INFLUENCE OF TEACHER'S MOTIVATIONAL STRATEGIES ON ACHIEVEMENT IN NUMERACY FOR PRE-SCHOOL CHILDREN IN OL-JORO-OROK ZONE, NYANDARUA COUNTY

BY

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A RESEARCH PROJECT REPORT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF MASTER OF EDUCATION IN EARLY CHILDHOOD EDUCATION IN THE DEPARTMENT OF EDUCATION AND COMMUNICATION TECHNOLOGY

UNIVERSITY OF NAIROBI

DECLARATION

This research proposal is my original work and has not been used for the award of degree in any university.

…….....

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This research proposal has been submitted with the knowledge of the university supervisor.

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ABSTRACT

This research proceeded to investigate the influence of teacher's motivational strategies on learning achievement in numeracy for pre-school children in Ol joro orok Zone, Nyandarua County. The study used a descriptive survey design with stratified sample population, within the stratified sample population, simple random sampling was done in order to produce the final sample. The population was based in schools which included head teachers, pre-school teachers and pre- school children. Data was collected through use of questionnaires, interview, observations, and checklists and performance of examinations. The data analysis for the study was carried out through descriptive and inferential statistics, at the descriptive level; results were reported in terms of means, frequencies and percentages. It was found that utilization of a wide variety of motivational strategies led to higher performance. When various motivational strategies were well used in the learning process, this gave rise to a good performance while lack of motivational strategies led to low performance. This was clearly reflected by the analysis of pre-test and post- test scores.

DEDICATION

This research is dedicated to my parents Ruth and Isaac, my little God given angels Moses, Winnie and Murugi whose support and mutual understanding have enabled me come this far.

ACKNOWLEDGEMENT

I humble before the throne of the Mighty God and acknowledge his majesty. It is through his amazing grace and love that I have come this far. I was once without description but little did I know that God had already crafted my destiny. I owe all to him; honour, power and dominion belong to him Amen.

Dr. John Kamau Mwangi, I thank you most sincerely for bearing with me even when mountains seemed insurmountable. Your moral support and dedication will indelibly remain in my heart for ever, you are my success bedrock, God bless you.

To my beloved children Moses, Winnie and Murugi I thank you most sincerely for bearing with me when the demand of doing this research, studying and working for my employer denied you the most precious thing-time, without your understating I couldn't have managed. I really treasure you, God bless you.

Finally as it is not possible to mention all my friends, I salute all those who in one way or another walked with me, by me or for me to see me succeed

God bless you all. Amen

TABLE OF CONTENTS

DECLARATION ii

ABSTRACT iii

DEDICATION iv

ACKNOWLEDGEMENT v

TABLE OF CONTENTS vi

LIST OF TABLES x

LIST OF FIGURES xi

ACRONYMS AND ABBREVIATIONS xii

CHAPTER ONE 1

INTRODUCTION 1

1.1 Background to the study 1

1.2 Statement of the Problem 5

1.4 Research Objectives 6

1.5 Research Questions 6

1.6 Significance of the study 6

1.7 Limitation of the study 8

1.8 Delimitation of the study 8

1.9 Basic assumptions 8

1.11 Organization of the Study 11

CHAPTER TWO 12

REVIEW OF RELATED LITERATURE 12

2.1 Introduction 12

2.2.1 Teacher's Planning as a Motivational Strategy 19

2.2.2 Use of Instructional Resources as a Motivational Strategy 20

2.2.3 Teacher's Feedback 21

2.2.4 Instructional Method 21

2.3 Theoretical Framework 22

2.4 Conceptual Framework 25

CHAPTER THREE 26

RESEARCH DESIGN AND METHODOLOGY 26

3.1 Introduction 26

3.2 Research Design 26

3.3 Target Population 27

3.3 Sample and Sampling Procedure 27

3.5 Research Collection Instruments 28

3.5.1 Observation Guide 28

3.5.2 Interview Guide 29

3.5.3 Questionnaires 29

3.6 Pilot Study 29

3.7 Validity 30

3.8 Reliability 30

3.9 Data Collection 31

3.10 Date Analysis 31

3.11 Ethical concern 31

CHAPTER FOUR 32

DATA ANALYSIS AND DISCUSSION OF RESULTS 32

4.1 Introduction 32

4.2 Demographic and Background Information of Respondents 32

4.3 Statistical Analyses of Pre-test and Post-test Results 51

CHAPTER FIVE 56

SUMMARY, CONCLUSION AND RECOMMENDATIONS 56

5.1 Introduction 56

5.2 Summary 56

5.3 Conclusions 57

5.4.1 Recommendations for Further Studies 58

REFERENCES 59

APPENDICES 64

Appendix I: The Head Teacher's Questionnaire 64

Appendix II: Pre-school Teachers Questionnaire 66

Appendix V: Lessons Observation Schedule 71

Appendix VI: Public and Private School Population 72

Appendix VII: Percentage of Money Spent on Various Motivational Aspects per Annum 73

Appendix XII: Financial Budget 78

Appendix XIII: Time Frame for the Study 79

LIST OF TABLES

Table 1.1: K.C.P.E Result Mean Score Nyandarua West District 4

Table 4.1: Distribution of the Quality of the Scheme of Work used by Teachers 39

Table 4.2: Distribution of the Quality of the Lesson Plans used by Teachers 41

Table 4.3: Distribution of the Instructional Resources used by Teachers as a Motivational Strategy Resources used by Teachers as a Motivational Strategy 43

Table 4.4: Distribution of Teacher's Feedback as a Motivational Strategy 46

Table 4.5: Distribution of they Type of Instructional Method used by Teachers 48

Table 4.6: Mathematics Pre-Test score for Private Pre-Schools before Sensitizing Teachers on Motivational Strategies 52

Table 4.7: Mathematics Pre-Test score for Private Pre-Schools After Sensitizing Teachers on Motivational Strategies 53

Table 4.8: Mathematics Pre-Test score for Public Pre-Schools before Sensitizing Teachers on Motivational Strategies 54

Table 4.9: Mathematics Post-Test scores for Public Pre-Schools After Sensitizing Teachers on Motivational Strategies 55

LIST OF FIGURES

Figure 2.1: Maslow's Hierarchy of Needs 16

Figure 2.2: Motivating Children in a Mathematics Class 24

Figure 4.1: Distribution of Teachers by their Gender 33

Figure 4.2: Distribution of Teachers by their Age Brackets 34

Figure 4.3: Distribution of Teachers by their Level of Education 35

Figure 4.4: Distribution of Teachers by their Teaching Experience 36

Figure 4.5: Distribution of Teachers by their Professional Qualification 37

Figure 4.6: Distribution of teachers' Responses on whether they had ever Attended any Seminar or Workshop on Motivational Strategies 38

Figure 4.8: Distribution of thee percentage of Money spent on Various Motivational Aspects per Annum in Public Pre-schools 50

Figure 4.9: Distribution of the Percentage of Money Spent on Various Motivational Aspects per Annum in Private Pre-schools 51

Figure 4.7: Distribution of the Actual Number of Pre-school Children in both Public and Private Pre-schools 49

ACRONYMS AND ABBREVIATIONS

AMESA	-	Association for Mathematics Education of South Africa
E.A.R.M.P	-	East African Regional Mathematics Programme
ECE	-	Early Childhood Education
EFA	-	Education for all
JICA	-	Japan Inter Cooperation Agency
KCPE	-	Kenya Certificate of Primary Education
K.C.S.E	-	Kenya Certificate of Secondary Education
K.N.E.C	-	Kenya National Examination Council
M.O.E.S.T	-	Ministry of Education Science and Technology
NACECE	-	National Centre of Early Childhood Education
NCTM	-	National Council of Teacher of Mathematics
SBTD	-	School Based Teachers Development
SMASSE	-	Strengthening Mathematics and Science Secondary Education
TSC	-	Teachers Service

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

According to the National Council of Teachers of Mathematics (NCTM 2000,) in North America, mathematics has been undergoing steady change in the last two decades. NCTM is the world's largest organization with more than 90,000 members. This organization advances that learning of mathematics is maximized when teachers focus on mathematics thinking and reasoning. The momentum for reform in mathematics education began in the early 1980s in the response to a 'back to basis' that emphasized reading, writing and arithmetic (3Rs). Cockcraft (1982) expressed the importance of mathematics and may be this is what fueled the steady change in the subject. Cockcroft argued that it would be very difficult perhaps impossible to live a normal life without making use mathematics of some kind. According to (World Bank Report 1998), "With the technological changes and advances of the 21st century, mathematics becomes not only the key to opportunity but also a tool of living.

Kuku, A.O (1990) quoting Cockcraft said that mathematics plays a key role in communication of information and ideas by use of figures, letter, tables, charts, graphs, diagrams and even geometrical construction. He argues that mathematics is quite useful for the development of logical thinking, accuracy and spiritual awareness, all those are essential ingredients in mental development of a man and there is need to enhance their development. Due to this awareness, mathematics is taking the front seat in the world of education in many countries in the world today. For example, in South Africa organizations like AMESA, (Association for Mathematics Education of South Africa) have been formed. This serves as a voice of mathematical education at all levels. The

sole aim is to improve the subject performances since it is impossible to live without some knowledge of mathematics in the world. This organization plans seminars for teachers and trainers of mathematics. Teacher's training is boosted, teaching contests are held and winning pedagogies are awarded. 'Matific' is an outgrowth of AMESA in which children are helped to discover mathematics at their own pace using minds on and hands on (constructive learning). Also mathematics buddy is a high quality independent online mathematics tutoring program based on the South African curriculum for grades 1 to 112. On the same footing, AMESA has scheduled a 21st annual congress dated 29th to 3rd July 2015. The venue will be University of Limpopo, Turf loop Campus, Polokwane, Limpopo Province. The theme will be deepening the quality of mathematics teaching (Maths buddy.co.za 2015).

The Kenyan government aims at being industrialized by the year 2020 as depicted in the Document Vision 2030. To this end, on realizing that the performance of mathematics was appalling in the national examination like the KCPE and KCSE (Kenya Certificate of primary Education and Kenya Certificate of Secondary Education respectively), formed an alliance with the government of Japan in 1998. The outgrowth of this alliance was Japan International Corporation Agency (JICA). The JICA later started a technical project known as strengthening mathematics and Science Secondary education (SMASSE 2004). This was due to the declining performances trends observed in Science Subjects such as mathematics over the years in Kenya. Having seen the need of improving performance of science subjects in secondary schools, in 2003 the Ministry of Education Science and Technology (MOEST) started a distance learning course for primary schools known as School Based Teacher Development (SBTD) where in-

service training in mathematics, science and English was addressed in the entire country.

The teaching methodologies and materials were addressed and the course lasted six months (Kiptoo 2000). However, whenever the Kenya National Examination Council (K.N.E.C) releases the examination results mostly for the K.C.P.E and K.C.S.E there is always hue and cry due to students' poor performance in mathematics. (The Standard 3rd March 2013:12). Different people have advanced various views as to why performance in mathematics is generally poor. Some attribute poor performance to poor teaching methods, others to lack of resources, negative attitudes of learners towards the subject. However, mathematics teachers get the lion's share of the blame.

According to Cabinet Secretary for Education in Kenya Professor Jacob Kaimenyi (2014) there should be no more school ranking at the release of K.C.P.E or K.C.S.E results. He argued that de-merits of ranking outweighed merits of the same. Drilling of children by teachers was seen as a demerit and other malpractices like cheating in examinations were fueled by poor performance, hence fear of failure. According to (Ginnott, 1976), a teacher is the decisive element in the classroom, he/she possesses tremendous power to make a child's life miserable or joyous, can be a tool of torture or an instrument of inspiration. In all situations it is the teachers' response that decides whether a crisis will be escalated or de-escalated. In the final run, this humanizes or de-humanizes a child. As depicted earlier on, the government of Kenya ventured in improving science subjects like mathematics in secondary schools through SMASSE 2003, and SBTD 2004 was geared towards improving the same in primary schools. It is crystal clear that no focus was given to the ECE sector. This sounds ironical as the preschool years lay the foundation upon which later learning in life. Despite the

perceived importance of mathematics the performance is still wanting and more so in Nyandarua west district, Nyandarua County. This has triggered the urge to investigate the influence of teachers' motivational strategies on the learning achievement in mathematics for preschool children in Ol-Joro-Orok Zone, Nyandarua County. In support to this statement the results tabulated below are crystal clear about mathematics performance in the last four consecutive years.

Table 1.1: K.C.P.E Result Mean Score Nyandarua West District

Year	Language	Kiswahili	Mathematics *	Science	Social Study
2011	54.96	51.60	**51.48**	52.67	52.56
2012	54.28	55.34	**53.17**	53.78	54.58
2013	54.62	55.34	**53.05**	53.23	54.55
2014	53.98	57.25	**52.98**	54.08	54.63

Source: MOE Nyandarua West District, Nyandarua County

KEY: * Subject of Concern

From the result table the subject has been declining although there was a slight improvement in the year 2012 from MSS of 51.48 to 53.17 however in the year 2013 and 2014, the subjected registered negative indices. On comparative bases mathematics always ranked last among the 5 subjects done in the K.C.P.E. The study assumed that one of the causes of marginal drop in performance was motivational strategies that were not appropriate.

1.2 Statement of the Problem

Mathematics performance has been poor over time both in primary and secondary education (MOE 2014). As a result, the Government of Kenya and the Government of Japan jointly formed JICA which gave birth to the formation of two projects namely SMASSE and SBTD. These were meant to offer job training for teachers of science subjects like mathematics. However, there was little regard for mathematics of pre-schools in Kenya. According to (Mwangi 2001) it was clear that problem of performance in mathematics is as a result of teacher training, teaching practices, resources for teaching and teachers motivation among other things. According to a study done by (Omondi 2010) motivation was found to be very important in determining performance in mathematics. To this end motivation is an important issue and should be sorted out urgently to save the situation in which mathematics performance is wanting. No study has been done to show the influence of motivational strategies on mathematics performance and if it is there, the answers are not satisfactory. Consequently, this research attempted to investigate the influence of teacher's motivational strategies on learning achievements in numeracy for preschool children in Ol-Joro-Orok Zone Nyandarua County.

1.3 Purpose of the study

The purpose of the study was to investigate the influence of teacher's motivational strategies on achievement in numeracy for Pre-School children in Ol-Joro-Orok Zone, Nyandarua County.

1.4 Research Objectives

1. To determine how teachers planning as a motivational strategy influence learning achievement in numeracy for Pre-school children.

2. To investigate how the use of instructional resources as a motivational strategy influence learning achievement in numeracy for Pre-school children.

3. To examine how mathematical classroom environment as a motivational strategy influence learning achievement in numeracy for Preschool children.

4. To find out the relationship between the teacher's feedback as a motivational strategy and learning achievement in numeracy for Preschool children.

5. To explore the influence of teacher's instructional method as a motivational strategy on learning achievement in numeracy for Pre School Children.

1.5 Research Questions

1. What is the importance of teacher's planning as a motivational strategy on learning achievement in numeracy for Preschool children?
2. How does the use of instructional resources as a motivational strategy influence learning achievement in numeracy for Preschool children?
3. How does a mathematical classroom environment as a motivational strategy influence learning achievement in numeracy for Preschool children?
4. How does teacher's feedback as a motivational strategy influence learning achievement in numeracy for preschool children?
5. How does teacher's instructional method as a motivational strategy influence learning achievement in numeracy for Pre School children?

1.6 Significance of the study

The significance of this study is pegged on the fact that the findings will be used to facilitate decision making, formulating policies, advocacy, reforms and development.

The study will contribute towards the improvement of theory and practice in Mathematics education. Specifically it will provide empirical and objective data about teacher's planning, mathematical classroom environment, teaching and learning resources, teacher's feedback and effect of teachers instructional methods on achievement on numeracy for preschool children

Such information will be useful to the following organizations and groups of people.

The ministry of education in policy formulation about production of mathematical teaching materials and promotion of instructional approaches that are gender sensitive and those that promote students motivation to learn mathematics.

The directors of education, district education officers and mathematics inspectors of school in their task of enhancing and enforcing effective classroom practices in the teaching of mathematics in Kenyan schools at all levels.

The faculties of education in the public universities in Kenyan in their task of providing innovative teachers of mathematics who would use sensitive instructional methods and media in mathematics lesson thereby balancing mathematics challenge and success in the subject among boys and girls. The knowledge of students' motivation to learn mathematics is also useful for teachers and educators.

The preschool teachers, primary school head teachers, secondary school mathematical departments heads and all teachers of mathematics. All these will be enlightened on how to enhance students mathematical self-concept, improve students motivation to learn, give effective teachers feedback to children using effective instructional media, use of effective evaluation practices and create classroom environment that is child friendly.

1.7 Limitation of the study

The time allocated for the study was too short. Consequently not all schools in Nyandarua County were covered. Hence the results found cannot be generalized to the whole county but restricted to only those schools in Ol-Joro-Orok Zone.

1.8 Delimitation of the study

The research was carried out in Ol-Jor-Orok Zone, Nyandarua County. It involved pre-schools in this zone. The population included preschool children, preschool teachers, and heads of institution where preschools could be situated within primary school compounds. Districts education officers, TAC tutors helped in providing the necessary information for instance national examination results, data on how many pre-schools are there in the district, their nature whether public, private or religious and their population

1.9 Basic assumptions

The basic assumptions included:

The respondent to the questions will gave true and frank responses.

That all pre-schools children had positive attitude towards mathematics and that they were positively motivated.

That all mathematics teachers were motivated to teach the subject and hence were able to motivate learners.

That one of the causes of marginal drop in mathematic performance was motivational strategies that were not appropriate.

1.10 Definition of key terms

Feed back: This refers to the knowledge of results given by a teacher to a Pre-school child. It could be a written comment, verbal comments, grades or teacher's behavior which indicates evaluation of the children's performance in assignments, tests or correctness of learners to questions during mathematical lessons.

Learning achievement : This term refers to the learner's ability to comprehend and retain concepts and principles taught in a formal set-up. This may be in terms of educational benefits to the individual learner which may be seen in differential lifetime earnings, physical productivity or job promotion rates of the educated over the uneducated. In this study learning achievement will refer to ability to comprehend and retain mathematical concepts and principles

Instructional: Form intended or used for teaching people about something.

Instructional Resources: Any item, living or inanimate used during the learning process or any activities taken deliberately to change an existing school situation. In their broadcast sense "resources can be taken as anything in the school or its environment that may be used to help teaching or learning. These may include people in various buildings and their surroundings, physical plants and actions resulting from a change in any particular situation. A resource becomes a teaching resource if it is physically used for aiding teaching and learning.

Strategy: A designed plan or set of procedures that should be acted upon aimed at achieving set goals.

Mathematics: It is an organized body of knowledge where ideas, principles and concepts involving numbers are built up logically.

Mathematical classroom environment: In this study, this referred to a dynamic mathematical classroom ecological system which is an outgrowth of both teacher's and children's interaction under certain instructional organizational factors. This also included classroom physical aspects. Actually this is the context in which teaching and learning activities occurred.

Motivation: The psychological process that determines the direction intensity and persistence of behavior. In this study it will refer to that which activates or energizes student's behavior related to learning mathematics.

Motivational Strategies: These are designed plans or set of or set of procedures that help determine the direction intensity and persistence of a given behavior. In this study, motivational strategies referred to: Teacher's planning, teacher's use of instructional resources, teacher's feedback (Response to Pre-School children's work), teacher's Instructional Method and teacher's Mathematical classroom environment.

Numeracy: This means the quality of being numerate, having numerical skills where one is able to recognize numbers, count, write numbers correctly and perform arithmetic. In this study, numeracy referred to the ability to recognize and write numbers correctly.

Pre-school:A centre for little children aged between (2 ½ -5) years before they join primary school. It is a re-primary institution referred to as a nursery school, daily care centre or kindergarten.

Teacher: One who can impart knowledge, skills and attitude through direct or indirect means. Through indirect means, it could be by being a role model or as a mentor where the student or the learner will imitate or copy a given behavior.

Zone: This is a small administrative unit in the county.

1.11 Organization of the Study

The study was organized into five chapters. The introduction part highlighted the background of the study, statement of the problem under study, purpose of the study, research objectives, research questions, significance of the study, limitation of the study, delimitation, and basic assumptions of the study and definition of significant terms. The second part was the review of related literature under the following subheadings: Introduction, importance of motivation, role of teacher in motivating children, concepts of motivation and classroom subject like mathematics, types of motivation, mathematical classroom environment as a motivational strategy, use of instructional materials as a motivational strategy, teachers feedback as a motivational strategy, teacher's instructional method as a motivational strategy ,theoretical framework and conceptual framework. The methodology part covered research design that is descriptive survey design, target population, sample and sampling procedure, research instrument, and validity, reliability of instruments, data collection and data analysis techniques. The fourth part represented the data analysis and discussion of research findings. The fifth part focused on the summary of the findings, conclusion and recommendation stemming from the study.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter presents the review of related literature on the influence of motivational strategy on learning achievement in numeracy for Pre-school children. It focuses on the mportance of motivation, role of teacher in motivating children, concept of motivation and classroom learning in numeracy, types of motivation, mathematical classroom environment as a motivational strategy, teachers feedback, use of instructional materials as a motivational strategy, teachers planning, teacher's instructional method as a motivational strategy. The chapter will also be guided by the research objectives; teachers planning as a motivational strategy influence learning achievement in numerac, use of instructional resources as a motivational strategy influence learning achievement in numerac, mathematical classroom environment as a motivational strategy influence learning achievement in numeracy, the teacher's feedback as a motivational strategy and learning achievement in numeracy and teacher's instructional method as a motivational strategy on learning achievement in numeracy. Finally, theoretical framework and conceptual framework will also be discussed.

2.1.1 Importance of Motivation

According to Hilgard, 1956) motivation is a pre-requisite condition for any form of learning. The person or an animal must be active in his/her environment, must be curious and attentive to what is going on around him. Without motivation learning cannot take place. According to Olson, (1997) motivation is probably the most important factor that teachers can target in order to improve learning of children. Numerous cross-disciplinary theories have been postulated to explain motivation. For

example Bandura, (1977) claim that people are motivated by material rewards ,desire to increase their power and prestige in the world, interesting work, enriched environment, recognition or being respected as an individual.

The fact is that human being in general children in particular are complex creatures with complex needs and desires. According to H.W. Beecher (1865), God made man to go by motives and he will not go without them any more than a boat without steam or a balloon without gas. Mutitu, (2012), postulates that student's motivation is an essential element that's necessary for quality education. Palmerr, (2007), affirms that when students are motivated, they pay attention, they begin working on the task immediately, they ask questions, volunteer answers and they appear happy and eager. Basically very little if any learning can occur unless children are motivated on a consistent basis.

2.1.2 Role of teachers in Motivating Children

According to (NCTM, 2009) learning of mathematics is maximized when teachers focus on mathematical thinking and reasoning. (Ginott, 1976), postulates that a teacher is the decisive element in the classroom. He or she possesses tremendous power to make a child's life miserable or joyous, can be a tool of torture or an instrument of inspiration, can humiliate or humor, hurt or heal. In all situations, it's a teachers' response in the classroom learning environment that decides whether a crisis will be escalated or de-escalated. According to the (SMASSE Project, 2004), it is the teacher's conduct in their classrooms that serve to direct students' motivation. This means that it's the responsibility of the mathematics teacher to know what his/her students need and offer the same. Excellence in mathematics requires high expectations and strong support for all students (NCTM, 2000). As a mathematics teacher, help the students to see the subject as an integrated whole but not a collection of isolated bits and pieces. According

to (Thomas, Friendman, 2007), as a mathematics teacher, you need to have a profound flexible and adaptive knowledge of mathematics. Have the ability to stave off frustration and demonstrate persistence. (MOEST, 2004) in mathematics module for teaching and learning mathematics in the primary classroom advances that teachers with positive attitude teach mathematics in a more successful way and this results in their students liking the subject more. A as a mathematics teacher, have a reflective disposition; make time to be self-conscious and reflective. As a mathematics teacher, if you don't feel inadequate after sincere self-evaluation and reflection you are probably not doing the job.

According to East African Regional mathematics programme (EARMP) 1973, no matter whether you are a pre-service teacher or an experienced teacher, there is more to learn about the content and methodology of teaching mathematics. The ability to examine one for areas that need improvement or to reflect on success and challenges is critical for growth and development. According to the (MOEST, Math's module 2004), the best teachers are always trying to improve their practice through the latest articles, the newest book, the most recount conference or by signing up for the nest series of professional development opportunities. So the best teachers never finish learning, never exhaust the number of new mental connections that they make and as a result, they never see teaching as a stale, stagnant or a boring job, with every new edition they enjoy the journey.

2.1.3 Concept of Motivation and Classroom Learning in Numeracy.

Different scholars and writers define motivation differently. In this study motivation refers to that which energizes, directs and sustains behavior. According to (Luthans, 1992), motivation is a stimulated state of the individual and an inner state that causes individuals to exhibit behavior directed towards goals. The stimulated state occurs because people have needs that they seek to satisfy. According to (Sanford, 1976) when people go to work in organizations they do so by bringing a supply of energy or potential to perform. (Abraham Maslow, 1954) identified eight innate needs of motivation which he further classified into five major categories. These are physical, safety, social, esteem and self-actualization. He postulated that these needs are shared relatively among all human beings everywhere. He felt that as needs at a given level of the hierarchy got satisfied, they would lose importance while those at the next level become most important. The needs are hierarchically arranged with physical needs at the bottom and those of self-actualization at the top. The hierarchy is pyramidal so as to give fair assessment of how many people would meet the needs. According to this theory, what one wants is a function of his or her pattern of needs satisfaction. According to (Aldog and Stearns, 1987), one can start with lofty aspiration aspirations relative to love, esteem and self-actualization but be driven to more basic needs if they are suddenly not satisfied. Figure 2.1 shows the distribution of Maslow's Hierarchy of needs.

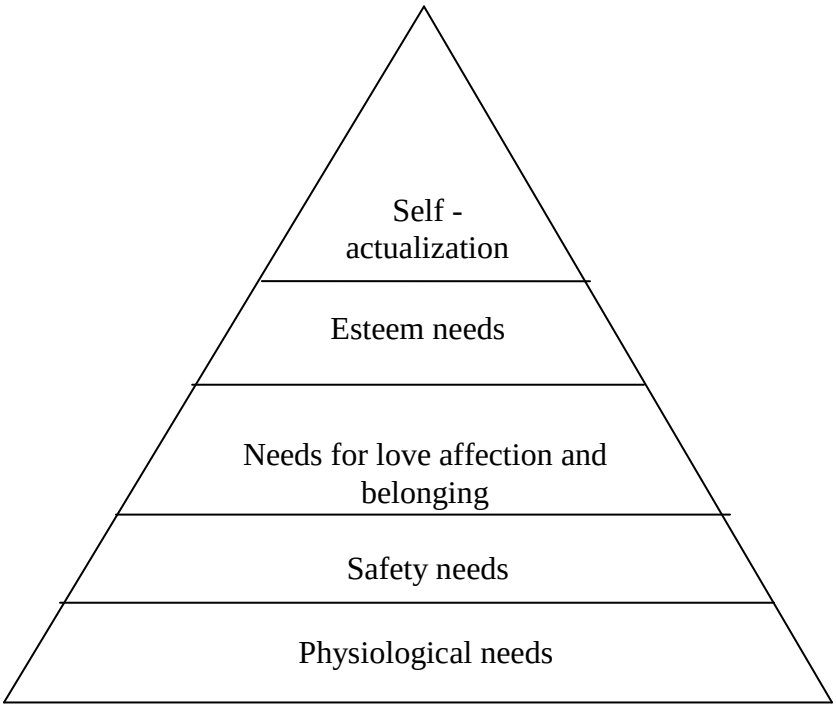


Figure 2.1: Maslow's Hierarchy of Needs

Source Maslow (1954)

The basic needs are physiological and they include the body's automatic efforts to retain normal functions i.e homeostasis. This includes satisfaction of hunger and thirst, oxygen and maintenance of the body's regular temperature, sleep, sensory pleasure, maternal behavior and sexual desires. These are the strongest needs and are basic for survival. According to (Mullin's 1999), in a working situation these needs are satisfied though indirectly by way of rewards, salary and remuneration and provision of working incentives. For the pre-school children who are expected to perform well in mathematics they should have adequate and balanced diet. A hungry child cannot learn since he/she lacks energy and motivation to learn. They cannot play, explore or even enjoy school activities. Mathematics teachers should work very closely with the parents and school management to ensure that children are well fed and that all the physiological needs are adequately satisfied. Safety needs could also be termed as security needs. They include

free from harm, the availability of a peaceful environment both at home and in school. The child should be secure socially, physically and emotionally.

According to (NACECE, 2001), parents and teachers are expected to collaborate to ensure that children receive appropriate care and that their development and safety is enhanced. Act (Republic of Kenya, 2001), points out that, parents are expected to maintain and provide the child with adequate diet, shelter, clothing, medical care among others. The same has been emphasized by the Kenyan constitution, The Bill of right section 53. So it's the duty of the parents as well as teachers to ensure that pre-school children are safe. Parents should protect their children from any attacks; develop a warm and a loving relationship with them. As a teacher, develop warm teacher child relationship; ensure there is no bullying in school. Discipline should be administered in friendly ways, should not be humiliated for this will lower their self-esteem hence de-motivate them. Love and belonging could also be termed as social needs. They include affection, sense of belonging in given social activities, friendship, giving and receiving love. Ones colleagues offer social support when one is in problems this reduce the stress that might hinder productivity.

Parents and teacher should make children feel loved and accepted regardless of their academic achievement and family background. The teacher should use child centered methods and encourage children to learn on their own. Concepts should be explained in a friendly manner to raise and maintain motivation to learn (Hull, C.L. 1943). Self-esteem means having ones self-worth, giving you a worthy price tag. Esteem needs could also be called ego needs. They include self-respect and esteem of others. This covers self-confidence, strength, independence, freedom and achievement, reputation of prestige, status, appreciation and recognition. A supervisor's commendation to juniors

for good work done satisfies these needs. According to (Watson, J.B. 1930), parents and teachers should always praise, encourage, reward and acknowledge both the efforts and achievement of children. This increases their self-esteem and self-confidence. Every child should be made to feel that he or she is capable of achieving success in life and more so in mathematics. Self-actualization needs are the development and realization of one's potential, they include growth, achieving ones potential and self-fulfillment and the drive to become what one is capable of becoming. According to (Mourer, O. H. 1943), children need to be rewarded and praised from when they are young so that they learn to enjoy the feelings of happiness that follow success. This creates internal motivation. This will make children work hard in school so that they enjoy success and they feel fulfilled. Parents and teachers should work hand in hand to help children realize their full potential. Developing goals early in life motivates children to work hard to achieve their goals.

2.1.4 Types of Motivation

According to Bandura (1977), there are two types of motivation to learn. These are the intrinsic and extrinsic motivation. Intrinsic motivation is a response to individual's internal needs such as personal interest in the subject, satisfaction or enjoyment in a learning task that is inherently interesting. Extrinsic motivation is directed at earning rewards that are external to a learner. This could be in forms of teacher's praise, approval of learner's participation in a lesson, positive feedback on performance of tasks and encouragement. As a teacher, the two types of motivation should be encouraged to promote children academic performance in mathematics.

Under intrinsic motivation, teachers explain or show why learning a particular content is important, create and maintain curiosity, provide a variety of activities and sensory

stimulations, provide games and simulations, set goals for learning, relate learning to students' needs and help student develop plan of action.

Under extrinsic motivation, teachers provide clear expectations, give correct feedbacks, provide valuable rewards and make rewards available.

2.2.1 Teacher's Planning as a Motivational Strategy

According to the professional leadership of the national council of teachers of mathematics (NCTM, 2000), mathematics teachers and educators must: Understand deeply the mathematics contents they are teaching, understand how children learn mathematics including a keen awareness of the individual's mathematical development of their own students and common misconception, select a meaningful instructional tasks and generalizable strategies that will enhance learning.

This means ten that it's mandatory for teachers to do prior preparation when teaching mathematics. This will help in logical delivery of the mathematical content to the learners in a manner that their motivation will be maintained.

The physical aspects of a classroom refer to the extent to which a classroom is lighted, aerated spacious crowded and has adequate chairs and desks. Teacher-pupil relationship in the process of teaching and learning also forms a mathematical classroom environment. If there is a well-developed and maintained rapport, this motivates the leaner to do well in mathematics. The manner in which the teacher gives the feedback could motivate or de-motivate the learners, Feedback serves as an extrinsic form of motivation and is quite necessary for learning is to take place. According to (Miller, N.E., 1948) a rewarding smile by a teacher is likely to raise the level of appreciation by

a child doing mathematics. Similarly a frown or a scolding by a teacher will mostly likely decrease the probability of undesired behavior, being repeated in the classroom.

According to the professional leadership of NCTM (2000) , mathematics teachers and educators must understand deeply the mathematics contents they are teaching, understand how children learn mathematics including a keen awareness of the individual mathematical development of their own students and common misconception and select meaningful instructional tasks that lead to generalizable strategies and this enhances learning. This means then that it's mandatory for teachers to do prior preparation when teaching mathematics. This helps in logical and systematic way of delivery of the mathematical content and to this end learners' motivation is maintained.

2.2.2 Use of Instructional Resources as a Motivational Strategy

According to constructivism views (R.B Davis, 1991), advances that children have their own world perspective which they must explore, have to interact with others to broaden their world perspective and children must be provided with a stimulating environment if they have to learn. This means then the teacher has to use concrete instructional materials to make mathematics learning more real and tangible. According to the (World Bank, 1993), instructional materials are a key ingredient in learning. This is because the children's attention is captured with minds on and hands on. In essence this serves to motivate the mathematics learners.

According to Piaget (1979), children need to be actively involved in the learning activities for them to construct knowledge. They should be given the opportunities to explore, manipulate, experiment, observe and ask questions. In so doing, they acquire knowledge which contributes to their mental development. To help children construct knowledge and build schemas, they need to be provided with plenty of concrete learning

and play materials. Piaget's constructivist theory implies that the teacher should be a facilitator of children learning. The teachers do this by providing an environment that stimulates children to construct knowledge and find out about things on their own as they play. His views are relevant to the study as he states that instructional resources are related to children learning achievement.

2.2.3 Teacher's Feedback

According to Hemacheck (1995) feedback is the knowledge of results given by a teacher to a student. It could be written comment, verbal, grades or teacher's behavior. This serves as extrinsic motivation and it's quite necessary if learning is to occur. Feedback informs the learner what they know and what they need to know, hence provide a chance of learning new knowledge.

2.2.4 Instructional Method

The method or process is the way in which content is presented, that is the approach used for instruction. Beecher, (1965), affirms that "if you tell me, I will listen, if you show me, I will see but if you let me experience, I will learn." So, the approaches used should support and cultivate motivation in the classroom. According to alderman, (1999), the best method should provide environment for optimal motivation, engagement and learning. Children should be helped to develop tools that enable them be self-regulated. One can use incentives because rewards and punishment work at controlling the students' immediate classroom behavior.

According to Mutitu (2012), a rewarding smile by a teacher is likely to raise the level of appreciation by a child doing mathematics. Similarly a frown or a scolding by a teacher will, most likely decreases the probability of undesired behaviour being repeated in the classroom. According to (Maslow 1954), teachers could give children stars in their

books or high grades once a certain criteria of performance is attained. They could also be given more time to play once a certain task is satisfactorily completed while the reverse will take place in a negative reinforcement.

According to Palmer, (2007), encouragement and praise can strongly influence children's motivation. Praise for effort and improvement can build a child's self-confident. Esteem can be boosted by emphasizing his or her performance relative to personal goal. In the process of curriculum delivery, the teacher should strive to create an effective environment where children will fight self-doubt, poor discipline, fear and any other "ghost".

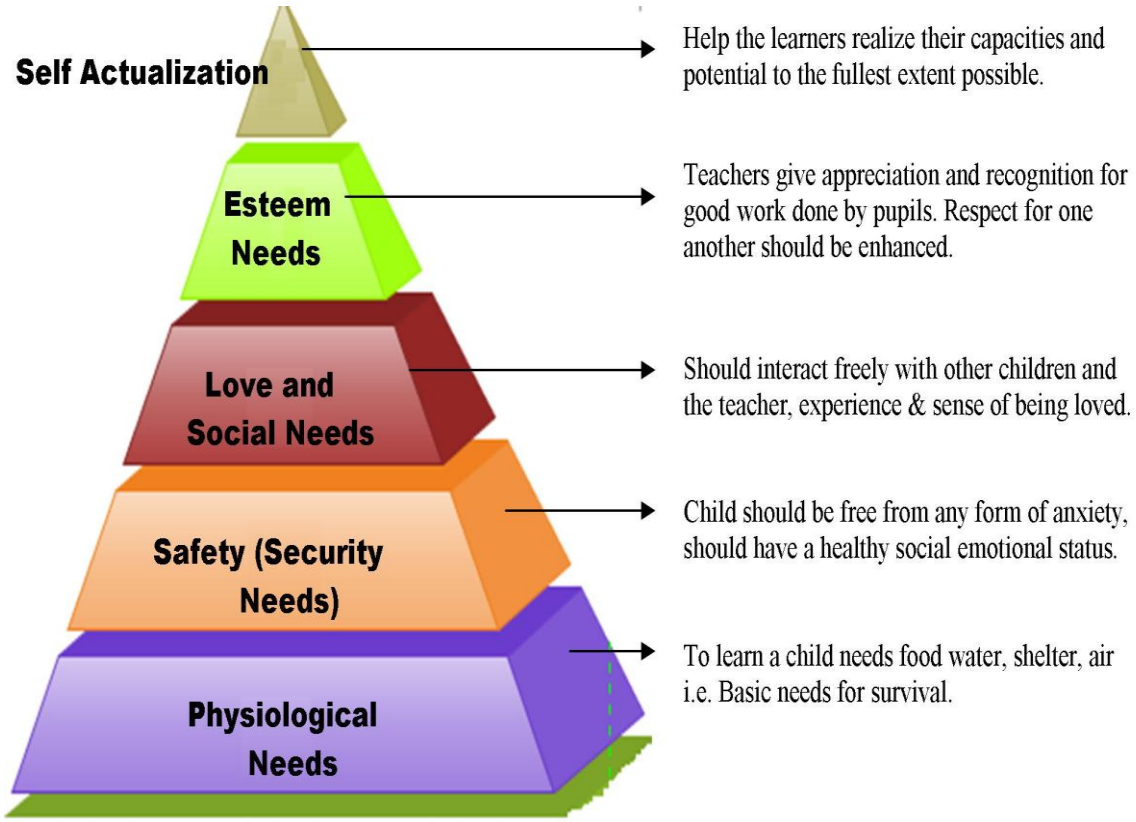
According to Rumsey, (1998), teacher's choice of method should take care of the overall approach to material presentation and development, the use of engaging classroom activities, fostering positive peer social interaction, encourage children to discover, encourage critical thinking, moving from simple to complex and using applications relevant to children's everyday experiences. The more comfortable children feel in themselves and with others the easier it is to concentrate and achieve.

According to Olson, (1997), almost everything teachers do in the classroom has a motivational influence on children, either positive or negative.

2.3 Theoretical Framework

Abraham Maslow, 1954 posited a hierarchy of needs based on two groupings, deficiency needs and growth needs. This theory is based on two assumptions, the first one being that human beings have needs that are different in nature ranging from biological needs at the lower level to psychological needs at upper level. The second assumption is that these needs must be satisfied before higher level needs. The five

levels developed are fully applicable into a school and classroom scenario. For instance physiological needs are necessary for survival; they sustain life and include food, water, shelter and sex. The child needs to be well fed, taken care of right away from home before he/she can learn. Hungry, malnourished children are de-motivated and can never learn, safety or security needs means the need for self-preservation. They include stability, freedom from anxiety. This means that children should live harmoniously both at home and in school. There should be no bullying; a friendly learning atmosphere should be developed. Under love and social needs, we have need for love, friendship, affection and social interaction. To enhance this in the classroom there should be peer tutoring, different clubs that children can identify with for instance mathematics club. Esteem needs form a desire for recognition for work well done. This is enhanced by praise and rewards. Respect from others is an external recognition while self-respect is an internal recognition. Self-actualization is at the top of the hierarchy. This is the need to develop fully and to realize one's capabilities and potentialities to the fullest extent possible. At this level children are helped to realize their potentials and work towards fulfillment of the same by setting manageable targets in mathematics. So, this theory is very relevant to the study at hand. Figure 2.2 shows motivating children in a mathematics class

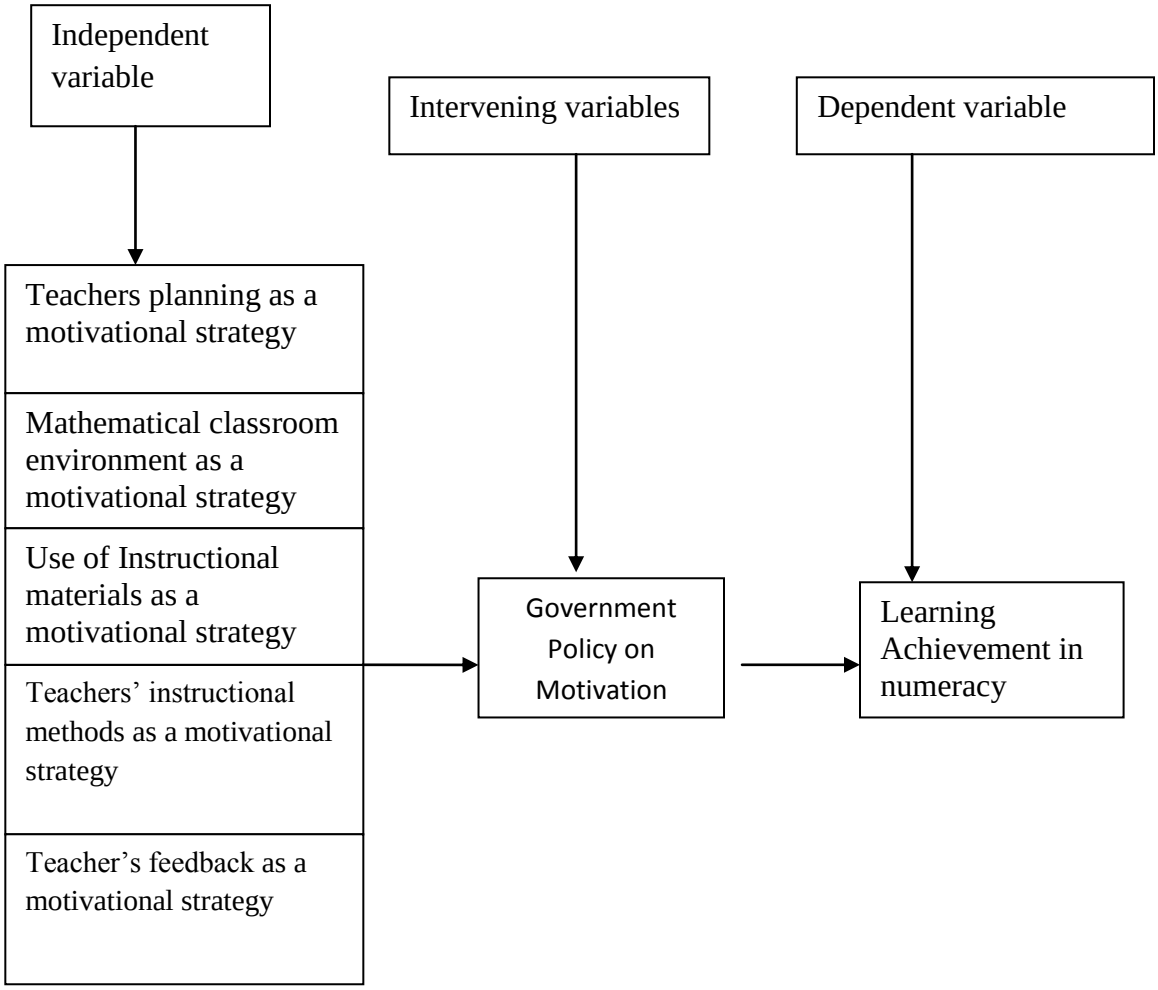


Maslow's Hierarchy of Needs Theory
Source (Abraham Maslow, 1954)

Figure 2.2: Motivating Children in a Mathematics Class

2.4 Conceptual Framework

This section explains how the variables under study interact with each other.



Source: *Own conception but paraphrased from (Mugenda and Mugenda 1999)*

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This section consisted of research methodology. It was organized as follows; Research design, target population, sample size, sampling procedures, research instruments, validity, reliability, data collection procedure, data analysis techniques, pre-test and post-test.

3.2 Research Design

The research employed a survey design but within it, there was description hence, the study took a descriptive survey design. According to (Mugenda, 2002), a descriptive survey is collecting of data in order to answer questions concerning the current status of the subject of study. A descriptive survey design aims at what is happening, seeks new insight, asks questions and assesses phenomenon in a new light. According to (Bogdab and Biklen, 1992) a descriptive research design is carried out in a natural setting. So, data is collected from the scene of behavior. The researcher takes note of whatever is happening and no detail is taken for granted. So a descriptive survey fitted this research in that, the researcher observed how the teacher motivated the learner while teaching numeracy for instance the researcher assessed how instructional resources were being used, did documentary analysis to establish whether the mathematics teacher planned for the lessons, attendance of the learners was assessed from the attendance register, observed the general mathematics classroom set up and then used questionnaires.

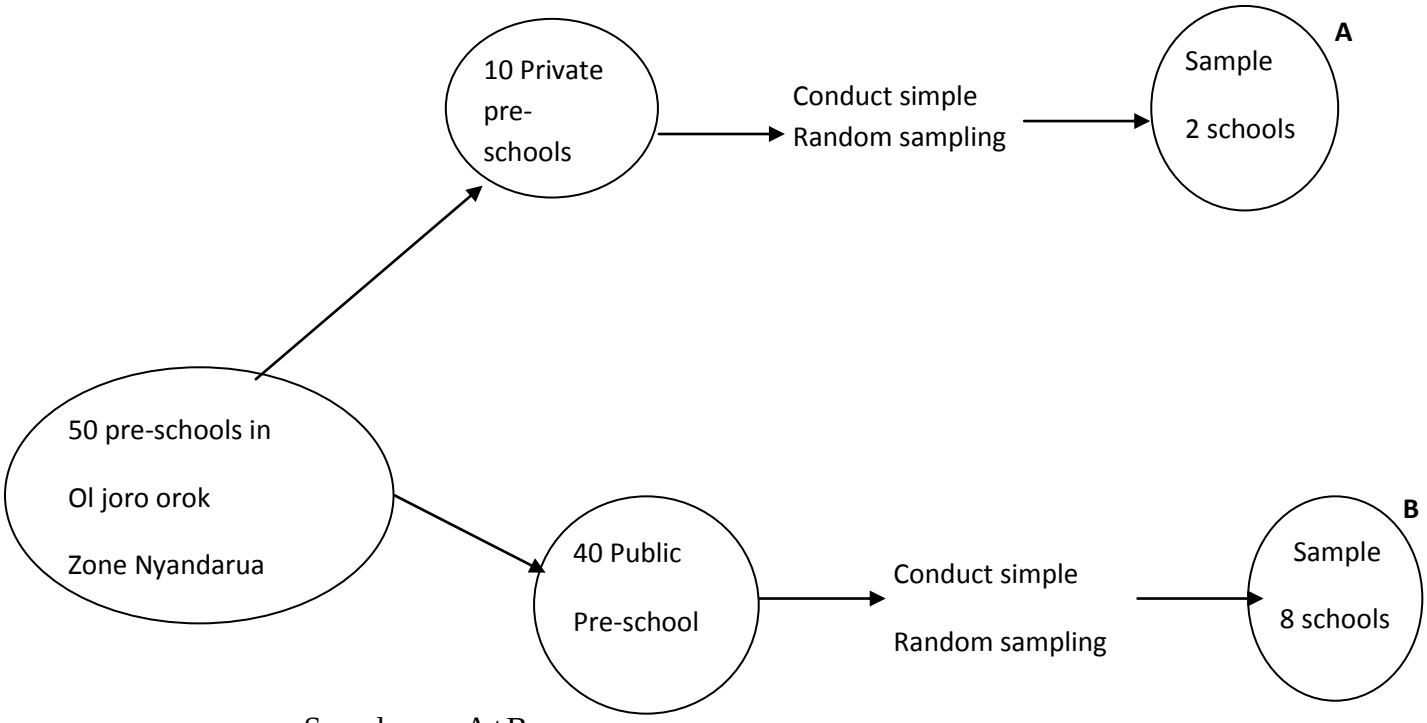
3.3 Target Population

According to (Ordho, A.J. 2003), population refers to an entire group of individuals, events or objects having a common observable characteristic. This means that population is the aggregate of all that conforms to given specifications. In this research the population was all the fifty (50) pre-schools, one thousand one hundred and seventy (1670) pre-school children, (50) fifty pre-school teachers, fifty (50) pre-school head teachers where the pre-schools were situated in primary school grounds. The target population also included two TAC tutors and the DEO, Nyandarua West District in Nyandarua County.

3.3 Sample and Sampling Procedure

According to Winker (1989), sampling is a step in which the researcher selects research participants. Individuals to take part in the research are identified. A sample is a small group selected from the population using scientific methods. In this case, the fifty pre-school consisted of private and public institution. So, stratified random sampling method was used. The population was be put in two strata, public and private, unto each stratum then simple random sampling was undertaken. According to Borg and Gall, (1989), stratified random sampling has the advantage in that the diversities in the population are taken care of and the sample identified is a more representative of the whole population.

Diagrammatically



Sample was A+B

Source – own concept but paraphrased by (Borg R. W and M D Gall 1989)

The sample was 20% of the whole population. That was 20% of the private pre-school children and teachers and 20% of the same individuals in the public pre-schools. This was 334 children and 10 pre-school teachers. The two TAC tutors were also included in the sample plus the D.E.O.

3.5 Research Collection Instruments

These are instruments for collecting data. They were be as follows; questionnaire for teachers, interview schedule for teachers and children, pretest and post-test for children. Also observation schedules were employed.

3.5.1 Observation Guide

In this study structured observation schedule was used. Children and teachers were observed during the teaching learning process as the interacted with the resources,

teacher's feedback to children and the general set up of the mathematical classroom was observed. The observation took place in the natural setting in the selected Pre-Schools.

3.5.2 Interview Guide

The Pre-School teachers were required to answer questions on their teaching profession, types of motivational strategies used and the feedback they gave to their children in the learning process. Before the interviews were conducted, the researcher visited the schools to book appointment. Respondents were briefed about the study to prepare them in advance. The Head teachers answered questions on the life history of the school, the number of teachers and their professional qualification. They also stated their annual expenditure on various motivational aspects. Children answered about their favorite subjects, activities done during number writing and also materials used when modeling numbers.

3.5.3 Questionnaires

The Head teachers answered questions on the population of the school, expenditure on various motivational aspects .Respondents answered simple and brief questions. These questions helped the researcher solicit information required. They expressed their opinion on types of appropriate motivational strategies to employ in order to enhance children's learning achievement in numeracy. Pre-School teachers answered questions about their educational background, motivational strategies they used and their opinion on the influence of motivational strategies on children's learning achievement in numeracy.

3.6 Pilot Study

A pilot study was carried out in two Pre Schools which were randomly selected from public and private categories. Instruments were administered to ascertain their

effectiveness in soliciting information for the study. The instruments were pilot tested and corrections were made. Some information which was not necessary was deleted while necessary information was added. Pilot testing of these instruments was an important exercise that enabled the researcher to establish validity and reliability of the instruments. Schools chosen for the pilot study were not included in the final study.

3.7 Validity

According to Borg R. W and M. D Gall, 1989), a research instrument is said to be valid if it measures what is supposed to be measured. To enhance validity, the pilot study was conducted in two sample Pre Schools which were randomly selected. Observation schedules and questionnaires were prepared and administered to the subjects in those Pre Schools. After the pilot study, ambiguities and omissions in the questionnaires that might have been overlooked were rectified and any unnecessary statements were deleted.

3.8 Reliability

According to (Orodho, A. J, 2003) reliability refers to the degree of consistence between two or more instruments addressing the same research focus ,it tells us how reliable a research instrument is. It can be done through retest method where expert judgment is involved. After the instrument is re-administered for the second time to the same participants and if the result is the same, the instrument is regarded as reliable. At the ends of the pilot study. At the end of the pilot study period, a preliminary analysis was done on data obtained from a sample of schools. The results represented what was anticipated and this was an indication that the instrument could be used to solicit information for the study.

3.9 Data Collection

According to (Borg and Gall 1989), data collection is a step at which the researcher obtains data about the independent variable and the dependent variable. In this research, the independent variable was "teacher's motivational strategies while the dependent variable was "Pre School children learning achievement in numeracy." To obtain the required data, the researcher employed observation, interviews, questionnaires and checklists for documentary analysis was used .Field notes were written as the interviews on motivational strategies were going on.

3.10 Date Analysis

This is a step in the research process when the researcher makes sense of what she/he has collected. This was done using percentages and graphs. Data was analyzed according to its types. That is nominal data, ordinal interval and ratio data. Data obtained from the Pre test and the Post test was subjected to various statistical parameters like, percentages, frequencies and mean standard score . Later, the collected data was organized along the research questions or research objectives. Finally coding of the data was done in order to attach meaning to the patterns that emerged from the in-depth penetration.

3.11 Ethical concern

The research observed confidentiality of the information. This was done by not revealing the identity of the respondents. For example the participants were not supposed to write their names on the questionnaires, good rapport was be established with the respondents, findings of the results of the pre-test and post-tests were held with confidentiality and only used for the purpose of the research but not for discussing children or teachers in a degrading manner.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION OF RESULTS

4.1 Introduction

This chapter presents the results obtained from the analysis of the data results of the pre test and post test. The chapter also contains analysis of the two questionnaires and the three observation schedules on the influence of teacher's motivational strategies on learning achievement in numeracy for Pre-School Children in Ol-joro-orok zone, Nyandarua County. The data was analyzed with the help of a computer program, SPSS. This enabled the researcher to present the data in frequencies, percentages, tables and charts. The chapter is organized based on the major research questions except the first part which deals with demographic information of the respondents.

4.2 Demographic and Background Information of Respondents

The study considered background characteristics of all those who participated in the study. These included the pre-school teachers, Pupils and head teacher from the sampled schools. These characteristics were sort out mainly to provide the demographic characteristics of the target population, which form the foundation of any study.

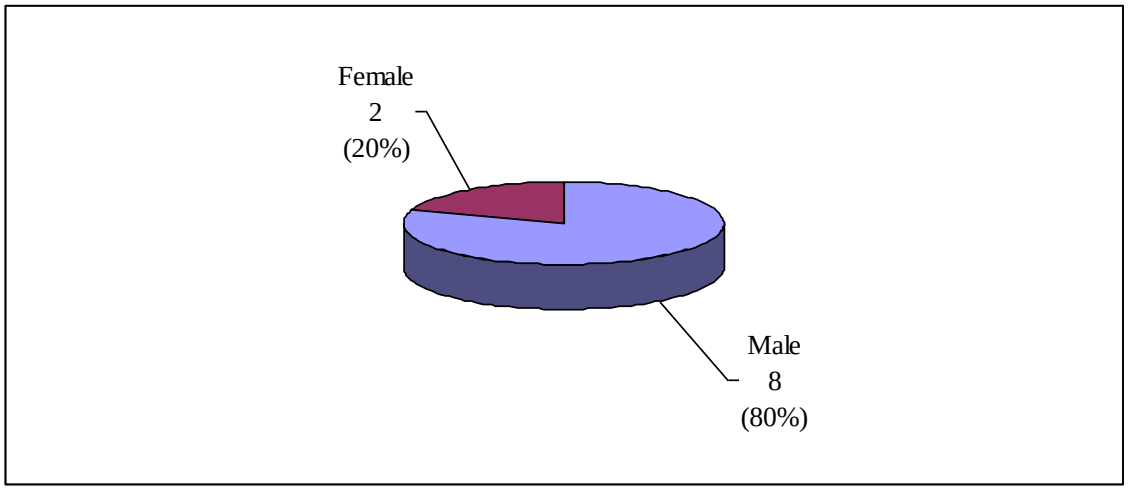
4.2.1 Teachers

The background characteristics of teachers that were considered included: Gender, Age bracket, academic qualification and working experience.

Gender

The study sought to understand the gender of teachers. This was categorized into; Male and female. Figure 4.1 shows the distribution of teachers by their gender.

Figure 4.1: Distribution of Teachers by their Gender

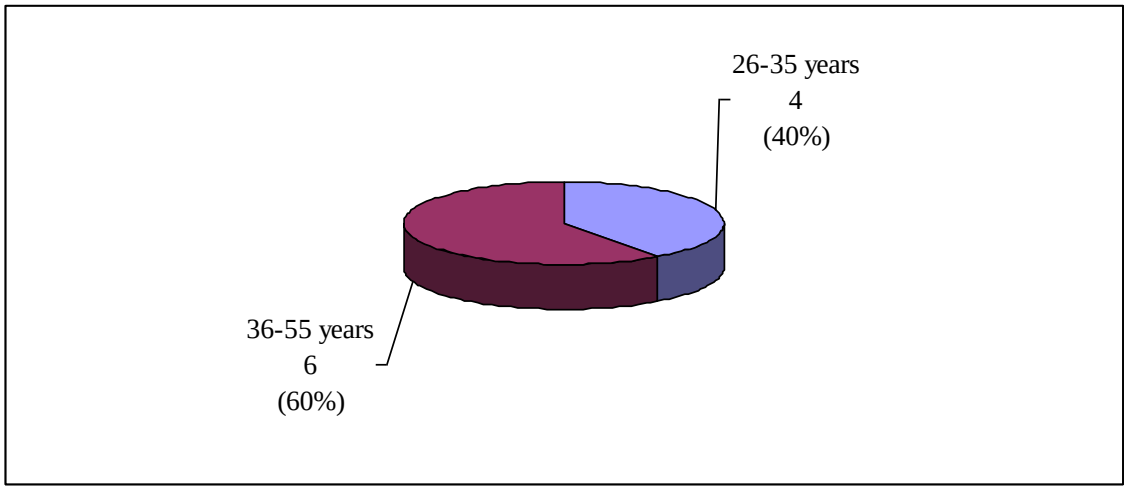


When asked to indicate their gender, an overwhelming majority, (80%) of the respondents who took part in the study were female. Only 20% of them were male teachers.

Age Bracket

Teachers were also asked to indicate their age brackets. This was categorized into; under 25 years, 26- 55 years and 56 years and above. Figure 4.2 shows the distribution of teachers by their age brackets.

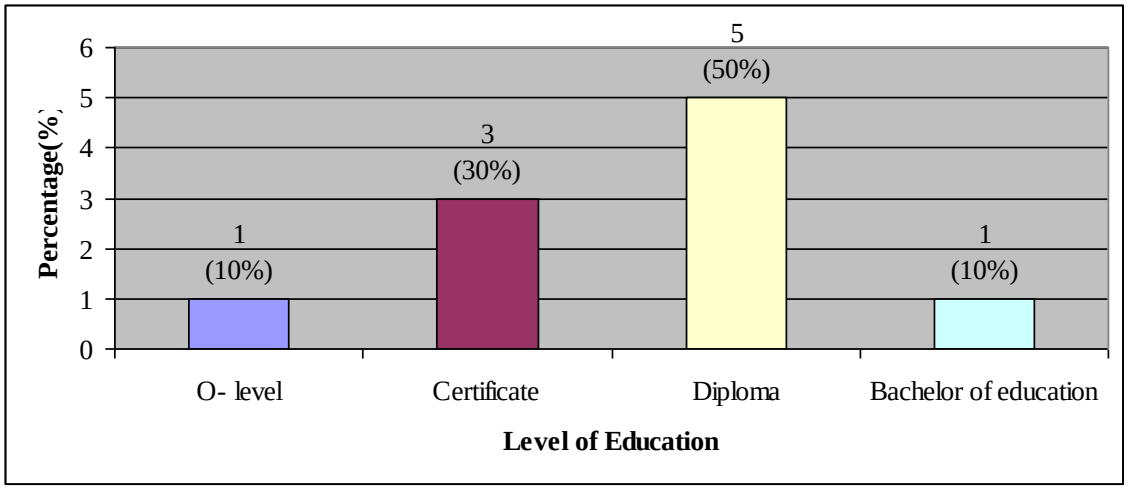
Figure 4.2: Distribution of Teachers by their Age Brackets



The above figure shows that majority, (60%) of the teachers who took part in the study ranged between 36-55 years. Slightly less than half of them, (40%) were between the age of 26-35 years. This shows that all were mature to handle children and utilize relevant motivational strategies to enhance learning achievement in numeracy.

The teachers were further asked to indicate their academic levels. This was categorized into, O- level, Certificate, Diploma and Bachelor of education. Figure 4.3 shows the distribution of teachers by their level of education.

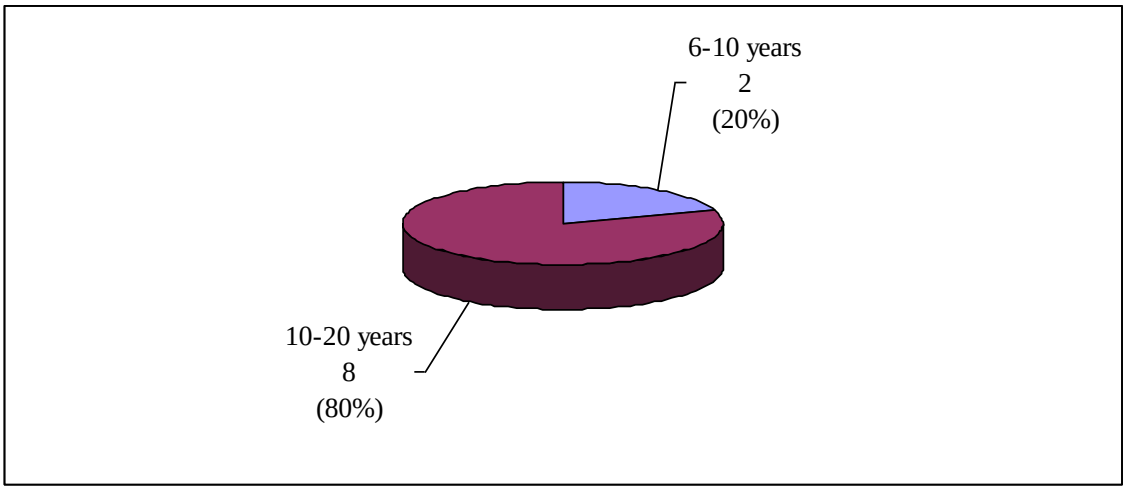
Figure 4.3: Distribution of Teachers by their Level of Education



Less than a quarter, (20%) of the teachers who took part in the study were of ordinary levels. Meaning that they only completed form four and were employed as pre-school teachers having not done any course pertaining to early child hood education. This was a clear indication that they were not conversant with pre-school curriculum, hence lacking adequate knowledge about motivational strategies to put in place in order to enhance learning achievements in numeracy. However 3 (30%) of the respondent were certificate holders in early childhood education while majority of them, (50%) were diploma holders. Only 10% of them had bachelor' of education as their highest level of education. It was crystal clear that they were well versed with pre-school curriculum and could use various motivational strategies to enhance learning achievement in numeracy. They were able to select and use appropriate motivational strategies for the level of learners and catered for individual differences.

The study sought establish teachers working teaching experience. This was categorized into; Below 5, 6-10, 11-20 and above 20 years. Figure 4.4 shows the distribution of teachers by their teaching experience.

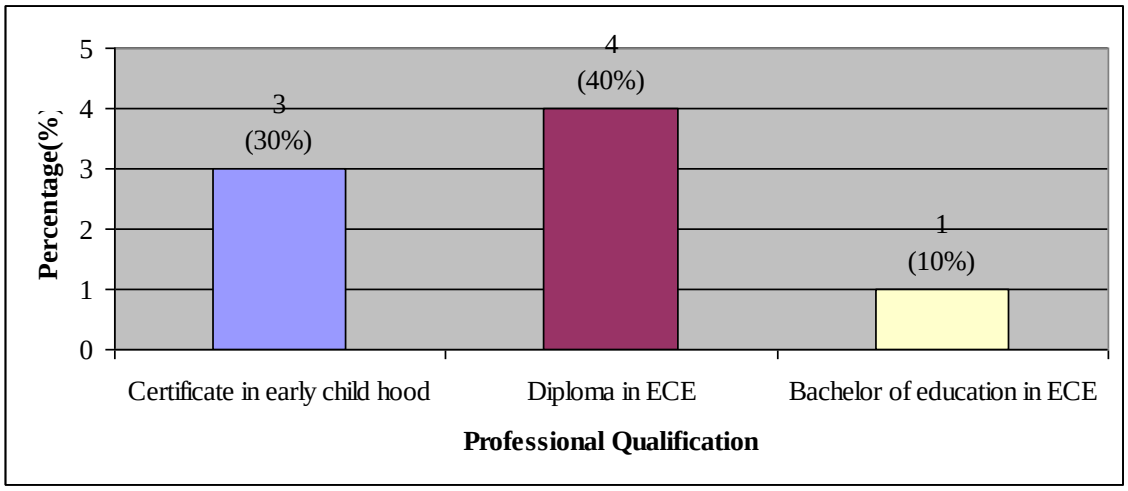
Figure 4.4: Distribution of Teachers by their Teaching Experience



Majority of the teachers, (80%) who took part in the study had a teaching experience of between 10-80 years. Slightly less than a third of them, (20%) had a working experience of between 6-10 years. This suggests that majority of the teachers had been teaching for a considerable duration of time enabling them to give reliable information on the influence of teachers motivational strategies on learning achievement in numeracy. This also suggested that they were able to select appropriate instructional resources, gave, proper feedback, planned their work and also kept relevant documents that helped children in the learning process.

Teachers were further asked to indicate their professional qualifications. This included, Certificate in early child hood, Diploma in ECE and Bachelor of education in ECE. Figure 4.5 shows the distribution of teachers by their Professional qualification.

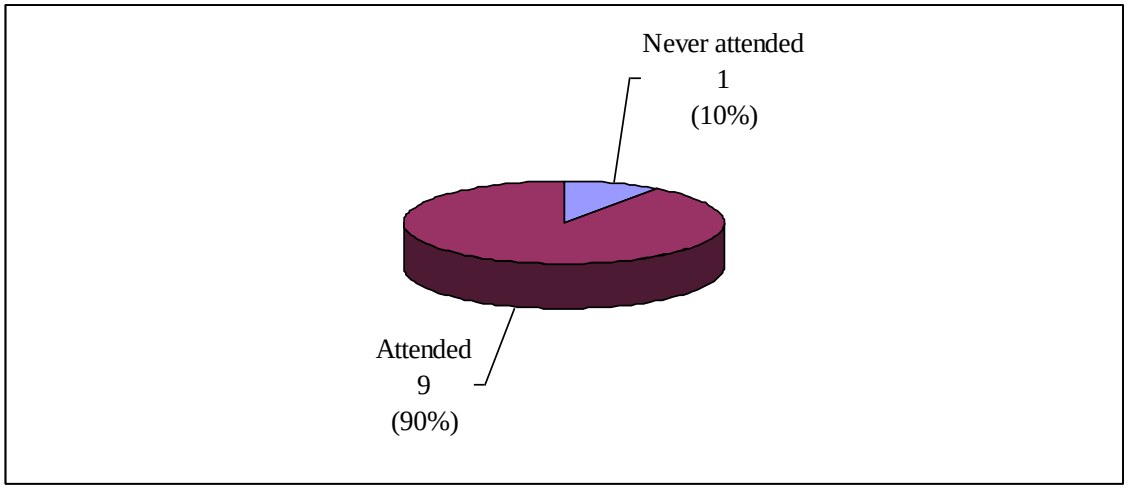
Figure 4.5: Distribution of Teachers by their Professional Qualification



Slightly less than a third, (30%) of the teachers had gone through certificate training in Early childhood education and (40%) had gone through diploma training in early childhood education. Only 10% of them had attained bachelors' degree in education. This suggested that 80% of the pre-school teachers had proper training and adequate knowledge in early childhood education matters. Those teachers were able to identify appropriate motivational strategies to employ as they chose the teaching methods and approaches to use as they taught numeracy. This enhanced learning achievement in numeracy.

Teachers were also asked to indicate if they had ever attended any seminar or workshop on motivational strategies. Figure 4.6 shows the distribution of teachers' responses on whether they had ever attended any seminar or workshop on motivational strategies.

Figure 4.6: Distribution of teachers' Responses on whether they had ever Attended any Seminar or Workshop on Motivational Strategies



An overwhelming majority of the teachers, (90%) who took part in the study had attended a seminar or workshop on motivational strategies in learning achievement in numeracy. However, (10%) of the teachers had never attended any seminar or workshop on motivational strategies on learning numeracy, hence lack of the necessary skills to handle numeracy was portrayed here. Teachers who had attended such workshops were able to use various motivational strategies while teaching numeracy. For instance they gave positive feedback like "well done" when children got things right. Prior preparation of the work to be taught was also done.

4.2.1 Teacher's Planning as a Motivational Strategy

According to the professional leadership of the national council of teachers of mathematics (NCTM, 2000) mathematics teachers and educators must; understand deeply the mathematics contents they are teaching, understand how children learn mathematics, including keen awareness of the individual's mathematical development of their own student and common misconception and select meaningful instructional

tasks and generalizable strategies that will enhance learning. This means then, that it's mandatory for teachers to do prior preparation when teaching mathematics. This will help in logical delivery of the mathematical content to the learners in a manner that their motivation will be maintained.

The sought to establish the number of pre-schools whose teachers had prior preparation before teaching.

Al of the teachers who took part in the study from the sampled pre-schools had prior preparation before teaching by having schemes of work and lesson plans,

The study sought to examine quality of the scheme of work used by teachers. Table 4.1 shows the distribution of the quality of the scheme of work used by teachers.

Table 4.1: Distribution of the Quality of the Scheme of Work used by Teachers

	Unsatisfactory		Satisfactory		Good		Very Good	
	F	%	F	%	F	%	F	%
Clarity of learning objectives	2	20	6	60	2	20	-	-
Sequencing of lessons	2	20	4	40	3	30	1	10
Range of teaching and learning activities	2	20	3	30	5	50	-	-
Use of instructional resources	2	20	6	60	1	10	1	10

Majority of the teachers, (60%) who took part in the study indicted that the schemes of work were satisfactory in terms of their clarity of learning objectives. This was supported by 20% of them who were in support that they were good in terms of their clarity of learning objectives. Only 20% of them indicated otherwise.

Majority of the teachers, (70%) indicted that the schemes of work were either satisfactory or good in terms of their sequencing of lessons. This was supported by 10% of them who were in support that they were very good. Only 20% of them indicated otherwise.

Slightly less than a third of the teachers, (30%) who took part in the study indicted that the schemes of work were satisfactory in terms of their range of teaching and learning activities. This was supported by half (50%) of them who were in support that they were good in terms of their clarity of learning objectives. Only 20% of them indicated otherwise.

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Majority of the teachers, (70%) indicted that the schemes of work were either satisfactory or good in terms of their use of instructional resources. This was supported by 10% of them who were in support that they were very good. The remaining percentage of then, (20%) of them indicated otherwise.

Table 4.2: Distribution of the Quality of the Lesson Plans used by Teachers

	Unsatisfactory		Satisfactory		Good		Very Good	
	F	%	F	%	F	%	F	%
Clarity of learning objectives	2	20	6	60	2	20	-	-
Sequencing of lessons	2	20	4	40	3	30	1	10
Range of teaching and learning activities	2	20	3	30	5	50	-	-
Use of instructional resources	2	20	6	60	1	10	1	10

Majority of the teachers, (60%) who took part in the study indicted that the quality of the lesson plans was satisfactory in terms of their clarity of learning objectives. This was supported by 20% of them who were in support that they were good in terms of their clarity of learning objectives. Only 20% of them indicated otherwise.

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Majority of the teachers, (70%) indicted that the quality of the lesson plans was either satisfactory or good in terms of their use of instructional resources. This was supported by 10% of them who were in support that they were very good. The remaining percentage of then, (20%) of them indicated otherwise.

4.2.2 Use of Instructional Resources as a Motivational Strategy

The study sought to establish whether teachers from the sampled schools used instructional resources as a motivational strategy. The resources included, Chalk boards, charts , text books, flash cards, models , counters , Real objects , paints & brushes, clay, assorted shapes, plasticine among others. Table 4.3 shows the distribution of the instructional

Table 4.3: Distribution of the Instructional Resources used by Teachers as a Motivational Strategy Resources used by Teachers as a Motivational Strategy

Method	USED		NOT USED	
	F	%	F	%
Chalk boards	10	100	-	-
Charts	10	100	-	-
Text books,	10	100	-	-
Flash cards,	8	80	2	20
Models	6	60	4	40
Counters	10	100	10	-
Real objects	6	60	4	40
Paints & brushes	5	50	5	50
Clay,	6	60	4	40
Assorted shapes	5	50	5	50
Plasticine	5	50	5	50

From the table, it can be noted that Chalk board diagram wall charts, text books, counters and clay were the most used instructional materials. Plasticine was not used at all. Real object were rarely used.

Children have their own world perspective which they must explore. Therefore they must be provided with a stimulating environment of meaningful learning has to take place. So the teacher should use concrete instructional materials to make numeracy learning more real and tangible. According to World Bank (1993) instructional materials are a key in gradient in learning in essence. This serves to motivate the learners.

4.2.3 Mathematical Classroom Environment as a Motivational Strategy

According to (NCTM, 2000) mathematical classroom environment refers to an ecological system which is an outgrowth of both teachers and children interaction under certain instructional factors as well as classroom physical aspects. The physical aspect of a classroom refers to the extent to which a classroom is lighted aerated, spacious, crowded, adequate chairs and desks, storage facilities and teachers pupil relationship. If there is a well developed and maintained rapport, this motivates the learners to do well in numeracy. This means then that the environment must be available accessible and of high caliber. For instance if an environment is not safe it is difficult and unwise to put all your attention on learning. On the other hand, an environment of openness and freedom to learn from our mistakes can foster motivation to learn.

According to (Rumsey, 1998) environment can be physical, mental, emotional or even spiritual to create an effective environment, Rumsey affirms that educators need to consider; overall approach to materials presentation and development, use of engaging classroom activities, in depth discussion in simulation, use of real life exercises throughout the varied scope and application, using application relevant to children, creating situation where children perceive themselves as academically productive, fostering positive peer interaction, decreasing peer aggression, moving from simple to more complex problems encouraging discovery, encouraging critical thinking for instance *what do you mean? What if…..? What works? What does not work? How would you……..?*

Also an environment of team work contributes to learning. According to (Doram J.1999) emotionally literate environment motivates learning. The more comfortable individuals feel in themselves and with others the easier it is to concentrate and achieve.

Consequently, emotional literacy has a positive influence on achievement, mental, health issues, behavior and work place effectiveness. Creating an emotionally literate environment includes; equipping children with essential life skills and leaning behavior including self awareness, empathy, managing feelings, motivational and social skills. These skills can be taught or modeled. In building and emotionally literate environment, the place for the teacher is to start with himself or herself. Each instructor should get his or her thinking straight, stand firm, refine communication skills to relate positively and creatively with children, develop positive regards towards self and others and develop support network for oneself and supportive lifestyle. As a teacher, teaching should focus not only on pedagogical technique but also on emotional dynamics of the student teachers relationship.

4.2.4 Teachers Feedback as a Motivational Strategy

According to Higlard (1943), feedback is the knowledge of the result given by an instructor to a student. Its purpose is to inform the student what he or she knows and what he/she doesn't know. Therefore, provision of feedback creates a platform on which new knowledge can be acquired. Feedback could be as a written comment, verbal, grades or teachers behavior. Feedback serves as an extrinsic motivation and is vital if meaningful learning is to occur.

According to (Miller, N.E 1948) a rewarding smile by a teacher is likely to raise the level of appreciation by a child doing mathematics. Similarly, a frown or scolding by a teacher will most likely decreases the probability of undesired beheaviour being repeated in the classroom. The manner in which the teachers give feedback could motivate or demotivate the learners. (Palmer, 2007) postulates that positive verbal encouragement and praise can strongly influence children motivation in the learning

process. Praise for effort and for improvement builds a student's self confidence. Esteem can be boosted by emphasizing his\her performance relative to personal goal. It is important that the student feel seen and gotten. Table 4.4 shows the distribution teachers' feedback as a motivational strategy.

Table 4.4: Distribution of Teacher's Feedback as a Motivational Strategy

Method	**Done**		**Not done**	
	F	**%**	**F**	**%**
Marking books	10	100	-	-
Positive comments on pupils books	8	80	2	20
Negative comments on pupils books	2	20	8	80
Praise from the teacher	10	100	-	-
Clapping for those who give correct answers	10	100	-	-
Scolding by teachers	-		10	100

All of the respondents, (100%) indicated that they use marking books ass a motivational strategy. This shows that none of the teachers in the sampled pre-schools used the method.

Regarding the use of negative comments on pupils books, Majority of the teachers, (80%) who took part in the study indicated that they did not use such a method. However, this method was used by only 20% of them.

Majority of the teacher, (80%) who took part in the study indicated that they use positive comments on pupils books as a motivational strategy. Only 20% of them employed the method.

All of the respondents, (100%) indicated that they did not use scolding as in classrooms. This is not a motivational strategy.

4.2.5 Use of Instructional Method as a Motivational Strategy

The method or the process is the way in which content is presented, that is the approach used for instruction. According to (Alderman, 1999) the two approaches that could be employed are a broadly categorized as heuristic and repository methods. In which, heuristic methods entail child centered approaches while respiratory treat students as passive being. For optimum learning, the instructional method used should support and cultivate motivation in the classroom. Through the method chosen the teacher should create a classroom environment for optimal motivation, engagement and learning helping students to develop tools that will enable him/her to be self regulated.

According to (Alderman, 1999) to improve method of instruction one can use incentives of time that is give students time to something he/she feels is important to him/her on the same, rewards and punishment/work at controlling the students immediately behavior. According to (Daniels, 2010) ;(Campbell and Niles 20006), experiential learning or self learning fosters motivation and raises learning achievements. Experiential learning is when an individual is actively involved with concrete experience. That means a student cognitively, affectively and behaviorally, processes knowledge, skills and altitudes. As such, knowledge is created through the

transformation of experiences. Table 4.5 shows the distribution of they type of instructional Method used by Teachers.

Table 4.5: Distribution of they Type of Instructional Method used by Teachers

Method	USED		NOT USED	
	F	**%**	**F**	**%**
Discussion	4	40	6	60
Story telling	-	-	10	100
Collaborate learning	7	70	3	30
Lecture	2	20	8	80
Peer teaching	10	100	-	-
Discovery	8	80	2	20
Role play	-	-	10	100

Regarding the number of pre-schools, slightly less than half of the respondents, (40%) who took part in the study were in agreement that they used discussion method. However, majority of them, (60%) indicated otherwise.

All of the respondents, (100%) indicated that they did not use story telling as a teaching method. This shows that none of the teachers in the sampled pre-schools used the method.

Majority of the teachers, (70%) indicated that they use Collaborate learning as a method of teaching. However, slightly less than a third of them, (30%) indicated otherwise.

Majority of the teacher, (80%) who took part in the study did not use Lecture method as an instructional method. Only 20% of them employed the method.

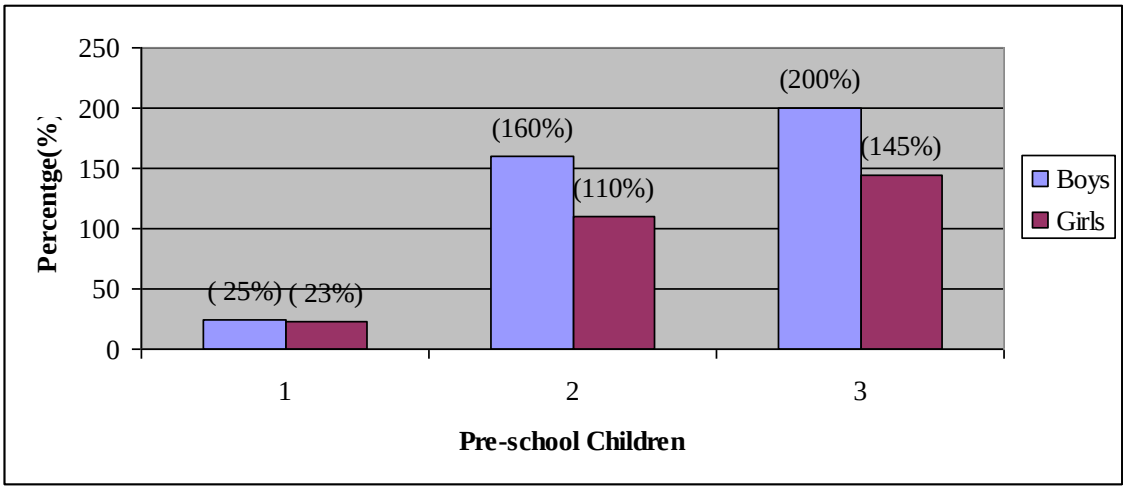
All of the respondents, (100%) indicated that they did employed peer teaching as a an instructional method.

Majority of the teacher, (80%) who took part in the study were in agreement that they employed discovery method as an instructional method. Only 20% of them employed the method.

All of the respondents, (100%) indicated that they did not use story role play as a an instructional method. This shows that none of the teachers in the sampled pre-schools used the method.

The study sought to establish the actual number of pre-school children in both public and private pre-schools. Figure 4.7 shows the distribution of the actual number of pre-school children in both public and private pre-schools.

Figure 4.7: Distribution of the Actual Number of Pre-school Children in both Public and Private Pre-schools



1>Private Pre-school

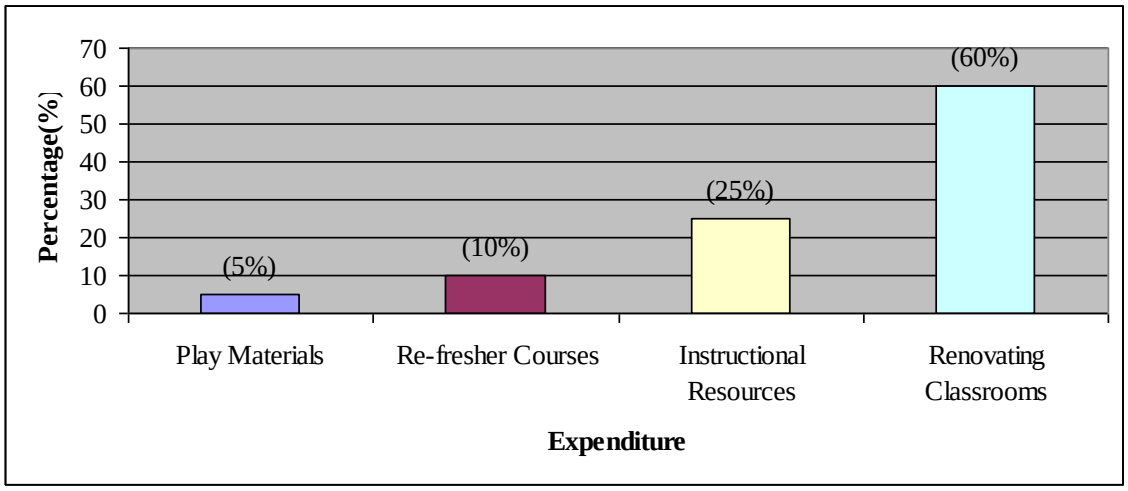
2>Public

3>Private and Public Pre-schools

From the figure, both public and private pre-schools had the highest actual number of children, 200% boys and 145% girls respectively. This was followed by public pre-schools which had a good number of children.

The head teachers were expected to state approximately how much they spent per annum on play materials, instructional resources, teachers refresher courses and on renovating classrooms. Figure 4.8 shows the distribution of thee percentage of money spent on various motivational aspects per annum in Public pre-schools.

Figure 4.8: Distribution of thee percentage of Money spent on Various Motivational Aspects per Annum in Public Pre-schools

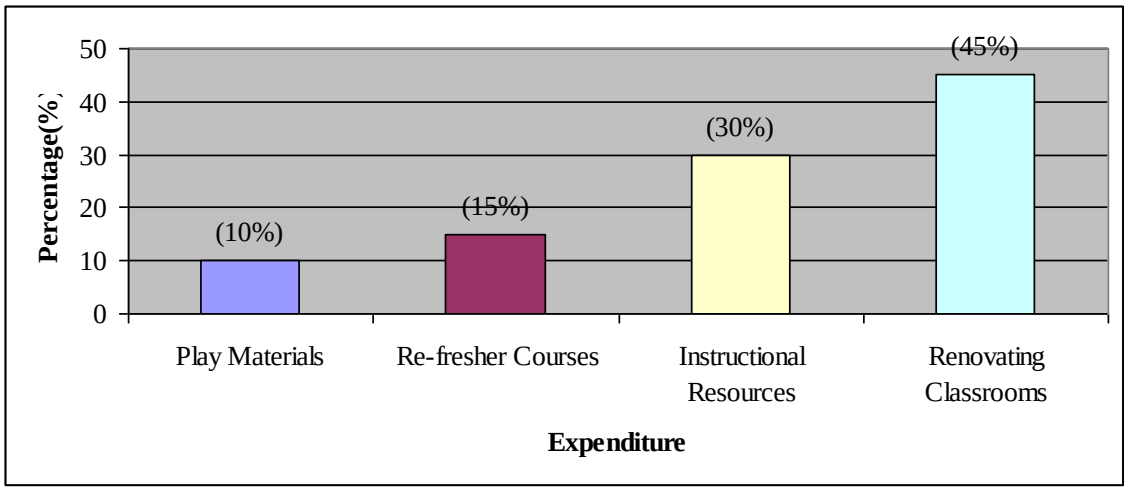


Public pre-schools spent the highest, (60%) amount of money on renovating classrooms. A quarter of the money was spent on instructional resources. The remaining percentage of the money was spent on either on re-fresher courses, (10%) or play materials, (5%) respectively.

The study sought to find out the money spent per annum on play materials, instructional resources, teachers refresher courses and on renovating classrooms in private pre-

schools. Figure 4.9 shows the distribution of thee percentage of money spent on various motivational aspects per annum in Public pre-schools.

Figure 4.9: Distribution of the Percentage of Money Spent on Various Motivational Aspects per Annum in Private Pre-schools



Private pre-schools spent slightly less than half, (45%) amount of money on renovating classrooms while slightly less than a third, (30%) on instructional resources. The remaining percentage of the money was spent on either on re-fresher courses, (15%) or play materials, (10%) respectively.

4.3 Statistical Analyses of Pre-test and Post-test Results

A pre-test was administered to pre-school children in both private and public pre-schools. Three hundred and thirty four children were involved in taking the test on the second week of the month of July in second term. The purpose of the test was to find out the entry behavior on mastery of numeracy and in particular number writing and number recognition before the introduction of motivational strategies. The pre-test scores were lower than the post-test scores as seen in the grouped frequency data in appendix F. The children scored a mean score of 49.17 in post-test whereas in the pre-

test the mean score was 44.75. This was the performance in public pre-schools. This showed that employing motivational strategies led to higher scores. Motivational strategies should therefore be used in the learning process to help children understand the concepts taught and hence achieve higher marks as shown in appendix F. the pre-test and post-test scores in private pre-schools had a slight difference only. Their pre-test mean score was 52.36 while the post-test scores had a mean score of 52.56, a mean score difference of 0.2 was noted. This was probably because, initially, the private schools had employed better motivational strategies than the public pre-schools. Therefore even after sensitization of importance of motivational strategies no much change occurred in private schools, hence a small difference in their mean score. Tables 4.6, 4.7, 4.8 and 4.9 show the distribution of the Pre and Post-test Scores for Public and privates pre-schools.

Table 4.6: Mathematics Pre-Test score for Private Pre-Schools before Sensitizing Teachers on Motivational Strategies

Class Limit	Class Boundary	Tally	Frequency	Cumulative Frequency
10-20	9.5-20.5	|	1	1
21-31	20.5-31.5	|||	3	4
32-42	31.5- 42.5	𝍸 |	6	10
43-53	42.5-53.5	𝍸 𝍸 𝍸 𝍸 |||	23	33
54-64	53.5.64.5	𝍸 ||||	9	42
65-75	64.5-75.5	𝍸 |	6	48
76-86	75.5-86.5	𝍸	5	53

The mean $\underline{X}=\frac{2775}{53} = 52.36$

Table 4.7: Mathematics Pre-Test score for Private Pre-Schools After Sensitizing Teachers on Motivational Strategies

Class Limit	Class Boundary	Tally	Frequency	Cumulative Frequency
10-20	9.5-20.5	||	2	2
21-31	20.5-31.5	|||	3	5
32-42	31.5- 42.5	𝍸	5	10
43-53	42.5-53.5	𝍸 𝍸 𝍸 𝍸 |	21	31
54-64	53.5.64.5	𝍸 𝍸	10	41
65-75	64.5-75.5	𝍸 ||	7	48
76-86	75.5-86.5	𝍸	5	53
			£f=53	∑cum.freq =53

Mean = $\overline{X} = \frac{\sum fx}{n} = \frac{2786}{53} = 52.56$

The difference in mean score 52.56-52.36=0.20

Table 4.8: Mathematics Pre-Test score for Public Pre-Schools before Sensitizing Teachers on Motivational Strategies

Class Limit	Class Boundary	Tally	Frequency	Cumulative Frequency
10-20	9.5-20.5	𝍸 𝍸 𝍸 |||	18	18
21-31	20.5-31.5	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 |	36	54
32-42	31.5- 42.5	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 |||	53	107
43-53	42.5-53.5	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 ||	98	*205*
54-64	53.5.64.5	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸	60	265
65-75	64.5-75.5	𝍸 𝍸 ||	12	277
76-86	75.5-86.5	||||	4	281

The mean $\overline{X}$ $\frac{\Sigma fx}{n} = \frac{12575}{281} = 44.75$

Table 4.9: Mathematics Post-Test scores for Public Pre-Schools After Sensitizing Teachers on Motivational Strategies

Class Limit	Class Boundary	Tally	Frequency	Cumulative Frequency
10-20	9.5-20.5	𝍸 𝍸	10	10
21-31	20.5-31.5	𝍸 𝍸 𝍸	15	25
32-42	31.5- 42.5	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸	55	80
43-53	42.5-53.5	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸	108	180
54-64	53.5.64.5	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸	58	246
65-75	64.5-75.5	𝍸 𝍸 𝍸	18	264
76-86	75.5-86.5	𝍸 𝍸 𝍸	17	281

The mean $\overline{X}$ $\frac{\Sigma fx}{n} = \frac{1381}{281} = 49.17$

Difference in mean score 49.17-44.75= 4.42

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This section provides summary, conclusions and recommendations of the study. The summary mainly contains the key findings. Conclusions and recommendations on the other hand, are based on the research objectives and the key findings of the study.

5.2 Summary

This research proceeded to investigate the influence of motivational strategies on learning achievement in numeracy for pre-school children in Ol joro orok zone, Nyandarua County. The study used a descriptive survey design with stratified sample population, within the stratified sample population, simple random sampling was done in order to produce the final sample. The population was based in schools which included head teachers, pre-school teachers and pre- school children. Data was collected through use of questionnaires, interview, observations, and checklists and performance of examinations. The data analysis for the study was carried out through descriptive and inferential statistics, at the descriptive level; results were reported in terms of means, frequencies and percentages. It was found that utilization of a wide variety of motivational strategies led to higher performance. When various motivational strategies were well used in the learning process, this gave rise to a good performance while lack of motivational strategies led to low performance. This was clearly reflected by the analysis of pre-test and post- test scores.

5.3 Conclusions

From the study, it can be concluded that motivational strategies plays a key role of pre-school children's performance in numeracy. Children on whom various motivational strategies were effectively employed, attained superior mean score compared to those where few motivational strategies were used. The degree of motivational strategies employed seemed to dictate the pre-school children performance. A combination of different strategies led to a better performance this seems to suggest that when various motivational strategies were effectively used, they helped in reinforcing the understanding of numeracy as pertained to number writing and recognition. Learners showed a lot of interest when they manipulated resources, when praised by teachers, when they received positive feedback and when teachers systematically delivered the subjects matter.

5.4 Recommendations

From the basis of this study, the following recommendations were made:

1. There is need for the ministry of education through Kenya institute of education (KIE) should prepare a set of instructional resources for pre-schools that would enhance children's learning achievement and encourage all schools to buy and use them.

2. The ministry of Education through the devolved county government should organize for motivational workshop and refresher courses for teachers. This could serve to sensitize pre-school teachers through in-service training programs and seminars on the importance of employing various motivational strategies in the learning process.

3. Schools should increase their allocation of funds to purchase or develop relevant instructional resources for pre-school children. Allocate enough funds for teacher's seminars and workshops.

4. Policy makers in pre-school education develop programmes on teacher's motivational strategies that would enhance children learning achievement in numeracy at pre-school levels.

5. School administrators should ensure that relevant and effective motivational strategies are implemented so as to promote pupils' academic achievement.

5.4.1 Recommendations for Further Studies

The researcher recommends that same study be replicated on a larger sample. The sample could be drawn from other parts of Nyandarua County or different geographical locations and districts altogether.

Further research was recommended to be conducted in other subjects in the pre-school curriculum, additional research is recommended for determining the general altitude of school administrators, teachers and children on motivational strategies in the learning process at the pre-school level.

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APPENDICES

Appendix I: The Head Teacher's Questionnaire

This Questionnaire is expected to elicit information from you as the Head of the school. The usual way to respond to this questionnaire is will be by ticking the appropriate answer or writing brief answers where possible.

Do not write your name anywhere in this questionnaire.

Please put a tick ( ), in the appropriate box or briefly write out your answers where necessary,

1. How old is your school?
2. Who is the sponsor of your school? Government ( ) Private ( )
3. What is the pupils' population in your school? Boys ( )

   Girls ( ) and the total ( )
4. Approximately how much does your school spend per annum on;

   (a) Play materials ( )

   (b) Instructional resources ( )

   (c) Teachers' refresher courses ( )

   (d) Renovating classrooms ( )
5. In your opinion, do you think teacher's motivational strategies influence children learning achievement? Yes ( ) No ( )
6. Account for your response in (5) above.
7. Indicate the number of teaching staff under the following:

(i) Certificate of education ( )

(ii) Diploma in ECE ( )

(iii) Bachelor of education in ECE ( )

Any other, please specify……

8. What are the major motivational strategies that teachers in your school employ to enhance learning achievement? .....

9. What are your future plans geared towards improving learning achievement of children in your school? .....

Thank you for your cooperation

Appendix II: Pre-school Teachers Questionnaire

This Questionnaire is expected to elicit information from you as a Pre School teacher in the current school or other schools you taught before. The information expected from you includes; your professional academic qualification, teaching experience and your motivational strategies aimed at enhancing numeracy in children .The questions are brief and concise.

Do not write your name anywhere in this questionnaire

Please tick ( ) appropriate answer or briefly write your response where necessary.

Gender Male ( ) Female ( )

1. Age in years Under 25 ( ) 26-35 ( ) 36-55 ( )
2. Highest level of education attained O-level ( ) Certificate ( ) Diploma ( ) Bachelor of education ( ) Any other, please specify……..
3. What is your teaching experience in years? ( )
4. Have you ever attended any seminar or workshop on motivational strategies and numeracy? Yes ( ) No ( )
5. If Question 5 is yes, what did you learn concerning motivational strategies and number writing? ……
6. How do you motivate your children in numeracy?
7. What errors do children mostly make in number writing?.....
8. Which of the following activities do you engage your children in when doing number writing?

a. Modeling ( )
b. Number of puzzle ( )
c. Number cutting ( )
d. Mosaic/Collage construction of number writing ( )

e. Number tracing ( )

f. Number printing ( )

g. Number matching ( )

9. What challenges do you encounter when teaching number writing?

   ……..

10. What recommendations would you make to help teachers gain new motivational strategies to help improve number writing?

    …….....……

Thank you for your cooperation

Appendix III: Children Pre-Test

Put a tick ( ) in the box, Do not write your name**.**

1. Your gender Male ( ) Female ( )
2. Which of the following subjects do you like most?

(i) Language activities ( )

(ii) Number work activities ( )

(iii) Environmental activities ( )

(iv) Religious activities ( )

(v) Science activities ( )

(vi) None of the above ( )

3. What materials do you use when modeling numbers?

Clay ( ) Dough ( ) Plasticine ( )

4. Which activity do you like most when writing numbers?

(i) Modeling ( )

(ii) Printing ( )

(iii) Colouring ( )

(iv) Tracing ( )

5. Does the teacher use the following activities in class?

(i) Peer teaching ( )

(ii) Collaboative learning ( )

(iii) Group work ( )

Others specify…….

Write these numbers well

ERRORS	**Write them well**

Appendix IV: Pre-school Teachers Observation Schedule

CHILDREN CLASSROOM RECORD		
ITEM	**AVAILABLE**	**NOT AVAILABLE**
Admission Register		
Attendance Register		
Health Record		
Progress Record		

ADMINISTRATIVE RECORDS		
ITEM	**AVAILABLE**	**NOT AVAILABLE**
Visitor's Book		
Log Book		
Diary		
School fees Record		
Class Time table		
Seating arrangement		

Appendix V: Lessons Observation Schedule

A: (i) Is there a scheme of work? Yes ( ) No ( )

Using the following scale indicate the quality of the scheme of work

1 = Unsatisfactory 2 = Satisfactory 3 = Good 4 = Very good

(ii) Clarity of learning objectives

(iii) Sequencing of lesson

(iv) Range of teaching and learning activities

(v) Use of Instructional Resources

B: (i) Is there a lesson plan? Yes ( ) No ( )

(ii) Clarity of learning objectives

(iii) Lesson time line

(iv) Use of instructional Resources

(v) Teacher's response (feedback) to children's answers

C: CONDITION OF THE CLASSROOM

(i) Condition of the classroom

(ii) Space available

(iii) Availability and condition of desks and seats

(iv) Classroom lighting

Appendix VI: Public and Private School Population

GENDER	PUBLIC	NUMBER	TOTAL
Boys	114	23	137
Girls	167	30	197
Grand total	281	53	334

Appendix VII: Percentage of Money Spent on Various Motivational Aspects per Annum

Aspect		**Percentage**
	Public	Private
Play materials		
Instructional resources		
Teachers refresher courses		
Renovation of classrooms		
Grand total		

Appendix VIII: Mathematics Pre-Test score for Private Pre-Schools before Sensitizing Teachers on Motivational Strategies.

Class limit	Class boundary	Tally	Frequency	Cumulative frequency
10-20	9.5-20.5			
21-31	20.5-31.5			
32-42	31.5- 42.5			
43-53	42.5-53.5			
54-64	53.5.64.5			
65-75	64.5-75.5			
76-86	75.5-86.5			

Appendix IX: Mathematics Pre-Test score for Private Pre-Schools After Sensitizing Teachers on Motivational Strategies

Grouped frequency data

Class limit	**Class boundary**	**Tally**	**Frequency**	**Cumulative frequency**
10-20	9.5-20.5			
21-31	20.5-31.5			
32-42	31.5- 42.5			
43-53	42.5-53.5			
54-64	53.5.64.5			
65-75	64.5-75.5			
76-86	75.5-86.5			

Appendix X: Mathematics Pre-Test score for Public Pre-Schools before Sensitizing Teachers on Motivational Strategies

Grouped frequency data

Class limit	**Class boundary**	**Tally**	**Frequency**	**Cumulative frequency**
10-20	9.5-20.5			
21-31	20.5-31.5			
32-42	31.5- 42.5			
43-53	42.5-53.5			
54-64	53.5.64.5			
65-75	64.5-75.5			
76-86	75.5-86.5			

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Appendix XI: Mathematics Post-Test score for Public Pre-Schools After Sensitizing Teachers on Motivational Strategies

Grouped frequency data

Class limit	**Class boundary**	**Tally**	**Frequency**	**Cumulative frequency**
10-20	9.5-20.5			
21-31	20.5-31.5			
32-42	31.5- 42.5			
43-53	42.5-53.5			
54-64	53.5.64.5			
65-75	64.5-75.5			
76-86	75.5-86.5			

Appendix XII: Financial Budget

1.	secretarial services	
	a. Typing proposal	10000
	b. Typing final copy	10000
	c. Photocopying	3000
2.	Stationary	
	a. Writing materials	500
	b. Duplicating paper	300
	c. Pens	300
	d. Computer diskette/flash disks	1400
3.	Travelling cost	
	a. Consulting supervisor	3000
	b. To the field	3000
	c. To the library	1500
4.	Computer data analysis	8000
5.	Binding cost	
	a. Binding proposal	5000
	b. Binding research report	3000
6.	Miscellaneous	7000
	Grand total	**56000**

Appendix XIII: Time Frame for the Study

s/no	Phase	Time schedule
1.	Proposal and presentation	Dec 2014-April 2015
2.	Instrumentations and pilot testing	May –June
3.	Sensitization of teachers on motivational strategies and observation	6^{th}-10^{th} July
4.	Administration of questionnaires, interview with teachers and children	13^{th}-17^{th} July
5.	Coding of the collected data	18^{th}- 26^{th} July
6.	Report writing	27^{th} July -14^{th} August
7.	Submission for examination	24^{th} August