes with operational definition of significant terms.

Chapter Four presents data analysis, presentation and discussion of findings.

Chapter Five presents summary of findings, conclusions, recommendations and suggested areas for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presented a review of empirical (primary) and non-empirical (secondary) literature on how instructional resources influence preschool children's performance in number work. The chapter covered the following specific sub-themes: types of instructional resources, availability of instructional resources, preschool teachers experience and use of instructional resources, parents' ability to provide instructional resources and availability of finances for acquisition of instructional resources in number work. The chapter also presents theoretical frame work and conceptual framework on which the study is based.

2.2 Studies on use of instructional resources and preschool children's performance in number work

Joyce (2001) reported that during the preschool and kindergarten years, children add to what they have learned in early explorations. The environment plays a critical role, the richer the environment the more concrete opportunities there are for children to learn by interacting with instructional resources. Teacher's role is to create an environment that invites children to observe, be active, make choices, experiment and hence instructional resources support the teacher in delivery of

knowledge or help to emphasize specific knowledge (MacCallum and Morcom, 2008). Piaget (2009) states that it is not always that use of instructional resources guarantee effective teaching and improves performance in number work but the resource must be appropriately selected and used. When the availability and adequacy of instructional materials is ensured, the number work lesson will be child centered instead of teachers centred and therefore motivate children to learn. This is because all of them will be involved in using the available instructional materials instead of listening to the teacher explain in class (Sasson, 2009).

Mwangi (2009) stated that adequate manipulative resources and models assume a critical role in helping children learn number work. Mathematical thoughts are abstract and so any model that embodies them is imperfect and has limitations. Teachers should use different models when teaching a particular concept. Kate (2002) stated that for children to acquire number work skills, they should be provided with a variety and relevant instructional resources that are locally available within the environment. Instructional materials can be collected around our houses, schools, thus communities and parents have to supply them for preschool teachers to be seen to be organized in number work activity areas. Instructional resources enable preschool children to perform well in number work activities. Instructional resources they stimulate and sustain interest in learning by providing firsthand experience with the realities of the physical and social environment.

Kabiru and Njenga (2007) indicated that use of variety and adequate instructional resources in pre-school classrooms arouses children's attention and sustains their interest. Learners become motivated and stay focused in number work activities. Adequate instructional resources also make learners to develop a positive attitude towards number work at an early stage. Instructional resources should be plenty so that every child in the classroom can choose what to interact with. Use of variety of resources is important so that all children can be involved and no child is left idle during number work lessons.

A study by Kibe (2011) stated that there is a good relationship between effective teachings and use of instructional materials. Kibe (2011) argued that while some educators have been fascinated by the potential of instructional materials to enhance teaching and learning, teachers lagged behind in using instructional materials during teaching and learning. Instructional materials are integral components of teaching number work in learning situations. It then shows that, for effective teaching of number work, utilization of instructional materials is necessary, thus the research explored how use of resources affects preschool children's performance in number work.

2.3 Types of instructional resources for teaching number work in preschools

Instructional resources are gathered and prepared ahead of time as pre-school children cannot be expected to sit diligently while waiting for the teacher to prepare the materials and collect activity suppliers for lessons. Availability of instructional resources depends on storage and usage habits (Abdelrahim, 2008). The quality of education and training on participation given to pre-schools children depends on the availability and adequacy of instructional resources for classroom learning. Institutional teaching should aim at equipping learners with useful skills and to improve their knowledge and capabilities in their performance in number work (National Policy on Education, 2004).

Mwangi (2009) reported that adequate manipulative (concrete) resources and models assume a critical role in helping children learn number work throughout their preschool education. Teachers should use different models when teaching a particular concept. Children should be exposed to adequate instructional resources since they acquire knowledge by constructing it through their interactions with the environment to explore the environment. Children use concrete resources such as blocks, stones, toys, ball among others. When children are learning classification, they use concrete materials/objects such as sticks, stones, leaves and they are not able to make mental representations of the skills and concepts learnt during classification without concrete materials.

Piaget (1973) reported that number work is a subject with abstract concepts. Some concepts are practical or concrete but most of them are abstract at the pre-school level. Piaget (1968) further observed that most concepts are concrete or they may be easily concretized by using real life examples and bring them closer to the learners. Omaiyo (2013) reported that providing opportunities and material for children to classify, sort and group objects using various criteria like; color, shape, size, texture or use, help children to symbolize and use differed imitation and enhance their mental abilities. Omaiyo (2013) asserted that learners actively construct their knowledge depending on the type of resources used; see, hear or do in relation to what they know thus, children should be exposed to different types of resources so that they can construct their knowledge better.

Piaget (1973) further suggested that the type of instructional required in number work largely depends on the specific content area being covered and the age group being taught. Sometimes different age groups require different materials and the same happens for different content areas. Piaget divided materials for ECDE mathematics into four categories: The first one is Audio-visual which is materials that produce sound and pictures like Television, Films and Digital Versatile Discs (DVDs); followed by Audio which is materials that produce sound like Radio, Radio Cassettes, Compact Discs (CDS), Walkman and iPod; then Visual whis is materials that need the sense of sight only like flash card, cut-outs charts picture books, picture cuttings, magazines and calendars among others

and lastly concrete which is materials that can be manipulated for example, blocks, stones, dolls, beads, a toy car, fruits, sticks among others.

Oginni; Awobodu; Alaka and Saibu (2013) noted that availability and adequacy of instructional resources in learning number work improves children achievement because every learner is involved in the activity given. Adequate instructional resources enable learners to acquire number work skills. As they interact with instructional resources, they learn classification skills which help them in counting, matching, modeling and tracing numbers among others. All this learning is done in a safe environment where the parents should provide instructional resources and coordinate with pre –school teachers so that the environments can enable children learn by doing, manipulating, observing, exploring and experiment with a variety of instructional resources guided by the teacher (MoE, 2008).

The ECE curriculum developed by Kenya Institute of Curriculum Development (KICD) has provision for children to have adequate instructional resources to interact with but most children in ECD however do not interact with a variety of instructional resources. This is because most ECD teachers do not care and teach number work without adequate resources, hence learners fail to develop some number work concepts. Most ECD centres in Kenya give little or no time for children to interact freely with instructional resources during number work lessons (Waithaka, 2005). Librera, Bryant., Gantwerk and Tkach (2004) stated

that the learning environment as well as the resources used by pre-school children is essential to their development. The pre-school classroom environment must provide welcoming, safe, warm and stimulating areas to promote the development of the whole child expand and deepen learning. Many pre-schools avail learning centers in which their children can read books, build with blocks and use other stimulating materials. This study will investigate how availability of these instructional resources affects children's participation in number work because many preschools have provided them.

2.4 Studies on preschool teacher's experience on use of instructional resources in number work

NACECE (2000) reported that preschool teachers have an important role to play in the stimulation and learning process of children. The teacher should have a deeper understanding of children's characteristics, behaviour, needs, abilities and interests so that he/she can provide assistance and proper care especially in number work. Waithaka (2008) observed that in Kenya preschool children are subjected to academic work due to pressure from parents who would like to see their children read and write within weeks upon joining pre-school.

Waithaka (2008) further emphasized the importance of training ECDE teachers since most ECDE centers in Kenya emphases academic and give little or no time for learners to interact with instructional materials. The ECDE curriculum

developed by KICD provides children with an opportunity to interact with instructional materials but this is overlooked by parents and private school managers who insist that the pre-school children have to be taught numeric, literacy and have the ability to read. Hence primary school head teachers subject the ECDE children with oral and written interview for them to be admitted to standard one hence gives no room for learners to interact with instructional resources. This is similar to what Librera; Bryant; Gantwerk and Tkach (2004) noted that a qualified teacher is expected to create this environment by having resources he/she feels are most beneficial if the child has to learn how the concept of counting and classifying with less difficulties.

Charles (2005) reported that for a trained preschool teacher to teach number work effectively, he/she should create a stimulating and safe environment. He/she should plan tasks related to number work. Studies have shown that learning among children occurs through social interaction with skilful teacher as the tutor. Therefore children therefore seek to understand the actions or instructions provided by the tutor, then internalize the information using it to guide or regulate their own participation.

Omaiyo (2013) reported that early childhood education teachers should have knowledge on how children grow, develop and learn. Skillful teachers should connect ideas in number work with other activity areas in ECDE syllabus. They should encourage children to communicate and expand their thinking as they

interact with important number work experiences. If facilities are adequately provided and the environment is conducive to learning, the curriculum satisfies and the children themselves have interest in learning. Learning can only take place in the presence of the qualified teacher when handling and organizing instructional resources for number work in classroom.

The Ministry of Education (2009) emphasized that a preschool teacher should provide children with learning opportunities that will enable them to perform advanced activities that will link them to class one. The MoEST emphasized that children should perform addition and subtraction problems up to digit 10. The children need to be mentally and physically stimulated and helped to mix and live with others as well as learn how to control their emotions. The preschool teacher should have knowledge of planning, organization and management skills. The teacher should have the ability to mobilize children in carrying out numerical activities using various instructional resources. The study will investigate the effect of preschool teachers' qualification and their use of instructional resources in number work.

Hewett (2001) stated that a preschool teacher should be a child's partner and always be involved in the learning process. Hewett (2001) further stated that teachers play a major role in fostering children's mathematical abilities. It is the teacher's role to plan for number work activities which arouse children curiosity in various mathematical concepts and skills. Being able to plan number work

activities requires knowledge of number work.

National Coalition for Core Arts Standards (2012) reported that teachers should have the knowledge to observe each child as they make choices and play in a supportive learning environment. Teachers should note interests, strengths and asses each child's prior experiences and informal knowledge. Teachers should provide support and use appropriate teaching strategies to enable children participate in number work. It is the role of the teacher to provide materials and books that promote number work exploration.

The teacher should have skills to collect small objects, number puzzles, counting books and games, egg cartons, used up kitchen utensils and others. The teacher should integrate number work into all aspects of the daily routines through individual and small group choices and transitions. The teacher allocates time for in-depth, planned, small group experiences that include interaction, problem solving and reflection during number and numerical operations. The teacher should know how to use instructional resources well (NAEYC, 2011). The study will investigate the effect of preschool teachers' qualification and their use of instructional resources in number work.

2.5 Review on parents' ability to provide instructional resources for number work

There is a notable consensus across education policy statements and practice guidelines in many countries that parents are children's first and most enduring educators (OECD, 2012). Indian Green Building Council (IGBC, 2008) stated that the council recognizes that a student's education is a responsibility shared by the government, parents, families and other members of the community during the entire time a student attends school. Harvard Family Research Project (HFRP, 2006) believes that children must have a range of learning environments around them or complementary learning which includes family, early childhood programs, schools, out-of-school time programs and activities, libraries, museums and other community based institutions.

Kamerman (2000) reported that children, mothers, fathers and practitioners all have a role to play in early learning. Attention needs to be paid to parent-child relationships, practitioner-child relationships, child-child relationships and parent-practitioner relationships. It is recognized that parents and practitioners may need support to make these learning partnerships work. Families dealing with stressful circumstances such as poverty, unemployment, family breakdown or addiction need particular support. There have been a number of initiatives like printed and online guidelines, handbooks, in-service workshops, film material and online discussion for a to support Early Childhood Education and Care (ECEC) services

and schools to enhance parental involvement, to develop conditions for and improve learning partnerships between parents and ECEC services and schools. Despite these initiatives, some academic researchers speak about worsening relations and little meaningful performance between parents and schools, to the detriment of children.

Reutzel and Cooter (1996) reported that positive effects on parental involvement were shown to increase when choices of instructional resources to be used in number work are provided by the parents. The schools that offered variety of ways for parents to get involved increases children's participation in activities particularly in number work. This increase in parental involvement has shown a consistent, positive relationship in children's participation and development in school. Wanke (2008) stated that parent tutoring brings considerable improvements to children. Socio-economic status has been recognized as an influential factor concerning parental involvement. Children require families that can provide literacy rich environments that foster readers in the school and if parents are not literate, they cannot assist their children with school work at home (Wanke, 2008).

Epstein(2001)discusses how children learn and develop through three overlapping spheres of influence; family, school and community. These three spheres must form partnerships to best meet the needs of the child. Epstein defined six types of involvement based on the relationships between the family, school and

community namely parenting (skills), communicating, volunteering, learning at home, decision making, and collaborating with the community. Epstein emphasizes that all the six types of involvement need to be included to have successful partnerships. Parental involvement has been shown to be an important variable that positively influences children's education. Many schools are observing the importance of parental involvement and are encouraging families to become more involved. Due to this recent trend, it has become essential to understand what is meant by parental involvement and in what ways it has an influence on children's education (Ondieki, 2012).

The kinds of parent involvement include telephone and written home-school communications, attending school functions, parents serving as classroom volunteers, parent-teacher conferences, and homework assistance/tutoring, home educational enrichment, provision of instructional resources, parent involvement in decision making and other aspects of school administration. However, apart from parental involvement in acquisition of instructional resources, they are also involved in parent administrative areas such as teachers' selection and evaluation (Kimiya, 2011).

Caples and Barrera (2006) indicated that everyone benefits when parent and family involvement occurs in educational settings. Chen (2008) reported that whether a program is at the preschool, elementary, or high school level, parent involvement enhances education for children.

The benefits of parents' ability to provide instructional resources include the elimination of mistaken assumptions which parents and school administration may hold about one another motives, attitudes, intentions and abilities. Parental programs concerned with availability of instructional resources are getting developed in more productive and parents friendly ways (Kimiya, 2011). The study will establish the extent to which the influence of parental involvement in the provision of resources affects preschool children's performance in number work.

2.6 Studies on the acquisition of instructional resources and how it influences preschool children's performance in number work

Essentially, there are two sources of funding for acquisition of instructional resources for ECE namely Public and Private (Kamerman, 2000). In the public and with free provision for acquisition of instructional resources, children enrollment rates are high (Clive, 2006).Clive (2006) further stated that public government funding is a major source of funds for acquisition of instructional resources for ECE, particularly for low income families who cannot afford to make private contributions. In the public sector, preschool funding for acquisition of instructional resources come from national, local government or both.

Wanjohi (2011) stated that after Kenya becoming a Republic in 1964, Kenyan leaders vowed to eradicate poverty, disease and illiteracy. Today, the proportion

of the population living on less than one US dollar a day, that is the poverty line, is higher than ever before. Kirimi (2012), stated that the rationale for introduction of safety nets like bursaries and constituency development fund in the education sector was to provide instructional resources for provision of quality education. This is because, almost all educational institutions in Kenya face financial constraints due to failure by parents to pay fees promptly.

Feshbach (2006) reported that the Ministry of Education and culture in England employ preschool supervisors, construct classrooms and equip classrooms with a variety of instructional resources and in addition each preschool teacher is provided with a budget for the purchase of instructional resources. Allen and Hart (2009) stated that besides using teaching materials the teacher must ensure that variety of the same are available in class for effective teaching and learning. Allen and Hart (2009) further said that the materials and equipment presented in early childhood setting should be chosen to provide opportunities for learners to practice and master familiar skills through a variety of materials. Preschools require finances to purchase some instructional resources.

UNESCO (2005) indicated that governments, policy makers and civil society have emphasized that developing countries need to invest more in education and ensure that systems of education are efficiently managed, that limited funds allocated to the sector have maximum impact and that cost-saving and cost-recovery measures are adopted. Expanding educational systems appears to imply

a proportional increase in resources, but governments are proving increasingly unable to cope with the higher costs.

Diaa (2006) reported that finance is one of the basic pillars upon which the educational system depends in achieving its goals and implementing its plans but Kirimi (2012), stated that through cost sharing and saving measures, the government was to reduce the high public expenditure in education. Parents were to provide building, teaching and learning materials but these efforts to curb high expenditure in education have made successful and quality training in preschools elusive.

Kirimi (2012) further observed that financial management is one of the important tasks in the realization of the goals of a school. Despite the rationale for introduction of safety nets such as bursaries and constituency development fund in the education sector, there are increasing concerns over the limited finances in preschools to provide quality education and training. Preschool programs have always been shared amongst government, local communities, beneficiaries, religious and private organizations, donors and private business. The study will investigate how availability of finances enhances acquisition of instructional resources and its effects on preschool children's performance in number work.

2.7 Theoretical framework

The study will be guided by constructivists' theory. The main concept of constructivism is that teaching with constructivism methods involves the learners being active participants in the classroom (Solso, 2009). He further asserts that constructivism is grounded on the fact that for children to expand their learning, they need to explore their environment and learn from hands on experiences. There are many constructivist theorists. According to John Dewey (1916), education depends on action where knowledge and ideas emerged only from a situation in which learners had to draw them out of experiences that had meaning and importance to them. Those situations had to occur in a social context like a classroom where students joined in manipulating materials themselves and hence creating a community of learners who built their Knowledge.

Jean Piaget's (1973) theory of learning shows that knowledge is a construct of interaction between heredity and interaction. According to Piaget, a child's thinking develops in a particular sequence, thus, learning is an active process.

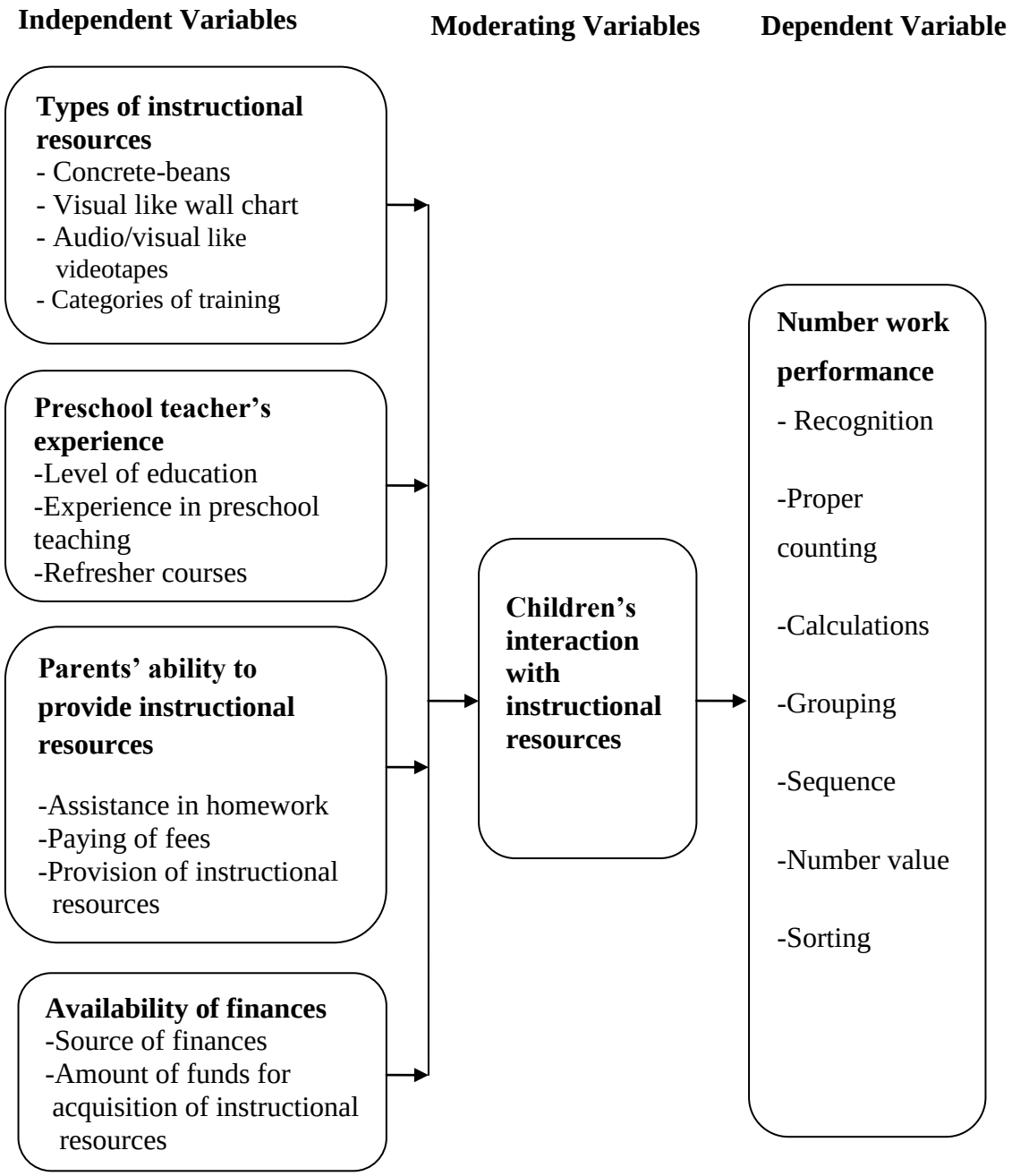
As the child develops and constantly interacts with the world around him or her, knowledge is invented and re-invented. This means that a learner should be allowed to do his or her own learning. Alsup (2004) asserts that students being taught using constructivist number work methods would become active learners in their environment, develop cognitive thinking and be able to relate number work on real world application. The purpose of knowing is to adapt to the environment

and the learner must be active, not a vessel to be filled with knowledge. Mee (2006) stated that the implication of constructivism is not to think that the learner's mind is blank, therefore learning should build on what the learner knows and also that time is needed for a constructivist mind to be created. Prior knowledge influences the new knowledge and learners will construct from new learning experiences.

2.8 Conceptual framework

A conceptual framework on which this study is based appears as Figure 1.1.

Figure 1.1 Conceptual framework



CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter focused on the research methods used to find answers on how instructional resources influence children's performance in number work. It contains research design, target population, sampling procedures and sample size, data collection methods, reliability and validity of the data collection instruments and procedures and finally the data analysis. Ethical considerations are also presented in this chapter.

3.2 Research design

The study used descriptive survey design. The descriptive survey design was selected because it is suitable for gathering of data and basically describes the characteristics of the population (Mugenda and Mugenda, 2003). The design enhanced the investigation of the influence of instructional resources on preschool children's performance in number work.

3.3 Target population of the study

The study's target population included 28 preschools, 28 preschool teachers and 1272 preschool children drawn from Kairuri Zone, Embu County. The study focused on public preschools because of funds limitation.

3.4 Sampling procedures and sample size

The sample for this study was selected in such a way as to ensure that certain sub-groups in the population are represented in the sample proportion. In this study the sample was obtained using Krejcie and Morgan (1970). According to Krejcie and Morgan (1970) a total of 1300 members required a sample of 297 members as shown in Table 3.1.

The researcher used stratified sampling since preschool teachers (men teachers and women teachers) and children (boys and girls) from all 28 public preschools were considered. One lesson from each of the 18 public schools was observed.

Table 3.1 Sample size

Category	**Gender**	**Total population**	**Sample size**	**Percentage(%) of sample**
Public schools		28	18	6
Teachers	Men	2	2	0.7
	Women	26	26	8.8
Children	Boys	632	127	42.6
	Girls	622	124	41.9

3.5 Data collection instruments

The research instruments in this study included questionnaires, observation schedule and number work test for the children.

3.5.1 Questionnaires

The questionnaires had both open and closed ended questions to facilitate in analysis as they are in immediate usable form while the unstructured questions was used to encourage the respondent to give an in-depth response without feeling held back in revealing of any information. In this study the questionnaires were administered to pre-school teachers to gather information on the pre-school teachers' qualification, use of instructional resources, family economic status and parental involvement.

3.5.2 Observation schedule

The observation schedule was used to collect data from preschool children more so on how children manipulate and interact with the instructional resources in the classroom during number work lessons.

3.5.3 Number work test

The number work test was given to the preschoolers and the scores were compiled, analyzed and reported to investigate the influence of instructional resources on children's performance in number work.

3.6 Validity of the instruments

Validity of the instruments was established by availing the research instruments to peers and a panel of experts from the Department of Education Communication and Technology who helped to establish its validity, a way of ensuring that the questionnaire and observation schedule included adequate and representative set of items which contain the variables under investigation. The panel ensured that the items adequately represented concepts that covered all relevant issues which were under investigation as per recommendations by Mugenda and Mugenda (2008).

3.7 Reliability of the instruments

Mugenda and Mugenda (1999) defined reliability as a measure of the degree to which a research instrument yields consistent results or data after repeated trials. An instrument is reliable when it can measure a variable accurately and obtain the same results over a period of time. This research study used test-rest method which involved administering the same scale or measure to the same group of respondents at two separate times. This was after a time lapse of one week. A pilot study was conducted on 10 preschool teachers and 10 children before the commencement of the study picked. Test re-test method was used to test for reliability of the instruments. The instruments were administered to the respondents and re-administered to the same respondents after one week. This was in line with (Shuttleworth, 2009), who stated that the instrument should be

administered at two different times and then the correlation between the two sets of scores computed. This was done using Pearsons Product Moment correlation coefficient Formula and a correlation coefficient of 0.8 was obtained and hence the instrument was deemed to be reliable and measurable. The comments made by the respondents during piloting exercise were used to improve the research instruments since inappropriate questions and items were removed.

3.8 Data collection procedures

The researcher sought permission from the DEO`s office to conduct the research. The researcher visited the sampled ECDE centers to familiarize with the schools and notify the managers, head teachers and the ECDE teachers of the intended study. The researcher then embarked on administering of data collection instruments to the sampled respondents. The questionnaires were administered to the preschool teachers to give information about pre-school teachers' qualification, use of instructional resources, family economic status and parental involvement.

The instruments were collected the same day but in case the respondents were not present, they were left with the questionnaires and handed them to a specific central place after two days. The observation schedule was used to observe the instructional resources used in the teaching of number work noting how they influence children's participation in number work. This showed how children manipulate and interact with the instructional resources in the classroom during

number work lessons. One lesson from each of the 18 public schools was observed. Number work test was given to 290 children from the 18 public preschools. The observation of the lesson and number work test took 30 minutes each.

3.9 Data Analysis techniques

The researcher edited the data collected through questionnaires, observation schedule and number test for children for the purpose of checking on completeness, clarity and consistency in answering research questions. The data was then coded, tabulated and analyzed using Statistical Package for Social Sciences based on study objectives. Descriptive statistics was computed and study findings presented using tables and percentages and interpretations made.

3.10 Ethical consideration

All respondents were treated with courtesy and respect in order to avoid misunderstanding between the enumerators and respondents. They were informed of the purpose of the study. Each respondent was politely requested to fill the questionnaire and was assured of confidentiality with regard to the information they provided.

3.11 Operational definition of variables

Table 3.2 shows the operational definition of variables.

Table 3.2 Operational definition of variables

Objectives	Type of Variables	Indicator(s)	Measure(s)	Measurement scale	Type of analysis Tools
To establish the types of instructional resources influencing children's performance in number work.	**Independent** Types of instructional resources	Concrete	Number of resource materials	Ratio	Percentages means
		Visual	Number of resource materials	Ratio	Percentages means
		Audio/visual	Number of resource materials	Ratio	Percentages means
To determine how teachers experience on use of instructional resources affect children's participation in number work.	**Independent** Teachers academic qualification	Level of education	Number of teachers with masters, degree, diploma, certificate or no certificate at all in ECD	Ratio	Percentages means
		Experience in preschool teaching	Number of years in preschool teaching	Ratio	Percentages means
		Refresher courses	Number of reflesher courses attended	Ratio	Percentages means
To establish the how parents ability to provide instructional influence	**Independent** Parent involvement	Assistance in home work	Number of parents assisting children in doing homework	Ratio	Percentages means

children's participation in number work.					
		Pay fees promptly	Number of parents affording school fees and can purchase support or purchase instructional resources	Ratio	Percentages means
		Attend school meetings on provision of instructional materials	Number of parents who attend school meetings	Ratio	Percentages means
To establish how availability of finances for acquisition of instructional resources affect children's participation in number work.	**Independent** Availability of finances	Amount for acquisition of instructional resources	Percentage of funds contribution towards acquisition of instructional resources	Ratio	Percentages means
		Source of finances	Number of financial sources	Ratio	Percentages means
	Dependent Preschoolers performance in number work	Number recognition	Number of preschool children who can recognize numbers	Ratio	Percentages means
		Proper counting	Number of preschool children who can do proper counting	Ratio	Percentages means

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND DISCUSSION

4.1 Introduction

This chapter contains data analysis, presentation and interpretation of findings. The study investigated the influence of instructional resources on preschool children's performance in number work. The chapter discusses results of the study under the following headings: questionnaire return rate, demographic characteristics of the respondents, objectives of the study namely, types of instructional resources, teacher's experience on use of instructional resources, parents ability to provide instructional resources and availability of finances for provision of instructional resources showing how they influences children's performance in number work.

4.2 Questionnaire return rate

The questionnaire return rate was 95.6 %, as 297 (28 questionnaires for preschool teachers and 269 preschoolers given number work test) were used. This was possible because the researcher waited for the respondents for two weeks for the teachers to complete the questionnaires.

4.3 Demographic characteristics of the respondents

This section discusses the teachers' gender, age and marital status. These social attributes were relevant to the study since they enabled the respondent to provide information that is valid, reliable and relevant to the study.

4.3.1 Study responses by gender

The teachers from Kairuri Zone preschools were asked to indicate their gender. The responses are shown in Table 4.1.

Table 4.1 Gender of the Teachers

Gender	Frequency	Percentage
Men	2	7.1
Women	26	92.9
Total	**28**	**100.0**

The study findings indicated that 26 teachers (92.9 %) were female teachers while 2 teachers (7.1%) who were male teachers. The findings showed that majority of the preschool teachers were female teachers.

4.3.2 Preschool teachers by age

The preschool teachers were asked to indicate their ages from among choices of age classes given. Their responses are shown in Table 4.2.

Table 4.2 Age of preschool teachers

Age in years	Frequency	Percentage
26-35	10	35.7
36-50	18	64.3
Total	**28**	**100**

The findings show that 64.3 % of the preschool teachers were in the age bracket 36-50 years while only 35.7% were below 35 years and hence youthful. The youthful teachers have many years to teach in the preschool and hence gain experience in using instructional resources in number work.

4.3.3 Marital status of preschool teachers

The preschool teachers were asked to indicate their marital status. The responses are shown in Table 4.3.

Table 4.3 Marital status of preschool teachers

Marital status	Frequency	Percentage
Married	25	89.3
Single	2	7.1
Widow	1	3.6
Total	28	100.0

The study findings indicated that 89.3 % of preschool teachers are married. Marriage ascribes familial responsibilities to preschool teachers and therefore teachers become more serious in their teaching career.

4.4 Instructional resources influencing children's performance in number work

In this section, the researcher sought to determine the types of instructional resources used in preschools, the ones the preschool teachers are using and the text books used in teaching number work.

4.4.1 Types of instructional resources

The researcher conducted an observation schedule on the various types of instructional resources used in the 18 public preschools and responses are in Table 4.4.

Table 4.4 Types of Instructional Resources

Preschool Name	Concrete (%)	Visual (%)	Audio (%)	Audiovisual (%)
Kenga Primary	80%	70%	20%	10%
Kianjokoma Day	60%	45%	10%	5%
Kianjokoma Boarding	95%	88%	5%	1%
Kiriari	75%	70%	10%	2%

S.A Manyatta	86%	71%	1%	0%
Kigari	90%	30%	20%	1%
Kairuri	68%	50%	3%	1%
Karuriri	80%	40%	1%	1%
Ngimari	81%	52%	1%	1%
Kamviu	80%	60%	3%	1%
Kirigi	78%	70%	1%	0%
Mukangu	80%	72%	0%	0%
Gatoori	90%	80%	0%	1%
Gicugu	72%	60%	1%	3%
Kavutiri	80%	50%	1%	5%
Kiangoci	72%	60%	0%	2%
Gituri	70%	69%	1%	4%
Kithunguriri	88%	72%	2%	3%
Mean	79%	62%	4%	2%

From the findings, all the 18 public preschools have concrete materials with a mean of 79% and visual materials with a mean of 62% while 15 schools have audio materials with a mean of 4% and audio visual materials with a mean of 2%. This shows that preschools have different types of instructional resources. This agrees with Piagêt (1973) who indicated that different age groups require different materials and the same happens for different content areas and therefore Piagêt divided materials for ECDE mathematics into four categories namely concrete

materials (materials that can be manipulated for example, blocks, stones, dolls, beads, a toy car, fruits, sticks among others), Visual materials (materials that need the sense of sight only like flash card, cut-outs charts, picture books, picture cuttings, magazines and calendars among others), Audio materials(materials that produce sound and pictures like Television, Films and DVDs) and Audio-visual materials (materials that produce sound like Radio, Radio Cassettes, CDS, Walkman and iPod..

The study further showed that instructional materials are used during number work lessons. This information collaborates with findings by Mwangi (2009) who reported that adequate manipulative (concrete) resources and models help children learn number work throughout their preschool education. This further collaborates study by Omaiyo (2013) who asserted that learners actively construct their knowledge depending on the type of resources used; they see, hear or do in relation to what they know, learners to be exposed to different types of resources so that they can construct their knowledge better.

4.4.2 Instructional resources which preschool teacher's use

The preschool teachers were asked to indicate the instructional resource they have used during number work classes and their responses were recorded in Table 4.5.

Table 4.5 Type of instructional resource used by preschool teachers

Type of Instructional Resource	Number of teachers who have used IR (Frequency)	Percentage
Concrete	28	100
Visual	28	100
Audio	23	88.5
Audiovisual	23	88.5

The study findings indicated that all the 28 preschool teachers have used concrete and visual materials while only 23 have used audio and audiovisual materials. This could be because concrete and visuals are readily available, easy to improvise and children can manipulate them and thus easy to remember. This collaborates study by Omaiyo (2013) who asserted that learners actively construct their knowledge depending on the type of resources used; they see, hear or do in relation to what they know, learners to be exposed to different types of resources so that they can construct their knowledge better.

The researcher also sought to know which type of instructional resource the preschool teachers consider to be the best. The findings indicated that 64.3% considered concrete materials as the best instructional resource used. This agrees with Mwangi (2009) who observed that when children are learning classification, they use concrete materials/objects such as sticks, stones, leaves to make mental representations of the skills and concepts learnt during number work.

4.4.3 Sources of instructional resources for number work

The findings indicated that instructional resources are obtained from material development as indicated by 57.1%, 11% obtain instructional resources from collecting and borrowing bottle tops and blocks of wood while 1% indicated that instructional resources are purchased. This collaborates study by Kate (2002) who stated that for children to acquire number work skills, they should be provided with a variety and relevant instructional resources that are locally available within the environment. Kate further observed that instructional resources are collected around schools and houses.

4.4.4 Importance of instructional resources for number work

From the findings, 32.1% indicated that instructional resources enable children to participate in number work, 50% indicated that instructional resources enhance children understanding of number work and 17.9% indicated that instructional resources enable children to develop skills in number concepts. This agrees with Omaiyo (2013) who reported that providing opportunities and material for children to classify, sort and group objects using various criteria like colour, shape, size and texture help children to symbolize and enhance their mental abilities.

4.4.5 Textbooks used in preschools for number work lessons

This section sought to know the textbooks used in preschool when teaching number work and the reasons why these text books are used. Table 4.6 shows the responses.

Table 4.6 Textbooks used in number work

Text book used	Frequency)	Percentage
Beginners mathematics	9	32.1
Nursery mathematics workbook	9	32.1
Alpha mathematics	9	32.1
Tip top mathematics pre-primary II	1	3.7
Total	**28**	**100**

The study indicated that 32.1 % of the preschool teachers use beginners mathematics by Jane Wanyoike, 32.1% use nursery mathematics workbook by mountain top publishers, 32.1% use Alpha mathematics while only 3.7% use Tip top mathematics pre-primary II. Tip top mathematics preprimary II is least popular in number work teaching because it does not have clear illustrations for maximum practice by preschool children.

The preschool teachers were asked to state reasons for using these books and 32.1 % of preschool teachers indicated that they use Beginners mathematics because it is written in simple mathematic language, 32.1% use Nursery mathematics workbook because it offers maximum practice while 32.1% use Alpha mathematics because it has activities and illustrations which enhance understanding of number work. My findings agrees with Librera, Bryant, Gantwerk and Tkach (2004) findings which shows that pre-schools should ensure that textbooks on number work are available in the learning centers.

4.5 Teacher's experience on use of instructional resources and its influence on children's performance in number work

This section presents information concerning the educational level of the preschool teachers and their years of experience in teaching.

4.5.1 Education level, teaching experience and refresher courses attended by the respondents

The respondents were asked to indicate their education level, teaching experience and refresher courses attended. Responses are shown in Tables 4.7, 4.8 and 4.9.

Table 4.7 Education level of the respondents

Education level	Frequency	Percentage
Certificate	17	60.7
Diploma	11	39.3
Total	**28**	**100.0**

The findings show that 60.7% of the respondents have certificate level of education while39.3% have diploma level of education. Trained preschool teachers had the required skills pertaining to use of instructional resources in number work lessons. This agrees with Librera; Bryant; Gantwerk and Tkach (2004) who indicated that a qualified teacher create a stimulating and safe environment as well as putting resources he/she feels are most beneficial to the child to learn how to count and classify in classroom. The study further agreed

with the Ministry of Education (2009) who reported that preschool teachers should have knowledge of planning, organization and management skills. The teacher should have the ability to mobilize children in carrying out numerical activities using various instructional resources.

Table 4.8 Number of years in preschool teaching

Number of years in preschool teaching	Frequency	Percentage
5-8	8	28.6
8-15	20	71.4
Total	**28**	**100**

From the findings, majority of the respondents (71.4%) have taught in preschool for 8-15 years. Teaching experience assist the preschool teachers to be conversant with the problems encountered during learners' participation in number work lessons. The past experience enables teachers to get solution to the current problem. This agrees with National Coalition for Core Arts Standards (2012) which observed that experienced teachers provide support and use appropriate teaching strategies and instructional resources which enable children participate in number work.

Table 4.9 Refresher courses attended

Refresher Course	Frequency	Percentage
Kenya Institute of Education	7	25.0
Mountain Top Publishers course on ECDE	2	7.1
ECDE Capacity building workshop at Kigari TTC	19	67.9
Total	**28**	**100**

The study indicated that majority of the respondents (67.9%) attended refresher course on ECDE capacity building workshops at Kigari Teachers Training College (KTTC).KICD enhances knowledge to preschool teachers on how to interpret curriculums in ECDE. Mountain Top Publishers enlightens preschool teachers on thematic approach which assists children to understand number work concepts better. Refresher courses inform the preschool teachers of the new developments in teaching number work to preschoolers. This agrees with Waithaka (2008) who stated that preschool teachers are trained so that they can enable children interact with instructional materials. This further agrees with Omaiyo (2013) who reported that learning can only take place in the presence of the qualified teacher who are able to handle and organize instrumental resources for number work.

4.6 Parents ability to provide instructional resources and its influence on children's performance in number work

This section sought to establish how parents are involved in provision of instructional resources for number work, parents who attend school meetings regularly and those who pay school fees regularly to enable acquiring of instructional resources. The responses are shown in Tables 4.10, 4.11 and 4.12.

Table 4.10 Parents involvement in the provision of instructional resources in number work

Parental involvement	Frequency	Percentage
Parents are involved in collecting of instructional resources e.g. bottle tops, wood pieces	2	7.1
Invite parents in workshop of making instructional resources	18	64.3
By setting a material making day in the pre school	4	14.3
By encouraging and helping children to use instructional resources in number work	4	14.3
Total	**28**	**100**

From the findings, 64.3% of preschool teachers indicated that parents should be involved through workshops of making instructional resources, 14.3% of preschool teachers indicated that they should be involved through setting of instructional resources making day in the preschool while 14.3% believed that

parents should be encouraged to help their children in using instructional resources available at home (14.3%). This agrees with Kamerman (2000) who reported that children, mothers and fathers and practitioners all have a role to play in early learning and attention needs to be paid to parent-child relationships, practitioner-child relationships, child-child relationships and parent-practitioner relationships for them to make learning partnerships work. This is further supported by OECD (2012) who stated that there is a consensus across education policy statements and practice guidelines in many countries that parents are children's first and most enduring educators.

In 18 preschools of Kairuri Zone, 60.7% of preschool teachers rated the involvement of parents in the provision of instructional resources for use in number work lessons as very good. The parental involvement is likely to improve the children performance in number work. This agrees with Ondieki (2012) who stated that parental involvement has been shown to be an important variable that positively influences children's education.

Table 4.11 Number of parents who pay fees promptly

Parents	**Frequency**	**Percentage**
80-99%	5	17.9
50-79%	14	50.0
30-49%	4	14.3
Less than 30%	5	17.9
Total	**28**	**100**

From the findings presented in Table 4.11, 50% of preschool teachers indicated that 50-79% of the parents pay their fees promptly. Prompt payment of fees facilitates acquiring of instructional resources for use in number work lessons and thus improves children's achievement in number work. This collaborates study by Kimiya (2011) who stated that parents' ability to provide instructional resources is associated with children's achievement in number work, better behavior, better social skills and adaptation to school, better attendance and lower dropout rates. Parental programs concerned with availability of instructional resources are getting developed in more productive and parents friendly ways.

The findings also revealed that 50-79% of parents attend school meetings regularly. Parents enable preschools to have a variety of instructional resources through attending of workshops for making of instructional resources since the parents are ready to contribute money towards purchase of instructional resources. This agrees with Wanke (2008) who stated that socio-economic status has been recognized as an influential factor concerning parental involvement in preschools.

4.7 How Availability of finances for provision of instructional resources influence children's performance in number work

This section covers the sources of finances for purchase of instructional resources

4.7.1 Source of finances for purchase of instructional resources

The preschool teachers were asked to indicate the sources of finances for purchase of instructional resources as shown in Table 4.12.

Table 4.12 Sources of finances for purchase of instructional resources

Source of finances	Frequency	Percentage
From county government	6	21.4
Fundraising in schools	3	10.7
Parents contribution	7	25
From parents and government	12	42.9
Total	**28**	**100**

The study findings show that funds for purchase of instructional resources come from parents and county government as indicated by 42.9 % of the respondents. This agrees with study by Kamerman (2000) who stated that there is public and private funding for acquisition of instructional resources. The findings also indicated that less than 30% of the finances received from parents go to purchasing of instructional resources. Adequate funds enable preschool teachers to purchase a variety of instructional resources on time. Availability of funds enables teachers and management to attend workshops meant to improve the use of instructional resources. This agrees with Karimi (2012) who indicated that parents who provide building, teaching and learning materials have made successful and quality training in preschools.

4.8 The influence of instructional resources on children's performance in number work

Number work test was carried out on the preschool children when reading out numbers (1-9),counting numbers (1-9),sorting and grouping numbers in accordance to colour, using sticks to write numbers and matching items with numbers and scores in percentage (%). Later, they were awarded. Table 4.13 shows the responses.

Table 4.13 Preschool children's number work test performance

Score (%)	**Reading numbers (1-9)**		**Counting (1-9)**		**Sorting group materials**		**Using sticks to write numbers**		**Matching items with numbers**	
	Children	%	Children	%	Children	%	Children	%	Children	%
0-10	32	12.5	0	0	0	0	0	0	0	0
11-50	3	1.2	39	15.2	0	0	2	0.8	47	18.4
51-70	141	55.1	174	68.0	182	71.1	221	86.3	134	52.3
71-100	80	31.3	43	16.8	74	28.9	33	12.9	75	29.3
Total	**256**	**100**	**256**	**100**	**256**	**100**	**256**	**100**	**256**	**100**

From the findings, 55% of the children scored 51-70% in reading, 68% of the children scored 51-70% in counting, 71.1 % of the children scored 51-70% in sorting group materials, 86.3% of the children scored 51-70% in using sticks to write numbers and 52.3 5% of the children scored 51-70% in matching items with

numbers. The study showed that children had skills on reading, counting, sorting group materials, writing numbers using sticks and matching items with numbers. This showed that most children (86.3%) were able to use sticks to write numbers and thus they had acquired mathematics concepts and skills in number work through use of different instructional resources.

4.9 Summary of the chapter

The questionnaire return rate was 284 (95.6 %), as 297 (28 questionnaires for teachers and 269 preschool children took number test) were used from preschools in Kairuri Zone. The data interpretation focused on the influence of instructional resources on preschool children's performance in number work in Kairuri Zone, Embu County based on the types of instructional resources, teacher's experience on use of instructional resources, parents ability to provide instructional resources and availability of finances for provision of instructional resources influencing children's performance in number work. The data was interpreted and discussed in this chapter.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter focuses on the summary of findings of the study which formed the foundation for discussions. The discussions provided a firm basis upon which conclusions and recommendations were advanced to address the influence of instructional resources on preschool children's performance in number work. Suggestions for further research are also presented in this chapter.

5.2 Summary of findings

The summary of findings presented is based on the four objectives of the study.

5.2.1 Types of instructional resources and their influence on children's performance in number work

From the findings, all the 18 public preschools have concrete materials with a mean of 79% and visual materials with a mean of 62% while 15 schools have audio materials with a mean of 4% and audio visual materials with a mean of 2%. These shows that relevant instructional materials are used during number work lessons.

The study findings indicated that all the 18 preschool teachers have used concrete and visual materials while only 15 have used audio and audiovisual materials. This could be because concrete and visuals are readily available, easy to improvise and children can manipulate them and thus easy to remember. From the

findings, 64.3% and 37.5% considered concrete and visual materials as the best respectively.

The instructional resources are obtained from material development as indicated by 57.1% of the preschool teachers, from collecting and borrowing bottle tops and blocks of wood as indicated by 11% of the respondents or purchase as indicated by 1% of the preschool teachers. From the findings, instructional resources enhance children's understanding of number work while 32.1% indicated that instructional resources enable children to participate in number work and develop skills in number concepts.

The study indicated that beginners' mathematics by Jane Wanyoike, nursery mathematics workbook by mountain top publishers and Alpha mathematics are equally used by 32.1 % while only 3.7% use Tip top mathematics preprimary II. Same percentage of respondents (32.1%) indicated that Beginners mathematics is used because it is written in simple mathematic language, Nursery mathematics workbook because it offers maximum practice and Alpha mathematics because it has activities and illustrations which enhance understanding of number work.

5.2.2 Teachers' experience on the use of instructional resources and its influence on children's performance in number work

The findings show that 60.7% of preschool teachers have certificate level of education while 39.3% have diploma level of education. Trained preschool teachers have the required skills pertaining to use of instructional resources in number work lessons. From the findings, 71.4% of the preschool teachers have

taught in preschool for 8-15 years. Teaching experience assist the preschool teachers to be conversant with the problems encountered during learners' participation in number work lessons. The past experience enables teachers to get solution for the current problem.

The study shows that, 67.9% of the respondents attended refresher course on ECDE capacity building workshops at Kigari Teachers Training College (KTTC). Refresher courses inform the preschool teachers of the new developments in teaching preschools.

5.2.3 Parents ability to provide instructional resources and its influence on children's performance in number work

From the findings, 64.3% of preschool teachers indicated that parents should be involved through workshops of making instructional resources, 14.3% of preschool teachers indicated that they should be involved through setting of instructional resources making day in the preschool while 14.3% believed that parents should be encouraged to help their children in using instructional resources available at home (14.3%). From the study, 60.7% of preschool teachers rated the involvement of parents in the provision of instructional resources for use in number work lessons as very good as 50% of preschool teachers agreed that parents with formal employment involve themselves better in provision of instructional resources for use in number work than those without formal education. From the findings 50% of the preschool teachers indicated that 50-79%

of the parents pay their fees promptly. Prompt payment of fees enable acquiring of instructional resources for use in number work lessons.

The findings also revealed that 50-79% of parents attend school meetings regularly. Parents enable preschools to have a variety of instructional resources through attending of workshops for making of instructional resources since the parents are ready to contribute money towards purchase of instructional resources.

5.2.4 The availability of finances for provision of instructional resources and its influence on children's performance in number work

From the findings, 42.9 % of the preschool teachers indicated that funds for purchase of instructional resources come from parents and county government. The findings also indicated that less than 30% of the finances received from parents go to purchasing of instructional resources. Adequate funds enable purchase of instructional resources on time, purchase of more variety of instructional resources and funds availability enable teachers and management to go for tours and workshops on how one can make better instructional resources.

From the findings, 55% of the children scored 51-70% in reading, 68% of the children scored 51-70% in counting, 71.1 % of the children scored 51-70% in sorting group materials, 86.3% of the children scored 51-70% in using sticks to write numbers and 52.3 5% of the children scored 51-70% in matching items with numbers. This showed that most children (86.3%) were able to use sticks to write numbers and thus they had acquired mathematics concepts and skills in number work.

5.3 Conclusions

It can be concluded that different types of instructional resources influence children's performance in number work. Concrete and visual instructional resources are widely used in preschools. Preschool learners should be exposed to different types of resources so that they can construct their knowledge and thus improve their performance in number work. Preschool teachers' experience in using instructional resources influences children's performance in number work. Preschool teachers should be trained and be experienced in using instructional resources in number work lessons to improve preschool children's performance in number work.

Parents' ability to provide instructional resources influence children's performance in number work. The parents should be involved in school meetings which decide on the instructional resources to be purchased or improvised. The parents should also pay fees promptly to enable preschools acquire instructional resources for use in number work and thus improve children performance in number work. Parents should help their children in using instructional resources available at home for number work. Availability of finances for provision of instructional resources influences children's performance in number work. Finances provided to preschools from public and private sources enable preschools acquire appropriate instructional resources for use in effective teaching and learning of number work and thus improving children's performance.

5.4 Recommendations

The following policy recommendations were made from the findings of this study

Preschools should have adequate concrete, visual, audio and visual audio instructional resources for teaching number work.

The preschool teachers and parents should attend workshops where they are trained on improvisation of relevant instructional resources.

The preschool teachers should be attend refresher courses to give them deeper understanding of using instructional resources for number work.

The preschool administration should source for finances from national and county government, and other donors.

5.5 Suggested areas for further research

The study has identified the following areas which can be used for further research studies

Conduct research on the influence of instructional resources on preschoolers' performance in number work in other parts of Kenya.

Conduct a research on how indoor and outdoor instructional resources influence preschoolers' performance in number work.

Conduct a research on the influence of instructional resources in preschools in all other activity areas apart from number work.

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APPENDICES

APPENDIX I

LETTER OF INTRODUCTION

Lincoln Kinyua Mwaniki
P.O.Box 128-60101
Manyatta, Embu
Cellphone; 0711 898 965
Email: Lincoln_kinyua@yahoo.com

The District Education Officer
Embu North Sub-County

Dear Sir/Madam,

RE: PERMISSION TO CARRY OUT ACADEMIC RESEARCH

I am a graduate student undertaking a degree in Master of Education in Early Childhood Education in the Department of Educational Communication and Technology, University of Nairobi. I am conducting a research study entitled "Influence of Instructional Resources on Preschool children's Performance in Number Work in Kairuri Zone, Embu County''.

The purpose of this letter is to request for permission to collect data in preschools. The information obtained is strictly for academic purpose and shall be treated with utmost confidentiality.

Thank You

Yours faithfully,

Lincoln Kinyua

APPENDIX II

QUESTIONNAIRE FOR THE PRE-SCHOOL TEACHER

Kindly fill the following questions by ticking (√) in the appropriate spaces provided except where otherwise indicated.

Section A: Background Information

1. Name of the preschool ……

2. Please indicate your gender

(a) Male [ ]

(b) Female [ ]

3. Please indicate your age.

(a) Below 20 [ ]

(b) 20 – 25 [ ]

(c) 26 – 35 [ ]

(d) 36 – 50 [ ]

(e) Above 50 [ ]

4. What is your marital status?

(a) Married [ ]

(b) Single [ ]

(c) Divorced [ ]

(e) Widow [ ]

(f) Widower [ ]

Section B: Types of instructional resources for teaching number work in preschools

5.(a) Please indicate the number of the following instructional resources in your preschool

Type of instructional resource	**Number of instructional resource**	**Remarks**
Concrete materials		
Visual materials		
Audio materials		
Audio visual materials		

(b) Please indicate whether you have used the following instructional materials in teaching of number work

(a) Concrete materials [ ]

(b) Visual materials [ ]

(c) Audio materials [ ]

(d) Audio visual materials [ ]

(c) Give reasons for using the materials you have ticked in question 5 (b)

……

……..

6. (a) In your own opinion, please tick (√) the best instructional material among the following

(a) Concrete materials [ ]

(b) Visual materials [ ]

(c) Audio materials [ ]

(d) Audio visual materials [ ]

(b) Give reasons as to why you think what you have chosen in question 6 (a) is the best instructional material……

……...

7.(a) Please indicate where you get instructional resources for teaching number work from

……

……

(b) Give reasons for your answer in question 7(a)

……

……

8.(a) Which textbook do you use in teaching number work?

……

……..

(b) Give reasons for your answer in question 8(a)

……

……

9. (a) Are the instructional materials for teaching number work adequate?

(a) Yes [ ]

(b) No [ ]

(b) Please explain your answer in question 9(a)

……

……

10. Please list two challenges you face in teaching number work in preschool

i)…….

ii)……

11. State two (2) reasons why instructional material should be used in number work

i)…….

ii)……

Section C: Influence of teachers' experience on use of instructional to Enhance children's performance in number work?

12. Please indicate your highest academic level attained

(a) Masters [ ]

(b) Bachelors [ ]

(c) Higher Diploma [ ]

(d) Diploma [ ]

(e) Certificate [ ]

(f) Others (please specify)……

13. Please indicate your professional qualification.

(a) Trained [ ]

(b) Not trained [ ]

(c) Undergoing training [ ]

14. If you are trained, in which curriculum were you trained?

(a) DICECE [ ]

(b) Montessori [ ]

(c) K.H.A [ ]

(d) Not applicable [ ]

(e) Others (please specify)……

15. If you are not trained in ECDE, what challenges do you face when teaching in preschool?

……..

……

16. For how long have you been in the preschool teaching?

(a) Less than 3 years [ ]

(b) 5 – 8 years [ ]

(c) 8 – 15 years [ ]

17. Please list any two refresher courses you attended in year 2014

i)…….

ii)…….

18. What are your views as far as teachers experience in teaching number work in preschool is concerned?

i)…….

ii)…….

19. In your own opinion, how does teacher's experience on use of instructional resources influence children's performance in number work?

……..

……

Section D: Influence of parents ability to provide instructional resources for use in number work

20. Please list two ways in which parents should be involved in provision of instructional materials number work in preschools.

i)…….

ii)…….

21. How would you rate the parent's ability towards provision of instructional resources for number work in preschools.

(a) Excellent [ ]

(b) Very good [ ]

(c) Good [ ]

(e) Fair [ ]

(f) Poor [ ]

22. Parents with formal employment support provision of instructional materials for use in number work.

(a) Strongly agree [ ]

(b) Agree [ ]

(c) Neutral [ ]

(d) Disagree [ ]

(e) Strongly Disagree [ ]

23. Please indicate the number of parents in terms of percentages (%) who pay school fees promptly.

(a) 100 [ ]

(b) 80-99 [ ]

(c) 50-79 [ ]

(d) 30-49 [ ]

(e) Less than 30 [ ]

24. Please indicate the number of parents in terms of percentages (%) who attend school meetings regularly.

(a) 100 [ ]

(b) 80-99 [ ]

(c) 50-79 [ ]

(d) 30-49 [ ]

(e) Less than 30 [ ]

25. In your own opinion, how does parents ability to provide instructional resources influence children's performance in number work?

……..

……

Section E: Availability of finances for acquisition of instructional resources for number work

26. Please list different sources of finances for the purchase of instructional resources in the preschool.

……..

……

27. Please indicate the amount of money used for purchase of instructional resources in percentage

(a) 100 [ ]

(b) 80-99 [ ]

(c) 50-79 [ ]

(d) 30-49 [ ]

(e) 10-29 [ ]

(f) Less than 10 [ ]

28. In your own opinion, how does availability of finances affect acquisition of instructional resources for teaching number work?

……..

……

APPENDIX III

OBSERVATION SCHEDULE

Types of instructional resources

S/No.	Preschool (Public)	Concrete	Visual	Audio	Audio visual
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					

APPENDIX IV

NUMBER TEST FOR CHILDREN

1. Name of the preschool …….

2. Please indicate the gender of the child

(a) Male [ ]

(b) Female [ ]

3. Age of the child

(a) Below 3 years [ ]

(b) 4 years [ ]

(c) 5 years [ ]

(d) 6 years [ ]

(e) Above 7 years [ ]

4. Read out numbers from 1-9. Score the child

(a) 0-10% [ ]

(b) 10-50% [ ]

(c) 51-70% [ ]

(d) 71-100% [ ]

5. Use counters to count 1-9. Score the child

(a) 0-10% [ ]

(b) 10-50% [ ]

(c) 51-70% [ ]

(d) 71-100% [ ]

6. Sort and group materials given according to colour. Score the child

(a) 0-10% [ ]

(b) 10-50% [ ]

(c) 51-70% [ ]

(d) 71-100% [ ]

7. Use sticks to write numbers 1-9. Score the child

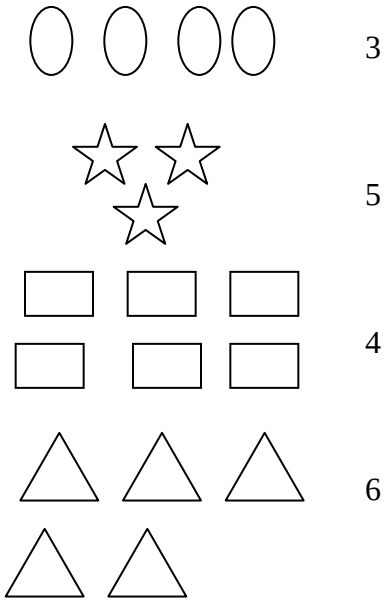
(a) 0-10% [ ]

(b) 10-50% [ ]

(c) 51-70% [ ]

(d) 71-100% [ ]

8. Match items with the number corresponding to their value. Score the child



3

5

4

6

(a). 0-10% [ ]

(b). 10-50% [ ]

(c) 51-70% [ ]

(d) 71-100% [ ]

APPENDIX V

DETERMINATION OF SAMPLE SIZE FOR A GIVEN POPULATION BY KREJCIE AND MORGAN

Table for Determining Sample Size for a Given Population

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

Note: "N" is population size
"S" is sample size.

Source: Krejcie & Morgan, 1970