

**EFFECT OF INSTRUCTIONAL RESOURCES ON CHILDREN`S NUMBER
WORK PERFORMANCE IN PRE-SCHOOLS IN ISIBANIA ZONE, MIGORI
COUNTY.**

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Award of the Degree of Master of Education in Early Childhood Education to
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DECLARATION

This project is my original work and has not been presented to any other academic award or any other university for approval.

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This project has been submitted with my knowledge as the university supervisor.

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DEDICATION

I dedicate this project to my loving parents William and Biliah for their effort and dedication in educating me in early levels of education.

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The success of this study has been due to tireless effort of my supervisor Dr. Origa of the University of Nairobi in guiding me at all stages of the study. I am grateful for his professional and academic support in the preparation and writing the project.

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ABSTRACT

Use of instructional resources has found little, if any acceptance in most of our ECDE centers. Observation reveals that most preschool teachers don't use instructional resources when teaching number work. Most parent and ECDE managers appear to pressurize the preschool teachers to undertake academic work as opposed to allowing children to learn naturally through interaction with instructional resources. The purpose of this study therefore was to investigate the effect of instructional resources on children's number work performance with special reference to the types of instructional resources used, teachers' academic qualification and use of instructional resources, organization of instructional resources in classroom and adequacy of instructional resources. The study used descriptive survey design. The target population comprised ECDE children and preschool teachers in Isebania Zone Migori County. There were 35 pre-school, 11 pre-schools were selected for the study through stratified random sampling. Through use of simple random sampling 5 pre-school were selected from public and 6 from private pre-school. 225 children were selected from possible population of 750 pre-schools using simple random sampling. Questionnaires were used to collect data from ECDE teachers while observation checklist was used to assess the presence of instructional resources used during number work lesson. Observation schedule was also used to investigate the organization of instructional resources in classroom and their effective use in learning number work. Own made number work test was administered to children to determine performance. The data collected was analyzed using descriptive statistics.

The data was analyzed using statistics and qualitative techniques and presented in tables, percentage and graphs. The main findings were: the study established that use

of visual and audio visual resources was minimal when teaching number work. Also use of instructional resources in public schools was minimal compared to private pre-schools. The study recommended that the government should train and employ preschool teachers. The study also suggested for a further research to be carried out on the effect of government budget allocation on ECDE centres.

TABLE OF CONTENTS

Declaration and recommendation	ii
Dedication	iii
Acknowledgement	iv
Abstract	v
Table of Contents.....	vii
List of Tables	x
List of Figures	xi
Abbreviation and Acronyms.....	xii

CHAPTER ONE: INTRODUCTION

1.1 Background to the Problem.....	1
1.2 Statement of the Problem.....	4
1.3 Purpose of the Study	5
1.4 Objectives of the Study	5
1.5 Research Question	6
1.6 Significant of the Study	6
1.7 Limitations of the Study	7
1.8 Delimitations of the Study	7
1.9 Assumptions of the Study	7
1.10 Definitions of terms	8
1.11 Organization of the Study.....	9

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction	10
2.1 Types of Instructional Resources	10
2.2 Teacher's Qualification.....	15
2.3 Organization of Instructional resources	19

2.4	Availability of Instructional Resources	22
2.5	Summary of Related Literature Review	25
2.6	Theoretical Framework	26
2.7	Conceptual Framework	29

CHAPTER THREE: METHODOLOGY

3.0	Introduction	30
3.1	Research Design	30
3.2	Target Population	30
3.3	Sampling Procedure& Sample size	31
3.4	Research instruments	32
3.5	Data Collection Procedure	33
3.6	Validity of Research Instruments.....	34
3.7	Reliability of Instruments.....	35
3.8	Data Analysis.....	35

CHATER FOUR

DATA ANALYSIS AND DISCUSSION OF FINDINGS

4.0	Introduction	36
4.1	Types of instructional resources used and number work performance..	36
4.2	Teachers Qualification and Number Work Performance ..	38
4.3	Organization of Instructional resources	40
4.4	Adequacy of Instructional Resources	42
4.5	Children Number Work Performance.....	44

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

5.0	Introduction	46
5.1	Summary of the Study.....	46
5.3	Findings of Each Research Questions.....	48
5.3.1	Types of Instructional Resources	48
5.3.2	Teachers qualification and use Instructional Resources	49
5.3.3	Organization of Instructional Resources in Classroom.....	49
5.3.4	Adequacy of Instructional Resources.....	50
5.3.5	Children's Number Work Performance	50
5.4	Conclusions.....	50
5.5	Recommendations.....	51
5.6	Suggestions for Further Research.....	51
	REFERENCES.....	53
	APPENDICES	
	Appendix I: Pre-school Teacher's Questionnaires.....	57
	Appendix II: Observation Checklist.....	59
	Appendix III: Observation Schedule for Children.....	60
	Appendix IV: Number Work Test.....	61

LIST OF TABLES

Table 3.1	Sample Size.....	32
Table 4.1	Types of instructional Resources.....	37
Table 4.2	Teacher's Qualifications.....	39
Table 4.3	Organization of instructional resources	41
Table 4.4	Level of adequacy of instructional resources.....	42

LIST OF FIGURES

Figure 2.1	Conceptual Framework.....	29
Figure 4.2	Children’s Performance in Number Work	44

LIST OF ABBREVIATIONS

CBOS:	Community Based Organization's
CORPS:	Community Own Resource Persons.
DEO:	District Education Officer.
DICECE:	District Centre for Early Childhood Education.
ECD:	Early Childhood Development.
EFA:	Education for All.
FBO:	Faith Based Organizations.
KIE:	Kenya Institute Education.
KNEC:	Kenya National Examination Council.
MOE:	Ministry Of Education.
MOEST:	Ministry of Education Science and Technology.
NACECE:	National Centre for Early Childhood Education.
NCTM:	National Council of Teachers of Mathematics.
NDP:	National Development Plan
NGO'S:	Non-Governmental Organizations
UNCRC:	United Nations Conventions for Rights of Children.
UNESCO:	United Nations Education Scientific & Cultural Organizations.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Problem.

According to the World Bank Report 2007, in most developing countries not enough mathematics teachers are being produced by universities and colleges. The colleges and universities are being encouraged to pursue these courses purposely to fill this gap. Recent visits to schools by personnel from Ministry of Education Science and Technology (MOEST) in Kenya revealed that most teachers do not have the expertise in their subjects (World Bank Report 2007). One of the consequences of this is that learners fail examinations and few of them pursue mathematics courses at tertiary level leading to even greater shortage of mathematics teachers. According to the United Nations Convention for Rights of Children (UNCRC) Education is a fundamental human right Wolfenson (2000). In Kenya the government through the MOEST realized the need for improvement of ECE and ratified the (1990) Jomtien World Conference on Education for all (EFA) and the World Education Forum Dakar Senegal (2000) whereby use of instructional resources in preschools was recommended. The Jomtien and Dakar Conferences under scored the importance of instructional resources in ECE for the purposes of improving children's learning.

Availability of instructional resources enhances the effectiveness of schools as these are basic things that can bring about good academic performance in the learners. Maicibi (2003) asserted that all institutions Or organizations are made up of human resources (workers) and other non-human resources, Maicibi further asserts that when the right quantity and quality of human resources is brought together, it can manipulate other resources towards realizing institutional goals and objectives. Consequently every

institution should strive to attract and retain the best of human resource. The implication of these opinions is that well trained teachers in number work, if well deployed to pre-schools will bring about well rounded pupils who will perform academically well in number work. According to Waithaka (2005) most Kenya pre-school teachers are not trained hence types of instructional resources materials seem not to be seen in number work lessons. As a result there is a poor foundation for preschoolers in number work which leads to low performance in number work right from pre-schools to higher levels of learning.

Number work is considered a core subject throughout the school years of each child. Although most people believe that even young children of 3-6 years should start learning number work, there is debate remains whether children should be formally taught and expected to solve specific problems or learn the basics through play and basic instructions. Kli'banoff et al (2006), asserts that early intervention program has 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. Farrant (1980) believed that it is not enough to just attend a high quality pre-school .these children need to be provided a challenging and accessible number work education because they believe that children's number work related experiences during the early years affect later performance in school. Effective teaching and learning does not only depend on the child'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.

There is wide spread interest in improving the levels of number work achievement in schools apart from the economic benefits that it is argued this would bring by better preparing young people for the numeral and number work literacy, the ability to understand number work concepts, perform calculations, interpret and use statistics information counters the demands of modern work places and raising the over skill levels of the work places. There are also social benefits tied to improving access to larger numbers of young people to post-school education and training opportunities and laying stronger foundations to skills for life long learning. The interest in raising levels of advancement in number work has led to a focus on identifying the range of factors that shape achievement as well as understanding how these factors operate to limit or enhance the achievement of different groups of learners. Among these factors is the availability of adequate instructional resources that are found in pre-schools.

In Kenya research on how instructional resource affects the children's academic performance in pre-schools has been minimal. This could be attributed to the fact that instructional resources are not as widely used in the pre-schools as in the upper class countries; however, there is need and a call for more research on how the use of instructional resources affects the performance of pre-schools in number work. Although Kenya is using a lot of her resources in educating young children from primary upwards budget allocated to ECD programs is very minimal Kenya spend very little % of her gross domestic product in ECDE. The information available about 2 years ago the government allocated to the Ministry of Education which allocates to its subsectors and in 2011 Ministry of Education submitted 0.01% to ECDE. In 2013-2014 Budget, the government allocated 0.04% to ECDE this makes the parents to provide instructional resources to ECD, because of poverty most parents withheld their children at home to join standard

one where there is free primary education. Learning through interaction of instructional resources is an important issue although most of the people in the society feel that the problem is insignificant. This is why this study sought to find out the effect of instructional resources on children's number work performance among pre-schools so that recommendations can be given for use of appropriate strategies. It is hoped that with time, possible solutions on provision of instructional resources to pre-schools will be reached hence change the trend in pre-schools.

1.2. Statement of the Problem

Instructional resources are very vital in acquisition of concepts and skills in pre-schools. Children learn by doing. They learn better by manipulating materials and make sense out of it. For a long time, there has been a debate on the best time to introduce instructional resources in number work in the life of a learner. 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 ECDE policy guideline (2006). Therefore, how this subject is introduced to the pre-scholar is very important. Instructional resources which are good way of demonstrating concepts to learners, must not be spared at this stage, this is because they are known to make concepts look easier to pre-scholars and the more frequently they are used by the teachers, the faster the learners understand, hence master concepts and thus improved performance from an early stage. Instructional materials if used efficiently and actively facilitate learning process in classrooms, however the situation is not good in most pre-schools firstly only the lower quality and the less quantity of instructional resources are provided to pre-schools in this way the availability of instructional resources is very less, secondly pre-school teachers are not trained for using instructional resources.

Teachers do not take interest in using the instructional resources Waithaka (2005).

According to Waithaka (2005) the government of Kenya is spending a huge amount of money in the education sector in primary, secondary and university assuming pre-schools. There are many factors that are responsible for low performance in mathematics. Less availability and deficient use of instructional resources is one of them. Though studies have been carried out on how instructional resources affect academic performance on mathematics in Kenya, focus on pre-schools has been limited. Thus this study is aimed at investigating the effect of the deficient availability and the inefficient use of instructional resources on number work performance in pre-schools in Isebania Zone Migori County.

1.3. Purpose of Study

The purpose of this study was to investigate the effect of instructional resources on children`s number work performance in pre-schools in Isebania Zone in Migori County Kenya.

1.4. Research Objectives

The objectives of the study were;

- i) To identify the effect of the types of instructional resources responsible for children`s performance in number work.
- ii) To determine the effect of teacher`s academic qualification on use of instructional resources had effect on children`s performance in number work.
- iii) To find out the effect of organized presentation of instructional resources on children`s performance in number work.

iv) To investigate the effect of adequate instrumental resources on children's performance in number work.

1.5. Research Questions

The following research questions were used in the study.

- 1) What are the types of instructional resources responsible for children's number work performance?
- 2) What is the effect of the teacher's academic qualification and use of instructional resources on children's number work performance?
- 3) How does organization of instructional resources in classroom affect children's number work performance?
- 4) How does the adequacy of instructional resources affect children's number work performance?

1.6. Significance of the Study

The findings of this study would equip the Ministry of Education with valuable information to increase more allocations of funds to pre-schools to cater for adequate instructional resources to pre-school centre. The findings of this study would also help K.E.M. I. in improving the teacher training curriculum, give the trainers enough expertise knowledge in handling instructional resources. The findings of this study would also help teachers to use the result to explore and find out types of instructional resources to use and the amount of time to allocate learners to interact with instructional resources. The findings of this study would also help to sensitize parents and community on the importance of providing instructional resources for their children. The findings of the

study would also help to sensitize children on the importance of interacting with instructional materials in their number work lessons.

1.7 Limitations of the Study

The use of a questionnaire as a data collection instrument may have many inherent demerits such as researcher's inability to elicit respondent's honesty and sincerity. The physical environment may have hindered the researcher from reaching the interior pre-schools scattered there were no roads, forcing the researcher to pass through thick forest, hence security was a threat.

1.8. Delimitations of the Study

The study confined itself to Isebania zone, Migori County and only involved ECE children aged 3-6 years and pre-school teachers.

1.9. Basic Assumptions

It was assumed that performance in number work was affected by types of instructional resources used. It was also assumed that there was adequate instructional resources in pre-schools , all pre-schools in the zone had access to instructional resource more so concrete materials which were locally available researcher also assumed that teachers were trained can organize instructional materials in classroom in an attractive manner to motivate learners to interact with instructional resources well designed in class and also gave learners more time to interact with instructional resource to gain concepts and skills for number work.

Also researcher assumed that the government, parents and NGO's provided instructional resources to pre-schools above all the researcher assumed that all the respondents to the instruments were to co-operate and answer questions truthfully.

1.10. Definition of Significant Terms

Availability: Something/person in place when it is needed

Community: It's a group of people with common characteristics or interest learning together within a large society sharing similar beliefs and facilities.

Concrete: Materials that can be manipulated.

Effect: The influence that something or somebody has on the way a person thinks or behaves or on the way something develops.

Instructional Resources: Materials that aid the teacher in the process of teaching, is any event real object improvised or commercially produced that establishes a condition which enables learners to acquire desirable knowledge, skills and attitudes includes concrete, audio, visuals and audio-visuals

Number work: Is a science of numbers, quantity, space and their interrelationships.

Numbers: Are units, belonging to a mathematical system used for collecting, measuring, ordering and labeling.

Organization: Refers to orderliness of thought and action. It is the technique or arrangement of work for a particular field or subject.

Performance: The act of meeting the required expectations, how well or badly you does something.

Pre-school: Institution where young children of 3-6 years old are mould prepared to join primary school

Qualification: Knowledge, skills or experience one has for a particular job.

1.11. Organization of the Study

The study was organized into five chapters. Each chapter was designed for a given information that was related to the topic of the study. The five chapters were organized systematically. Chapter one was the introduction which was related to the background of the study. The statement of the problem was linked to the purpose of the study which was linked to the objectives and questions of the research. The significance of the study was highlighted. The area of the study was delimited and the limitation of the study was highlighted. Chapter two reviewed the related literature while chapter three highlighted the designing methods of the study. Chapter four was organized according to discussions of the study and chapter five summarized the whole project by concluding and giving recommendations.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0. Introduction

This chapter had detailed literature review in areas related to pre-school number work performance in relation to instructional resources. It examined the findings of those studies in relation to the present study topic. The aspects to be examined in this chapter included; types of instructional resources in relation to number work, teacher's qualification and use of instructional resources, on number work, availability and organization of instructional resources in classrooms and adequacy of instructional resources in relation to number work finally the theoretical framework and Conceptual Framework.

2.1. Types of Instructional Resources

According to Piag t (1968) 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. However most concepts are concrete or they may be easily concretized by using real life examples and bring them closer to the learners. According to Margaret K. and Anne N. (2007) 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. Piag t (1968) 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.

Piag t (1968) 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. Piag t divided materials for ECDE mathematics into four categories: The first one is materials that produce sound and pictures. For example Television, Films and DVDs.(Audio-visual), followed by materials that produce sound, for example Radio, Radio Cassettes, CDS, Walkman and iPod.(Audio), then materials that need the sense of sight only. For example, flash card, cut-outs charts picture books, picture cuttings, magazines and calendars among others.(Visuals) and last materials that can be manipulated for example, blocks, stones, dolls, beads, a toy car, fruits, sticks among others.(Concrete)

Kate (2002), postulated that learning of number work is a result of experience and active learner involvement the routine use of different types of instructional resources continues to be sensual because it helps learners to connect real things and events with their abstract representations. The ability to picture and do things in their minds would be enhanced by frequent reference to real world application. This coincides with Brunner (1980) in his study of thinking processes, focuses on levels of knowing and translates these levels into a hierarchy of learning processes. He believes that there are three forms or levels of knowing related to instruction: The first one is the knowledge that involves the physical manipulation of concrete objects and ones own physical movement (enactive). This concrete level of knowledge is demonstrated in number work by the ability to sort objects. Number can be understood and presented through the manipulation of concrete objects the second one is knowledge that involves the mental manipulation of concrete objects that are representation of objects (Iconic). This task is accomplished through

images of the object in picture or diagram form. Therefore, the emphasis is in visual perceptual information. The child can solve a problem by drawing pictures or symbols for the number of objects specified.

According to Piag t (1968) children go through sequence in learning their world. Piag t established that children pass through four stages of cognitive growth: Sensori Motor (birth to 2 years) whereby the child explores the world by discriminating between three dimensional objects. These abilities are prerequisite to classifying and grouping objects and events. Without these abilities, a true understanding of many number work concepts would be very difficult, if not impossible. Piag t further suggest that children in the pre-operational stage cannot understand the concepts unless they reach the formal stage. Abstraction should not be used when teaching number work in pre-schools. Learners must see, touch and manipulate in order for them to deal with acquisition of number work skills and concepts like number value, number recognition, classification, numbers and numerations.

At the pre-operational stage, the child attends to specific attributes of a situation at a time, cannot process multiple comparisons and does not have the ability to conserve quantity. The child makes global comparisons and thus learns how to classify. The child can discriminate visually among shapes, sizes and colors. Later, the child can compare representations of objects or represent numbers. A one- to- one correspondence is also developed at this stage making it possible for the child to learn how to count, add and subtract. The basic skill required is matching, beginning with similar objects. Seriating skills begin with simple ordering of objects by size, texture taste or color. Near the end of

this stage the child develops many necessary skills that lead to the performance of higher levels of mathematics. Symbols and abstract concepts should be introduced after children have done plenty of concrete activities and therefore understand the meaning of concepts introduced in a concrete way.

According to Bandura (1986) number work is a social construction of humanity. Children learn number work through intuition reasoning. This is where a child learns by perception through sense of seeing. Intuition captures learner's experiences and the teacher is supposed to build on that experience of the child. This can only be done with the use of adequate and variety of concrete materials for learners to interact with. Bandura further suggest that as learners working together using concrete materials together generate number work vocabulary as they use different types of materials together. A research by Meade (1987) suggest that long term use of concrete materials in pre-schoolers is positively related to increase in learner's number work achievement and improved attitudes of learners towards number work. Meade further suggested that teachers should use concrete or manipulative materials in number work instructions more regularly in order to give learners hands-on experience that helps them to construct useful meaning to the number work ideas that they are learning. For Meade use of concrete materials to teach multiple ideas over the course of schooling had the advantage of shortening the amount of time it takes to introduce the material and also helps learners to see connection's between ideas.

Meade coincides with Farrant (1960-1980) suggest that good instructional resources need little or not explanation, stimulates ideas and demand active response from the learners. Farrant further suggest that memory of the learners is retained by use of learning

materials as learning is a continuous process in life. According to Kate (2006) learning number work is an active process in which the learner uses sensory input and constructs meaning out of it. Kate stressed that learners must be provided with different types of instructional materials to do something that learning or recognizing number symbols, shapes and their value is not passive acceptance of knowledge which exists out there but that learning of basic number work vocabulary and that for learner to gain the ability to observe and discover new ideas in number work involves the learners engaging with the instructional materials for children are not passive receptors of knowledge. They should participate in all number work-related activities such as sorting and grouping, matching and pairing and patterning among others.

A study carried out by Christakis Zimmerman (2004) on the use of Audio- Visual Aids on the effect of television on cognitive development. The result showed that, hours of television watched between ages three and five improved scores on a reading recognition and short term memory. More so the video will teach the child about logic patterns and sequencing and analyzing details. They conclude that television viewing is good for the children's brain. Balo (1971) commented that Audio- Visual materials as integral part of teaching/learning number work and help to bring about permanent and meaningful experience. He said that they provide first hand experience in number work where possible or of vicarious one where only that is feasible. Wolfenson (2000) suggests that uses of Visuals which are educational inputs are of vital importance to teaching of number work in the school curriculum. He was of the opinion that use of visuals helps learners improve in counting, classifying, develop number value would make discovered facts glued firmly to the memory of the learners. Hence make them remember what was seen.

2.2. Teachers' Qualification

Waithaka (2008) emphasized the importance of training ECDE teachers as he observed that most ECDE centers in Kenya emphasizes academic and give little or no time for learners to interact with instructional materials. He further observed that in Kenya pre-school 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. The ECDE curriculum developed by K.I.E has the provision for learners 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 and write this fact is compounded by the fact that the 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.

According to John Dewey (1857-1950) a qualified teacher has the ability to organize the knowledge of the world in a rationale way independent of the learning for Dewey knowledge consists of learning about the real world out there. The trained teachers has to endeavor first and to understand that world organize it in the most rational way possible and present it to the learner. This view may still engage the teacher in providing the learner with activities with hand-on learning with opportunities to experiment and manipulate the objects of the world but the intention is always to make it clear to the learner the structure of the world independent of the learner. This goes in hand with the suggestions of Librera et al (2004) that a qualified teacher is expected to create this environment as well as put forth resources he/she feels are most beneficial to the child to learn how to count and classify in classroom.

Vygotsky (1978) suggested that a qualified teacher can be very good at retrieving resources that other people see as rubbish or have no value to use with children they hire with. For Vygotsky there is a wide range of instructional resources and equipment available for number work activities of which may be available in most settings. A lot of number work materials can be salvaged from home, school and the immediate environment of the pre-schoolers. This suggestion of Vygotsky is supported by Tasson and Kate (2002) that a qualified teacher has the ability to transform the immediate local materials available and bring them to the classroom for learners to interact in mathematical activity areas.

According to Bruce & Tina. (2007) a qualified teacher is aware and keen of factors to consider when selecting number work instructional materials like: cost, trained teachers need to know that children do not need expensive resource in order to learn number work, but materials collected from the immediate environment of the learner. Charles Worth (2005) suggested that number work can build on every day exploratory activities for pre-schoolers. The pre-school teachers should let the learners explore their environment through play for a large portion of the day and a daily basis in the typical – play based classroom, a trained teacher can allow learners enough time to interact with instructional resources, the children can spend adequate time to learn new skills and practice existing ones. Hanline (1999) suggest that other pre-school teachers also build on everyday explanatory activities by setting up number work statues for their children letting them explore and figure out some of the number work problems on their own.

According to Charles Worth (2005) the trained teacher explains the best way to transfer number work knowledge to pre-school children she/he sets them to interact with instructional resources and discover things on their own, only to prompting them by asking questions relevant to a specific number work concept. He further suggested that it is important to prompt the learner and ask relevant questions. For trained teacher to teach effectively in number work, he/she is expected to create a safe, stimulating environment to prompt the learners appropriately and plan worthy tasks. According to Vygotsky (1978) much important learning by the child occurs through social interaction with a skillful tutor/teacher as the tutor may model behaviors or provide verbal instructor for the child. Vygotsky refers to this as collaborative dialogue; the child seeks to understand the actions or instructions provided by the tutor then internalize the information using it to guide or regulate their own performances. Bandura (1986) believes that anything that can be learned by direct experience can also be learned from observation. Bandura also believes that models are most effective if they are seen as having respect, competence high status or power. Thus, in most cases teachers can be highly influential models. Through careful planning of instructional materials to be presented, teachers can do more than teach routine information they can model skills, problem solving strategies, moral codes, performance standards, general rules and principles and creativity.

Hebb (1949) suggest that during pre-school years, children of three to five years during this early learning it would be important for the qualified teacher to provide the child to experience in an enriched environment which consists a wide variety of sights, sounds textures, shapes, objects among others. The more complex the environment, the more there is to be represented on the neurological level. The more that is represented on the neural level, the more the child can think about. Hebb suggested that there is need to train

teachers as they deal with young children so that they can create an educational environment with great variety of instructional resources for number work.

Bryant (1983) asserted that experience and qualification is the best asset for handling number work task. In his findings, teaching is one of the duties that require both qualifications and experience for better delivery. Recruitment of competent teachers to improve teacher student ratio is necessary measure in improving number work performance of learners. Bryant further suggested that the government of Kenya should give adequate attention to training of teachers to enhance performance of learners in number work.

According to the National Council of Teachers of Mathematics (NCTM) (1991) early childhood education teachers should have some 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. NCTM further suggests that training of teachers is very vital importance to improve number work performance in our location. Qualified teacher is human resources whatever facilities are available, whichever kinds of learners are given to teach the importance and vital role of the qualified teacher cannot be over emphasized. Assuming that necessary facilities are adequately provided for the environment is conducive to learning, the curriculum satisfies and the learners themselves have interest in learning, learning cannot take place without the presence of the qualified teacher when handling and organizing instrumental resources for number work in classroom.

The teachers represent a large proportion of the input of an educational system. Maicibi (2003) observed that the problem of teacher supply is not one of simple numbers. It is first and foremost a problem of quality and of getting the right quality. Hauline (1991) also observed that it is a truism that teachers are the human beings of any educational system that upon their number their quality and devotion depends the success of any number work performance in learners. It is also vital to have sufficient and adequate human resources in terms of teacher quality for teaching of all subjects in the school curriculum without qualified teachers as implementing factors the goals of education can never be achieved hence no achievement in number work from low levels of education to higher levels of education.

2.3. Organization of Instructional resources

According to Burden (1981) classroom organization, arrangement of resources and the general arrangement of the area activity in classroom are important for learners to acquire number work skills and concepts. Burden further suggested that organization of classroom facilitate orderly and effective learning and allow access to materials and equipment to serve learning needs. It also stimulate learners co-operation amongst them.

Kesim Lemtech J. (1988) suggested that classroom organization helps learners to manage time and resources efficiently and effectively for maximum learning. It also helps to organize favorable space for pupil's organization of classrooms. Space is important to allow easy movement from one point to another in the classroom and to allow access to number work resources. It also takes into consideration those children with special needs.

Guthrie (1942) suggested that in organizing classroom space you need to organize the classroom space to make it appealing and interesting for learners to create space for movement and storage of instructional resources by providing a well organized environment for the learners to interact with the materials. The teacher has to arrange the learning environment so that the desired responses are elicited in the presence of the stimuli to which they are to be attached. In organization for space helps demarcate activity areas whereby we have activity area for number work with its relevant resources materials, furniture and resources and wall space.

According to Kasambira (1997) all activities have different material arrangement of number work instructional resources, the teacher to ensure that all children can see or can access the materials the classroom should be arranged in a certain way that all the learners can see the instructional materials put in strategies to give room for other learning activities. Kasambira further suggested that the high traffic areas should be left free. The teacher should know how the materials should be arranged, how to take care of learning areas and how best to locate the materials to meet the children's needs. The materials should be accessible to learners all the time.

According to Librera et al (2004) 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 especially to expand and deepen learning. Librera et al (2004) presented a list of elements that make up a learning environment. One is to provide learning centers in the classroom that encourage integration of multiple content areas. Many pre-schools make available these learning centers in which their children can

read books, build with blocks and use many other stimulating materials. Another is to allow easy access to materials.

According to Rowell (1998) the design and set up of the classroom plays a significant role. Rowell further felt that the provision and positioning of equipment, different types of materials and activities can encourage motivate and entice the learner to engage in number work activities. Tassoni (2002) postulated that classroom environment should be designed to address development. It provides space for exploration and movement that is scaled to the child's size and facilitates easy movement in the classroom ensuring safety. The child has the freedom with the teacher's guidance and supervision to select activities that are of particular interest children are guided in all areas to learn and achieve in an environment that is supportive and nurtures creativity, personal achievement and independence.

The Montessori classroom is made up of a variety of areas that promote independence for the teacher but social interaction between classroom design all furniture is child sized and children instructed in its care and in skills for moving and carrying it, this helps promote independence for the children so that they do not have to rely on the teachers for much help. Rowell (1998) observed that some pre-schools have play-based classrooms which are set up with different play areas as well as toys to engage each child. Others are set up quite differently with learning centers each that focuses on one aspect of the curriculum as well as concrete materials that foster learning for each child. Although these differing environments promote different approaches to learning, each is effective in its own way.

An article titled *Developing play-based* by Hanline (1999) explains that in order for play to be an effective learning environment for young children, the environment must be carefully planned to encourage children's active participation. The physical environment provides the foundation for a play based curriculum. The arrangement of the physical environment promotes engagement in appropriate play behaviors and in social interactions. Play based curriculum is best implemented in an environment arranged into indoor and outdoor activity centers that allow children's participation in all types of daily basis. Waithaka (2005) suggested that learners are affected by their immediate environment (sound, light, temperature and design).

Although learning styles will inevitably differ among learners in the classroom, Waithaka further suggests that teachers should try to make changes in their classroom that will be beneficial to event learning style. Some of these changes include room redesign, the development of small group techniques, and the development of contract activity packages. Redesigning the classroom involves locating dividers that can be used to arrange the room creatively (such as having different learning stations and instructional areas), clearing the floor area and incorporating learner thoughts and ideas into the design of the classroom.

2.4. Availability of instructional resources.

According to Margret Mwangi (2009) adequate manipulative (concrete) resources and models assume a critical role in helping children learn number work throughout pre – school. By their nature, mathematical thoughts are abstract, so any model that embodies them is imperfect and it has limitations. The model is not mathematical at best; it

illustrates the mathematical concept under consideration. Teachers should use perpetually different models when teaching a particular concept.

Piaget (1968) suggested that children should be exposed to adequate instructional resources; children 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. For Piaget, when children are learning classification, they use concrete materials/objects such as sticks, stones, leaves. They are not able to make mental representations of the skills and concepts learnt during classification without concrete materials.

According to ECD syllabus (2008) adequate instructional resources enable learners to acquire number work skills. As they interact with instructional resources, they learn classification skills which help them later in counting, matching, model the numbers, trace 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.

Kate (2002) suggested that for children to acquire number work skills, involve provision of variety and relevant resources that are locally available within the environment. Instructional materials can be collected around our homes, schools and communities, the parents have to supply them to the pre – school teachers to be organized in classrooms number work activity areas.

Hanline (1999) felt that one way of ensuring that children learn by doing in number work is through the constant use of instructional resources which should be available to the children for use. Waithaka (2005) observed that in Kenya the ECE curriculum developed by KIE has provision for learners to have adequate instructional resources to interact with; but most learners in ECD however do not interact with a variety of instructional resources. This is because most of ECD teachers do not care and teach number work without adequate resources, hence learners fail to develop some number work concepts. Waithaka further observed that most ECD centres in Kenya emphasized academics and gave little or no time for learners to interact freely with instructional resources during number work lessons.

A study by KIE (1999) found that most ECD centres do not have even a single instructional resource. They use standard one book instead of using the prescribed ECD curriculum activity books.

Reys (1999) suggests the provision of adequate learning materials to children to practice different concepts such as sorting and grouping, matching and pairing, ordering and sequencing and number activities the children should have a provision of varied materials that encourage varied activities. Children should be given opportunities to practice and review mathematical skills and concepts as children are active learners and they learn through manipulation of concrete resources.

Anderson (1998) believed that children should be provided with adequate instructional resources, children become whole through use of instructional resources. He thought that instructional materials help them to apply what they know as they arrange and play with a variety of instructional resources. They become logical and develop sequence of objects

in their mind. Anderson advocated that pre – schools should be supplied with all the objects found within their immediate environment for counting, grouping, pairing and weighing among others, which will create opportunities for them to acquire number work skills and concepts easily.

According to Kabiru and Njenga (2004) 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. Kabiru further suggests that teachers should be plenty so that every child in the classroom can choose whom to interact with. Variety of materials is also important so that all children can be involved and no child is left idle during number work lesson, and for them to use all their senses in learning hence develop number work concepts and skills.

2.5. Summary of Related Literature Review

The Literature Review shows that different types of resources instructional materials are very necessary for pre-schools children. They help children to develop interest and positive attitude towards mathematics as integrating mathematics into all parts of life multiples the learning and gives young children an understanding that mathematics is part of life. Children are naturally interested in mathematics. This interest should be maintained by providing them with appropriate activities and adequate resources.

The literature review also shows that as children interact with instructional materials they develop early mathematical concepts and skills and mathematical skills and concepts

should be taught sequentially from simple to complex, children learn classification, then number sense followed by measurement and geometry. Pre-school teachers should give appropriate activities to enhance the development of mathematical skills and concepts. As children interact with instructional materials they develop ability to think and reason logically. They also develop recognition of number symbols and number value and basic mathematical vocabulary.

More so concrete materials help children to develop ability to write number as they manipulate the concrete materials they develop their fine finger muscles ready for writing the numbers. The literature review also shows the importance of training ECDE teachers as trained teachers are able to collect variety relevant resources and organize the instructional materials in classroom and use appropriate teaching methods in pre-school classrooms. Literature review shows that instruction materials must not be expensive they should be from the immediate local environment surrounding the child. And also children must also be provided with quality variety and adequate materials so as to improve all the senses in learning. The Literature Review also shows that the availability of instructional resources should be arranged in an organized manner into the activity number work areas.

2.6 Theoretical Framework

The theory behind this study is constructivism theory by Jean Piaget (1968). This theory considers the learner to be engaged in an active knowledge construction process. Piaget (1968) suggested that the learners actively construct their knowledge out of the materials

presented to them; this suggests that learners interpret what they see, hear or do in relation to what they know.

The learner makes sense of his/her environment, manipulates available resources; interact with the environment which includes resources that are there. For Piaget children learn by doing, they learn through action and so they need to manipulate objects. They should be allowed to experience first hand as many objects and events as possible so that they can develop number work skills and concepts. Children should therefore, be provided with various materials to look at, feel, listen to, smell and taste. Children are active participants in the process of acquiring knowledge; children are not passive receptors of knowledge. They should participate in all mathematical-related activities such as sorting and grouping, matching and pairing, and patterning among others. Piaget further suggested that children should be given concrete materials. Teachers of young children should use concrete materials.

Basing the study on the theory, it comes out clearly that learning resources have a role to play in children; learning should be active and child-centered. Knowledge is constructed from within the child; therefore the learners must interact with learning materials and given time to conceptualize ideas as they participate in the given activities in number work. When children use concrete experiences and practical activities, understand the meaning and concepts introduced in a concrete way. The symbols and abstract concepts must be introduced after children have done plenty of concrete activities by use of learning materials to enable the children to identify and develop concepts of symbols numbers, as use of materials helps explain terms that are abstract to the learners. Learning therefore must start from concrete to abstract, simple to complex

to lay foundation for better performance in number work. The teachers should discourage spoon feeding to encourage the learners to construct his/her own knowledge in number work, and this is best achieved by teachers motivation creating a suitable learning environment and giving a child a chance to develop intrinsic motivation through his/her own thinking instructiveness and curiosity, teachers strengthening of social interaction of children during number work lessons , children can be put in groups and given opportunities to learn as they operate, cooperation in this stage is very instrumental in gaining cognitive development as it allows critics and improvement.

CHAPTER THREE

METHODOLOGY

3.0. Introduction.

This chapter focuses on the methodology that will be used in data collection and data analysis. The methodology focuses on the research design, target population, sampling techniques & sample size, research instruments that were used in data collection, validity and reliability, data collection procedure and data analysis.

3.1. Research Design.

The research design for this study is descriptive survey design. This is because the researcher will not be able to manipulate the variables for the simple reason that they have already occurred. Descriptive research is description of the state of affairs as it exists. The research reports the findings. Kerlingèr (1969) points out that descriptive study are not only restricted to fact findings, but may often result in the formulation of important principles of knowledge and solutions to significant problems. This research design has been chosen because the researcher seeks to find out state of school performance in Isebania Zone and the effects of instructional resources on children's number work performance Kombo & T. (2006). The design is therefore the most efficient in examining the effects of instructional resources on children's number work.

3.2. Target population

The target population is the entire group of persons or elements that have at least one thing in common a researcher is interested; the larger group from which the sample is taken, the group about which the researcher wishes to draw conclusions Orodho and Kombo (2002). The target populations for this study consist of 35 pre-schools, 70

preschool teachers and 750preschool children in both public and private pre-school in Isibania zone in Migori County

3.3. Sampling procedure and sample size.

Sampling is the procedure a researcher uses to gather the participants or things to study. It is a process of selecting a number of individuals or objects from a population such that the selected group contains elements representative of the characteristics found in the entire group.

Fraenkel and Wallen (1996). Gravy (1990), Babbie (1992), Evy (1972) recommended that the sample size should form 30% of the population for the research findings to be generalized. In this study the sample size will include 30% of the entire population of pre-schools in Isibania zone who will be randomly sampled, the accessible population of ECD children is 750 and therefore 30% will be 225 children. Stratified random sampling method will be used in selecting schools to be included in the sample. This sampling method will be suitable because it involves dividing the population into homogeneous sub-groups and then taking a simple random sample in each sub-group. The sample is selected in such a way as to ensure that certain sub-groups in the population are represented in the sample proportion to their number in the population Kombo & T. (2006).

In this study the pre-schools will be categorized into two: public and private pre-schools. In Isibania Zone there are 15 public pre-schools and 20 private pre-schools. The sample size for this study comprise of 6private pre-schools and 5public pre-schools, simple random sampling will be used to select the six private pre-schools and 5 public pre-schools. The researcher will identify all those participants to take part by using what is

known as random numbers, numbering all the participants of the population and then randomly collect the sample required. The figure below shows sample size for this study.

Table 3.1: Sample size

	Population	Sample Size	30%
Pre-schools	35		
Public	15	5	$30/100 \times 15$
Private	20	6	$30/100 \times 20$
Pre-school teachers	70	21	$30/100 \times 70$
Public	30	9	$30/100 \times 30$
Private	40	12	$30/100 \times 40$

3.4. Research instruments.

The research instruments in this study will include the following: Questionnaires, Observation checklist and observation schedule. The instruments will be developed by examining the research objectives, research questions and Reviewed Literature; also the researcher has to consider the population sample as some types of instruments are unsuitable to some groups of people due to factors such as the literacy level of Education Orodho & Kombo (2002). In this study the questionnaires were administered to pre-school teachers. The questionnaires administered to pre-school teachers were to gather the information on the pre-school teacher's qualification and use of instructional resources. The observation structured checklist was used by the researcher to assess on the availability of types of instructional resources and their effective use in number work lesson in ECDE centers.

The observation schedule will also be used to observe the organization of the instructional resources in the classroom especially in activity areas, more so on how children manipulate and interact with the instructional resources in the classroom during number work lessons. Own made number work test was also given to 225 children from 11 preschools, 6 of them had adequate instructional resources while 5 had inadequate instructional resources.

3.5. Data collection procedure.

The researcher sought permission from the DEO's office to conduct the research. The researcher also visited the sampled ECDE centers to familiarize with the schools and notified the managers, head teachers and the ECDE teachers of the intended study. The researcher then embarked on administering the research tools to the sampled respondents. The questionnaires were administered to the ECDE teachers to give information about the teacher's qualification and use of instructional resources on performance. The respondents were given a specified time to respond to their respective questionnaire, after which they were to hand them to a specific central place. The observation checklist was used by the researcher to check the availability and organization as well as presence of types of instructional resources. Observation schedule were used to check on effective use of different types of instructional resources by the learners in the classroom during the number work lessons. Own made number work test was given to six schools with adequate instructional resources and five with inadequate instructional resources to get the difference in performance

3.6. Validity of Research Instruments.

Validity means the research instrument measuring what it is intended to measure. It is the degree to which the test items measure a particular quality for which the test was designed (F. Kothari 2004). It also touches on whether the research findings are accurate and truthful. The researcher establishes validity of instruments through careful construction of the items to include relevant dimensions of the research. The instruments (observation schedule, questionnaires and observation checklist) were reviewed by research experts from the department of Education Science and Technology of University of Nairobi.

This was to ensure that the use of expert's judgment ascertaining that what was constructed included relevant dimensions of the research objectives hence ensure validity of the instruments. Validity helped the researcher to know if the instruments were valid by piloting. The researcher ensured that data collected using various instruments represented the content area under study. Piloting helped the researcher to establish how the respondents responded to the different items. (Mugenda and Mugenda 1999). This helped in determining the validity of the research instruments. The validity was established through piloting of the instruments with samples from the target population. The researcher analyzed the pilot data in order to validate the instruments. Inappropriate questions and items were discarded for improvement of quality research instruments. The procedure that was be used to select the pilot sample was similar to the one for the main sample.

3.7. Reliability of Instruments

Reliability is the degree of consistency between two instruments or more as they address the same research problem. A researcher must be concerned with the extent to which the instruments can be established through the use of test re –test technique whereby the same instrument is given to different participants at different times. Questionnaires will be administered to the same groups of teachers. After a week, the same questionnaires will be given to the same teachers. The researcher will also use an observation schedule and an observation checklist through own direct observation from the respondent. The researcher will analyze the test re-test data in order to decide on the reliability of the instruments. The inappropriate questions and items will be discarded for improvement of quality research instruments. The procedure that will be used to select the pre-test sample will be similar to the one for the main sample.

3.8. Data Analysis.

The researcher edited the data collected by penetrating into all the data collected by use of questionnaires, observation checklists and observation schedule for children. The researchers got familiar with the data collected in terms of how complete, accurate and how uniform were. The researcher then made effort to organize the data along research questions. The data obtained then was analyzed using descriptive statistics. In qualitative data the researcher can still do some basic statistics but this must be accompanied by content analysis. The data was then summarized and organized according to research question into themes and presented in narrative forms with some basic statistics, like percentage, frequency tables among others.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION OF FINDINGS

4.0 Introduction

This chapter focuses on the presentation of the research data based on the objectives of the study. The presentation was illustrated by the use of questionnaires, observation checklist and observation schedule. The analysis was organized under the following themes.

Types of instructional resources used, teacher's qualification and use of instructional qualification and use of instructional resources, organization of instructional resources in classrooms, adequacy of instructional resources and finally children's performance in number work.

4.1 Types of instructional resources

The research question for this theme sought to find, out the types of instructional resources used to enhance better number work performance in pre-schools. The researcher used the data from the observation checklist to find out the types of instructional resources in number work.

The findings from the responds shows that concrete and visuals were used both in public and private pre-schools, while use of audio and audio visuals was minimal and some pre-schools without. Table 1. Below shows the findings as observed by the researcher.

Table 4.1: Types of instructional resources

Pre-school category	Concrete	Visual	Audio	Audio visual
A	60	20	10	10
B	30	20	10	10
C	50	50	0	0
D	20	40	10	10
E	50	50	0	0
F	60	20	20	20
G	50	50	0	0
H	70	10	10	10
I	50	30	10	10
J	40	60	0	0
K	50	50	0	0

Table 1 above shows that 8 pre-schools had concrete materials with 50% and some with more than 50% and learners were able to count and classify them easily, while 6 pre-schools had visuals with 50% and learners were able to count and classify them easily. The findings showed that private pre-schools had more concrete materials and number work corner for the learners to use during number work lessons and for free time interaction hence pre-school children in private were able to write numbers from one to nine easily in sequence. This is in line with the objective that different types of instructional resources have effect on children's performance in number work. The

visuals like, the charts and pictures were well hanged where learners can easily see them. Manipulatives like, counters were easily accessible to the learners.

The findings from both public and private pre-schools showed that the use of audio and audio visual was minimal with 10% while some pre-schools had nothing completely and their children were unable to count, measure and classify even writing of numbers was a problem for them. 6 pre-schools had 10% of audio while 5 pre-schools had not even single audio materials in class. 5 pre-schools had 10% audio visuals while 6 pre-schools had no audio visuals in their classroom therefore instructional resources are essential for children's number work learning as they assist learners in acquiring number work skills and concepts. These finding are in line with Muganda and Mugenda (1999) who suggested that types of instructional resources has effect on children's number work performance. Pre-schools that do not have adequate types of instructional resources tend to perform low than schools with adequate instructional resources. Most pre-schools seems to lack such instructional resources more so public pre-schools which leads to children's low performance in number work as evidenced in the KCPE 2011 results, mathematics was lowly performed in Isebania zone.

4.2 Teachers' qualification

Pre-school teachers were asked to indicate whether trained, untrained or in service. The researcher sought to find out the teacher's qualification and use of instructional resources on children's number work performance through use of questionnaires given to teachers. Table 2 below shows their responses concerning their qualification and use of instructional resources on children number work performance

Table 4.2: Teacher's qualification

school	Teacher's qualification	Use of instructional resources	Children's performance In %
A	Trained	Very often	70
B	Untrained	Hardly	30
C	In service	Often	50
D	Untrained	hardly	20
E	Trained	Very often	80
F	In service	Often	50
G	Trained	Often	60
H	Untrained	Hardly	30
I	In service	Often	60
J	Untrained	Hardly	30
K	Trained	Very often	70

The data above shows that trained teachers from the 11 pre-schools use instructional resources very often when teaching number work lessons. Their performance was above average with the highest score of 80% in classifying, counting and number writing. The

data further show that those teachers who are in service often use instructional resources in number work lessons when classifying, counting and number writing and their performance was average. According to Worth (2005) the trained teachers explains the best way to transfer number work knowledge to pre-school children she/he sets them to interact with instructional resources and discover concepts and skills by guiding them. On the other hand the untrained teachers hardly used instructional resources when their learners are counting, classifying and number writing. Their performance was below average with 30% and 20%. Hence teachers' qualification and use of instructional resources had effect on children's performance in number work. From the data in Table 2 most pre-school teachers are trained and others are in-service course. They are aware of the importance of using concrete, visuals audio and audio visuals when the children are counting, classifying and writing numbers hence their performance is above average. The untrained teachers hardly use the concrete, visuals, audio and audio visuals hence their performance is below average with 20%.

4.3 Organization of instructional resources

The researcher sought to find out how pre-school teachers organize instructional resources for number work in their classrooms for children to interact with. Further the researcher wanted to know whether pre-school teachers in Isebania organize instructional resources in number work activity areas and whether instructional resources were accessible and orderly when children use them during number work lessons through the use of observation schedule. Table 3 below shows the summary of the findings in percentages.

Table 4.3: Organization of instructional resources

School category	Organization of number work corner	Accessibility %	Orderly %
A	30	40	20
B	50	20	50
C	40	10	30
D	20	40	50
E	60	50	20
F	80	40	30
G	30	50	60
H	60	30	50
I	50	40	30
J	90	50	40
K	70	40	20

The data above shows that most preschool teachers organize their number work instructional resources into activity areas. Seven preschools arranged their instructional resources into number work corner with 50% and above. The findings coincides with Kasambira (1997) who suggested that classroom organization and arrangement of resources and the general arrangement of activity area are important for children to acquire skills and concepts hence improvement in number work performance. Children get concretes, visuals, audio and audio visuals for classifying and counting easily. On the accessibility of instructional resources the findings shows that most pre-school number work instructional materials are not accessible to children, only 3 preschools accessibility was average, while 8 schools accessibility was below average.

The findings above show that orderliness of instructional resources was below average. This shows that the instructional resources were not well arranged, Burden (1981) suggested that there must be orderliness in classroom to provide space for easy movement of children to interact with instructional resources and for time management and acquiring of number work skills and concept. The data shows that the orderliness of instructional resources is low which in turn affects number work performance to be low children cannot be able classify count the instructional resources when the instructional material are un orderly, hence the organized presentation of instructional resources affects children's performance in number work.

4.4 Adequacy of Instructional Resources

The researchers sought to assess how adequacy of instructional resources affect children's number work performance through the use of questionnaires given to pre-school teachers. The researcher asked the pre-school teachers to indicate the percentage of adequacy of instructional resources. Table 4.4 below shows the summary of the findings.

Table 4.4: Level of Adequacy of Instructional Resources

Pre-schools	Concrete %	Visuals %	Audio %	Audio visual %
A	50.6	40.5	20.2	20.5
B	49.5	50.0	28.5	15.5
C	60.5	40.0	35.3	20.5
D	50.0	30.5	40.0	17.7
E	49.4	40.0	20.5	20.3
F	68.5	50.0	40.5	35.0
G	55.7	62.7	30.0	40.5
H	73.5	55.0	38.7	20.5
I	65.5	70.3	35.3	38.6
J	72.5	50.3	50.5	32.5
L	70.5	40.5	40.5	20.4

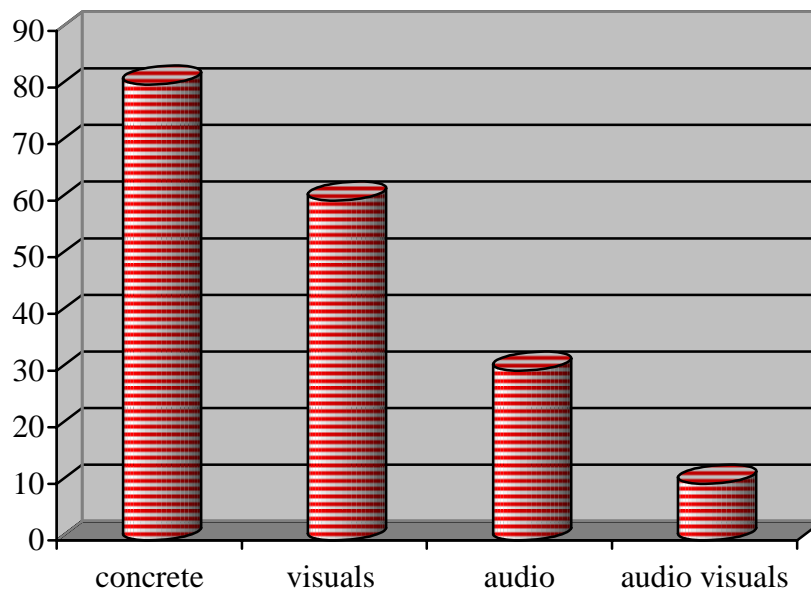
The data on Table 4.4 above indicates that majority of pre-school teacher's response shows that some instructional resources were adequate like the concrete and visuals while others were inadequate. The data above shows that every preschool had average concrete resources with some even above average. This is because most of the concrete were collected by the children & teachers from their immediate environment and displayed in number work corner thus children were able to classify, count and write numbers. According to Reys (1999) concretes materials enhances learners to acquire number work concepts and skills as they play with them practically hence enhance their performance. Six pre-schools had adequate average visuals while 5 pre-schools visuals were below average. The data further shows that there were inadequate audio and audio

visually all pre-schools scored below average, pre-school children were not able to acquire concepts and skills through use of audio and audio visual resources, hence this affected their number work performance to be low. The data also shows that adequacy of instructional resources had effect on children's number work performance as schools with adequate instructional resources were able to classify, count and write numbers 1-9 while schools with inadequate were unable to classify and count numbers.

4.5 Children's performance in number work

The researcher ought to find out children's number work performance through the use of own made test administered to eleven pre-school. The researcher selected 6 pre-school with adequate instructional resources and 5 pre-schools with inadequate instructional resources. The result was summarized on the figure 4.1.

Figure 4.1: Children's performance in number work



The researcher arrived at performance by carrying the concretes, visuals, audios and audio visuals to pre-school with inadequate instructional resources.

The graph above showed that pre-schools with adequate concrete resources scored more. School with adequate concrete materials scored 80% in classifying, counting, number value and number writing. While schools with adequate visuals scored 60% in classifying, counting, number value and number writing. On the other hand schools with inadequate audio and audio visual scored very low with Audio 30% and audio visual 10%. The finding above shows that there is a significant difference in the performance of the pre-schools with adequate instructional resources and those with inadequate instructional resources. This coincides with Reys (1999) who found out that schools with adequate instructional resources tend to perform better than those without. The data above shows that instructional resources affect children's performance in number work.

In measuring, counting, classifying and number writing, pre-school with adequate materials managed to score high with 80.5% while schools with inadequate instructional materials scored below average of 10% in number work performance. This implies that instructional resources are essential when teaching number work because they help children in acquiring Mathematics concepts and skills. Children who used instructional resources scored high performance than those who had inadequate instructional resources.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

5.0 Introduction

This chapter summarizes the finding of the study and presents conclusion and recommendations and suggestions for further research conducted in 11 pre-schools, Migori County. Below follows a summary of major findings of research questions that were formulated to guide the study.

Research question (i) sought to assess the types of instructional resources used and children's number work performance.

Research question (ii) to investigate how the teacher's academic qualification and the use of instructional resources affect children's number work performance.

Research question (iii) to find out how the organization of instructional resources in classroom affects children's number work performance.

Research question (iv) to assess the adequacy of instructional resources on number work performance.

5.1 Summary of the study

The purpose of this study was to investigate the effect of instructional resources on children's number work performance. The study adopted the descriptive survey design to investigate the effect of instructional resources in children's number work performance. The data was collected using Questionnaires from pre-school teachers, Observation check list was used by the researcher to assess the presence of types of instructional resources in 11 pre-schools and observation schedule was conducted by the researcher to determine on the organization of instructional resources in classrooms and

further observe on how children interact with instructional resources to determine their performance. Own made mathematics test was given to preschool with adequate instructional resources and those with inadequate for the difference to determine their performance.

The findings revealed that inadequate instructional materials had an effect on children's performance in number work in pre-schools. The researcher found out that almost all had concrete and visuals. Most preschools had an average of 50% of concrete. This is because most of the concrete are locally available and the teachers said, in boxes and store them safe in boxes and store them in the office and move them to classroom. Majority of pre-schools were not having audio and audio visuals hence it was difficult for children to classify and write numbers 1-9. Provision of instructional resources help children to acquire concepts and skills through manipulating objects and symbols. The important for schools to have a variety and adequate instructional resources which are attractive for high number work performance.

The study used descriptive survey design, questionnaires were administered to pre-school teachers, observation checklist was used by the research the types of instructional resources used in number work and observation schedule was used by the researcher to observe on the organization of instructional resources in classrooms and more so to observe on how learners interact with instructional resources to determine the effect of instructional materials on number work performance. The participants were 35 pre-schools, 70 pre-school teachers and 750 pre-school children in both public and private pre-school in Migori County. The sampled size consisted of 225 pre-school children 6 private preschool and 5 public preschools and 21 preschool teachers. The return rate was

100% for the pre-school teachers. The questionnaire was administered to pre-school teachers while observation checklist and observation were administered by the researcher. The data was collected and analyzed in tables, frequencies, percentage, figures and graphs.

5.2 Findings of Each Research Questions

5.2.1 Types of instructional resources

The researcher found out that different types of instructional resources were essential in order to have high performance in number work .From Table 4.11, the researcher found out that out of the 4 types of instructional resources; most preschool had concrete above average while visuals were average. Almost all schools audio and audio visual were below average. Most of the concrete and visuals were locally available which were displayed in number work corner to enhance performance. Children interacted with them easily hence acquired number work concepts and skills. The researcher has concluded that these types of instructional resources had effects on number work performance.

5.2.2 Teacher's qualification and use of instructional resources

Table 4.2 shows that most teachers were trained and others were in service. The trained teachers use instructional resources very often when their children are classifying, counting and writing numbers. The teachers who were in service course also used instructional resources often. In considering the children's performance in number work the data showed that children with trained and in service were able to classify, count and write numbers 1-9. 7 preschool, children scored 50% and above in classifying, counting

and number writing while the preschool with untrained teachers hardly used the instructional resources hence obtained low score of 20% which is below average.

5.2.3. Organization of instructional resources in classrooms

Table 4.3 show that most preschool teachers organized their instructional resources in number work corners with 7 preschool having 50% and above, concrete visual, audio and audio visuals for classifying, counting and number writing were seen. Only four preschool had below average in organization of instructional resources in number work corner. From the data in table 3 accessibility of instructional resources for children to classify, count and write numbers was low with only preschool had an average in accessibility while other 8 had below average. While in orderliness only four preschool had an average in orderliness in instructional resources. Which means majority of preschool instructional resources were disorderly which in turn affects children number work performance in classifying, counting and number writing as children prefer attractive and well-arranged instructional resources to capture their attention and interest?

5.2.4 Adequacy of instructional resources

Table four showed that concrete and visuals were adequate in all 11 preschools for children to classify, count and number writing. The data further showed that there were inadequate audios and audio visuals with only 1 preschool which had 50.5% visuals while others had below average in audio visuals hence it was difficult for children to classify, count and write numbers.

5.2.5 Children's number work performance

Figure 4.1 showed that preschool with adequate concrete scored 80.5% in number work test given to children. Also schools with adequate visuals managed to score 60% while school with inadequate audio and audio visuals score low as 10%.

Graph 1: showed that instructional resources are essential in teaching children number work because instructional resources enhance children's acquiring of number work concepts and skills. Adequate instructional resources enable children to interact and manipulate the instructional resources and tend to perform better than those who have inadequate instructional resources. The researcher found out that use of adequate instructional resources when teaching number work had a positive effect on children's number work performance.

5.3 Conclusions

Based on the data, it was concluded that children's low performance in number work was contributed to lack of adequate instructional resources. Inadequacy of instructional materials implies that unless the provision of these resources are improved and used sufficiently, children would continue to perform lowly in number work even to the higher levels of education.

Teaching and learning resources are essential if learning has to be effective. A variety and adequate instructional materials such as concrete, Visuals, Audio and Audio-Visuals play an important role in enhancing children to acquire number work concepts and skills if well organized in classrooms. They should be arranged in an attractive manner and orderly for learners to easily access them and for time management, they should be made available in variety. The instructional materials arouse children's curiosity and

motivate them in learning. However the researcher established through the data that most of these instructional resources in pre-schools were lacking which may be a factor that had contributed to children's low number work performance. The pre-school teachers & children should be encouraged to collect locally available materials and organize them in their classroom in number work corner so that they can use them when learning number work.

5.4 Recommendations

In the light of research data the researcher wishes to make the following recommendation's in order to solve the problem of instructional resources.

- i. There is need for the government to train and employ pre-school teachers as they will be trained on the importance of number work as a subject and performance, provide variety and adequate instructional resources organized in their number work corners. This will in turn help children to developed interest in number work at an early stage hence improvement in number work performance.
- ii. There is need to guide and con as a subject and performance try to encourage them to bring into class the locally available materials more so the concrete, visual audio and audio visuals so that they can interest work concepts 8 skills at 60 to lay the foundation in number work.
- iii. The government should include preschool in the education system so that there will be same classrooms as in primary schools where classrooms are be lockable so that the teacher can be able to organize and secure the number work instructional resources.
- iv. Pre-school teachers should be sensitized on how to organize the locally available materials in classrooms, for children to access them easily; instructional resources

should be arranged in an orderly manner for attraction and handling number work lessons.

5.6. Suggestion for Further Research

Taking the limitations and delimitations of the study, the research makes the following suggestions for further research.

- i) A further research on the effect of government budget allocation on ECD centres.
- ii) A further research on the effect of audio instructional resources on children's number work performance in pre-schools should be carried out.
- iii) A further study should be carried out on the effects of audio visuals on children's number performance in pre-schools.

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APPENDICES

APPENDIX I: PRE-SCHOOL TEACHER'S QUESTIONNAIRES

Section A

You are kindly requested to read this questionnaire carefully and then complete it as honestly as possible. The researcher would like to assure you that your response will strictly remain confidential and used only for research purpose. Please tick the approximate box.

1. Pre-school name.....
2. Gender i) Male ii) Female.
3. Age 20 years 20-25 years 30-40 years 40 and above years.
4. What is the level of your academic? KCPE O'level A' level.
5. What is your professional qualification? Degree Diploma Certificate
6. Indicate whether; trained untrained in service none of the above.
7. How often do your pupils interact with instructional resources? Very often
Hardly often

Section B.

1. Where do you get the instructional resources for teaching number work from?.....
2. Which text book do you use in teaching number work?
.....
3. How do you design your classroom?
 rows groups Round tables
4. Are the instructional resources for number work adequate?
Yes **No**

5. List three challenges you face when teaching number work.

a)

b)

c)

APPENDIX II: OBSERVATION CHECKLIST.

Date of observation.....

School categories	Types of instructional resources organized in classrooms			
	Concrete	Visual	Audio	Audio-visual

APPENDIX III: OBSERVATION SCHEDULE FOR CHILDREN

Date of Observation.....

School category	Classifying	Counting	Number value	Number writing

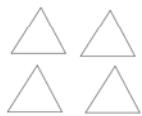
APPENDIX IV PRE-SCHOOL NUMBER WORK TEST

1) Use counters to count numbers 1-9

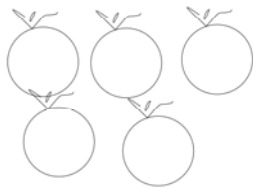
2) Sort and group materials given according to colour and shape

3) Use sticks to write numbers 1-9 on the ground

4) Match items with the number corresponding to their value



3



4



5