INFLUENCE OF TEACHERS' TRAINING ON STRATEGIES USED WITH SLOW LEARNERS IN LOWER PRIMARY MATHEMATICS LESSONS IN MOMBASA COUNTY KENYA

BY

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DECLARATION

I declare that this project is my original work and has not been presented in any other institution for consideration of any certification. This research project has been complimented by referenced sources duly acknowledged. Where texts, data, graphics, pictures or tables have been borrowed from other sources including internet, these are specifically accredited and references cited using current APA system and in accordance with anti- plagiarism regulations.

Signature……. Date…….……..

SHIPHRAH S. THOYA

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I confirm that the work presented in this research project was carried out by the candidate under my supervision.

Signature……. Date…….……..

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DEDICATION

I dedicate this work to the concerned lower primary teachers who have difficulties in teaching mathematics to slow learners in Majaoni sub-district, Mombasa County. I also dedicate my work to the lower primary pupils who are slow in learning mathematics.

ACKNOWLEGMENTS

I would like to thank God for granting me this opportunity to complete this project. My appreciation goes to my supervisor Dr. Rachel W. Kamau-Kang'ethe who played various roles in imparting the required knowledge to me. I wish to thank my mentor Dr. Juliet Mugo who guided me through my research. My appreciation also goes to my family Canon. James Muramba, Mrs. Muramba and Simeon Muramba who encouraged me to further my education. My gratitude goes to my colleague Dan Munjaru who continuously encouraged me to remain focused on the Course. Lastly, I would like to thank all schools in Majaoni, Mombasa County that participated in the study. May the Lord bless you abundantly.

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ABBREVIATIONS AND ACRONYMS

ANOVA	Analysis of Variance
CBO	Community Based Organization
ECE	Early Childhood Education
ECEC	Early Childhood Education and Care
ESL	English as a second language
EU-CORE	European Corporation in Research and Education
FBO	Family Based Organization
GED	General Education Development
NGO	Non-Governmental Organization
OECD	Organization for Economic Co-operation and Development
PI	Parent Involvement
PTA	Parents Teachers Association
UK	United Kingdom
UNCRC	United Nations Convention on the Rights of the Child
US	United States
USA	United States of America

ABSTRACT

Every child possesses full educational potential and that an appropriate education environment is necessary to encourage the child to grow and develop in an optimal manner. Early childhood education is the primary foundation of the entire education. As much as this is the case, slow learners have not keenly been taken into consideration especially when learning mathematics in Majaoni region. Most teachers find it difficult to cope up with these categories of learners because they are not fully trained to do so. The study sought to explore the influence of teachers' training and teaching strategies used with slow learners in lower primary mathematics. Curriculum developers have not developed a unit for teacher trainees where topics are included to cater for the needs of slow learners. The current study sought to find out methods used by teachers when teaching lower primary mathematics, identify instructional materials used by teachers when teaching slow learners, identify the questions teachers use when teaching the slow learners and find out the approaches teachers employ on remedial teaching to slow learners in Mathematics. The study adapted constructivism theory that emphasized on experiential learning where children construct their own knowledge as a result of learning experiences. Descriptive survey research design was employed to carry out this study. The target population was 25 lower primary schools. Simple random sampling was used to select 9 lower primary schools representing both private and public. The respondents selected were based on their direct interaction with the pupils and the school administration. The study used questionnaires for data collection. Data was analyzed through Pearson's product moment Correlation. Statistical Package for Social Sciences (SPSS) was utilized to prepare and organize data for analysis. It was therefore concluded that teaching strategies were found to influence teachers' preferences on teaching slow learners in lower primary mathematics. It was recommended that there is need for school managers and administrators to develop programmes that would sensitize teachers on use of optimal teaching strategies and related practices.

CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE STUDY

1.0 Introduction

In this chapter, the researcher provides background to the study, presents statement of the problem, states the purpose of the study, identifies objectives and research questions, gives the significance of the study, discusses theoretical and conceptual framework and explains the operational definition of terms.

1.1 Background to the Study

Teachers and educators describe slow learners as those who have learning difficulties. These learners normally differ from peers in terms of their abilities. They do not do well poorly in school, yet are not fit for special education; they are more intelligent compared to those who are mentally retarded (MacMillan, Gresham, Bocian, &Lambros, 1998; Mercer, 1996). They have limited attention span compared to gifted and average pupils. They catch up with extra efforts.

Learners who have low mathematical skills underachieve in mathematics. The slow learners have difficulties in knowing, applying and solving problems (Mannamaa, M., Kikas, E., Peets, K., & Palu, A. 2012). The mathematical skills include knowledge of the numbers and arithmetic. Chin (2004) identifies some basic mathematical skills which these pupils may lack, such as classification, appropriate computational skills, measurement and geometry.

Knowing numbers involves recognizing numbers in different forms which include numerals, number words, and concrete quantities and to place them in order (Donlan, 2010).

If children are not given meaningful experiences, they become insecure when solving mathematical problems. Most of the slow learners in lower primary schools face a number of situations that emerge because of unhealthy education environments due to lack of social support and home environments that are not responsive to the pace and level of their learning and thinking. (Spencer A. Rathus, Scott G. Veenvliet, Shannon J. Maheu – 2011). Most teachers find it difficult to cope with this category of pupils because they are not fully trained to do so. Consequently, children end up achieving low. They also lack interpersonal and intrapersonal skills.

These learners should not be classified as children with special needs because they can do better when provided a conducive environment for learning in the regular schools. Their poor performance is mostly attributed to a number of factors such as attitude of pupils (Uhumuavbi and Umoren, 2005); lack of instructional resources (Yara & Otieno, 2010); inappropriate instructional techniques (Olulonye, 2010) among others. To keep these pupils actively engaged, more than usual variation is required in methodology, classroom climate and instructional materials. A slow learner needs more time, repetition and more resources for teaching to be successful academically (Muppudathi, 2011).

In a study of the influence of pupils' attitude towards mathematics, Bolaji (2005) found that the teachers' approaches in teaching mathematics and their personalities greatly contributed to the pupils' positive attitude towards mathematics. A school environment should promote social interaction and peer to peer learning in the classroom so that children learn to work together and depend on each other regardless of their abilities and interests.

According to West African Examination Council (2010), current results show that the conventional teaching approach is deficient in meeting the needs of majority of mathematics learners in schools. Some scholars have studied the efficacy of mastery learning as an instructional strategy. Akinsola (2011); Olunfumilayo (2010); Samuel (2007), Wambugu and Changeiywo (2008) in their respective studies reported that mastery learning approach is effective in improving the achievement of pupils in mathematics. Similarly, Abakpa & Iji (2011) and Awofala & Nneji (2012) also reported that mastery learning approach enhanced slow learners pupils' achievement in mathematics in Markurdi (Benue State) and Ibadan (Oyo State) in Nigeria respectively.

According to a joint committee of UNESCO, there was insufficient evaluation of teacher training programs in relation to their impact on the teaching practice and on students' learning outcomes in the country. Teacher-pupil activities in the lower primary are not exploited fully since teachers use traditional lecture method of teaching. Teachers do not involve all the pupils during classroom interaction since they rush over lessons interacting only with bright pupils ignoring the slow learners (Majanga, 2011).

Research on children's learning in the first six years confirmed the importance of early experiences in mathematics for lasting positive outcomes (National Council of Teachers of Mathematics, 1991). Mathematical experiences for young children should take advantage of familiar contexts, building on relationships within families and the informal knowledge of early learners. A teacher is considered a co- learner and collaborator with the child; therefore teachers are encouraged to facilitate the child's learning by planning lessons based on the child's interest, asking questions for further understanding and actively engaging in activities (Hewett, 2001).

According to NACECE (1995, 2000), a teacher should have a deep understanding of the children, their characteristics, behavior needs, abilities and interests. Role of play is also emphasized in encouraging learning including the learning of mathematical concepts (Skolverket, 2011). According to Rowen (1980), a teacher must be a careful observer in making a match between the level at which the child is operating and curriculum content. Keen observation and listening will enable a teacher to tell whether a particular group of children should be given activities as per their level. The teacher should therefore relate to children individually to understand their abilities and to maximize their full potential.

ECDE teachers should have some knowledge on how children grow and their level of understanding. Teachers should connect ideas in mathematics with other activity areas. Teachers must be aware of children's cognitive development and how they learn to select adequate teaching materials and techniques appropriate to the child's ability to

understand and learn. The teacher should also build up confidence for the slow learners and make them believe that they are not different from the gifted and average children.

Many researchers have proved that well trained teachers generate the greatest opportunity for the pupils to learn. Teachers are important in school-related factors affecting pupils achievement through their effectiveness (Orodho et al., 2013; UNICEF, 2012; Willitter et al., 2013 & Vavrus et al., 2011).Teachers need to spark enthusiasm to slow learners and utilize appropriate teaching strategies to increase learning

1.2 Statement of the Problem

According to Borah (2013) the greatest challenge to an educator is a child who is a slow learner. These children do not fall into the category of special education. They do well when given more time during classroom activities. The syllabus for teacher trainees is set to cater for the needs of the average learners and children in need of special attention. Curriculum developers have not formulated a unit for teacher trainees to guide them on how to cater for the slow learners. There is need therefore for curriculum developers to come up with a specific unit which would guide the teacher on effective instruction to slow learners in the subject areas.

1.2.1 Purpose of the Study

This study sought to establish the strategies teachers use when teaching mathematics to slow learners after completing their training in Majaoni Constituency, Mombasa county Kenya.

1.2.2 Objectives of the Study

The study was guided by the following objectives;

1. To determine the influence of teachers training on the methods applied when teaching mathematics to slow learners in lower primary.
2. To determine the influence of teachers training on materials used when teaching mathematics to slow learners in lower primary.
3. To determine the influence of teachers training on question techniques used when teaching mathematics to slow learners in lower primary.
4. To determine the influence of teachers training on approaches employed when providing remedial teaching in mathematics to slow learners in lower primary.

1.2.3. Research Questions

The study will be guided by the following research questions;

1. What methods do trained teachers apply when teaching mathematics to slow learners in lower primary?
2. What materials do trained teachers use when teaching mathematics to slow learners in lower primary?
3. What questioning techniques do trained teachers use when teaching mathematics to slow learners in lower primary?
4. What approaches do trained teachers employ when providing remedial teaching in mathematics to slow learners in lower primary?

1.3 Significance of the Study

The study contributes viable knowledge on slow learners specifically in mathematics. It reveals the current approaches in teaching mathematics for lower primary schools. The study indicates strategies and intervention measures to explore and help slow learners with low mathematical skills. The study has suggested significant policy statements through its recommendations.

The findings may be of insight to policy makers, curriculum developers and other educational stakeholders at various levels of educational administrations and teachers taking measures to overcome the existing problems of low mathematical skills for pre-school pupils in Kenya. The results of this study will also benefit researchers and scholars, as it may form the basis for further research. The students and academicians will use this study as a basis for discussions on how to improve slow learners poor performance in mathematics.

1.4. Limitations and Delimitation of the study

The following are the limitations and delimitations of the study

1.4.1. Limitations

The researcher would have involved other constituencies in the County for more conclusive results; however, it was not possible due to the limited time and financial constraints. During the study, not all respondents cooperated as expected.

1.4.2 Delimitations of Study

The study limited itself to specific lower primary schools in Majaoni along Shanzu region where emphasis was on slow learners when learning mathematics excluding those with other learning disabilities.

1.5 Assumptions

It was assumed that the administration of the sampled schools would allow the study to be carried out in their institutions at the stipulated time, the respondents would truthfully provide information sought by the researcher and the instruments used would collect enough and relevant information.

1.6 Theoretical and Conceptual Framework

The theories and conceptual framework that this study adopted guided our understanding on the influence of teacher training on teaching strategies while teaching mathematics in lower primary. The better we understand these strategies from a variety of points of view the more effective we can use it in analysis and problem solving.

1.6.1 Theoretical Framework

Constructivism theory was underlined by Piaget and supported by Montessori, Brunner and Vygotsky. Constructivism theory has become a mainstream theory in educational policy and practice. As a result, national standard documents influencing the curriculum are affected (Westwood, 2003). Understanding mathematics builds upon the principles of the constructivist learning theory (Westwood, 2003). The current mathematics curriculum

assumes that the teaching and learning will be constructivist in approach. The design of lessons has to be centered on the learner and oriented towards activities through which learners construct their knowledge as a result of the learning experience (Westwood, 2003). This theory promotes active learning through doing and recognition of one's experience (Vygotsky, 1978).

The constructivists believe that people must construct their knowledge on the basis of their experiences and that no other alternative exists (Vygotsky, 1978). Constructivism is considered a driving force in mathematics activities. During the last two decades, applications of constructivism have been endorsed extensively in teaching mathematics activities. It describes the knowledge as being an influx, where an individual internally constructs knowledge through social and cultural mediation (Glasersfeld, 1996). Mediation is the kind of communication between parents and child, teacher and pupil, pupil and pupil and also it can be a kind of teaching. Bronfenbrenner (1979) states that learning and development are facilitated by the participation of the developing person in progressively more complex patterns of reciprocal activity with someone with whom that person has developed a strong and enduring emotional attachment and when the balance of power gradually shifts in favour of the developing person.

Learning takes place through interaction (Vgotsky, 1978). In order for a slow learner to understand mathematics well he or she should interact with fellow peers. In this interaction a capable peer may help the child where he or she failed to solve mathematical problems (Vgotsky, 1978). Glasersfeld (1996) maintains that the

constructivism theory of knowledge has some valuable impacts for the teaching of mathematics. Vygosky (1978) believed that children's thinking is affected by their social knowledge. He believed that a child can learn best if the concept is according to their level of understanding. According to him, we can best understand and describe children's cognitive capacities when we look at two aspects of their development.

We can determine the extent to which children can perform tasks independently and with assistance of a more competent person. Anything too complicated for a child to learn cannot be learnt. When a teacher provides support for a child, they will adjust the amount of help they give depending on their progress. In order to get a true assessment of a child's potential development, we should assess capabilities when the child is performing the activity alone and with a more competent individual.

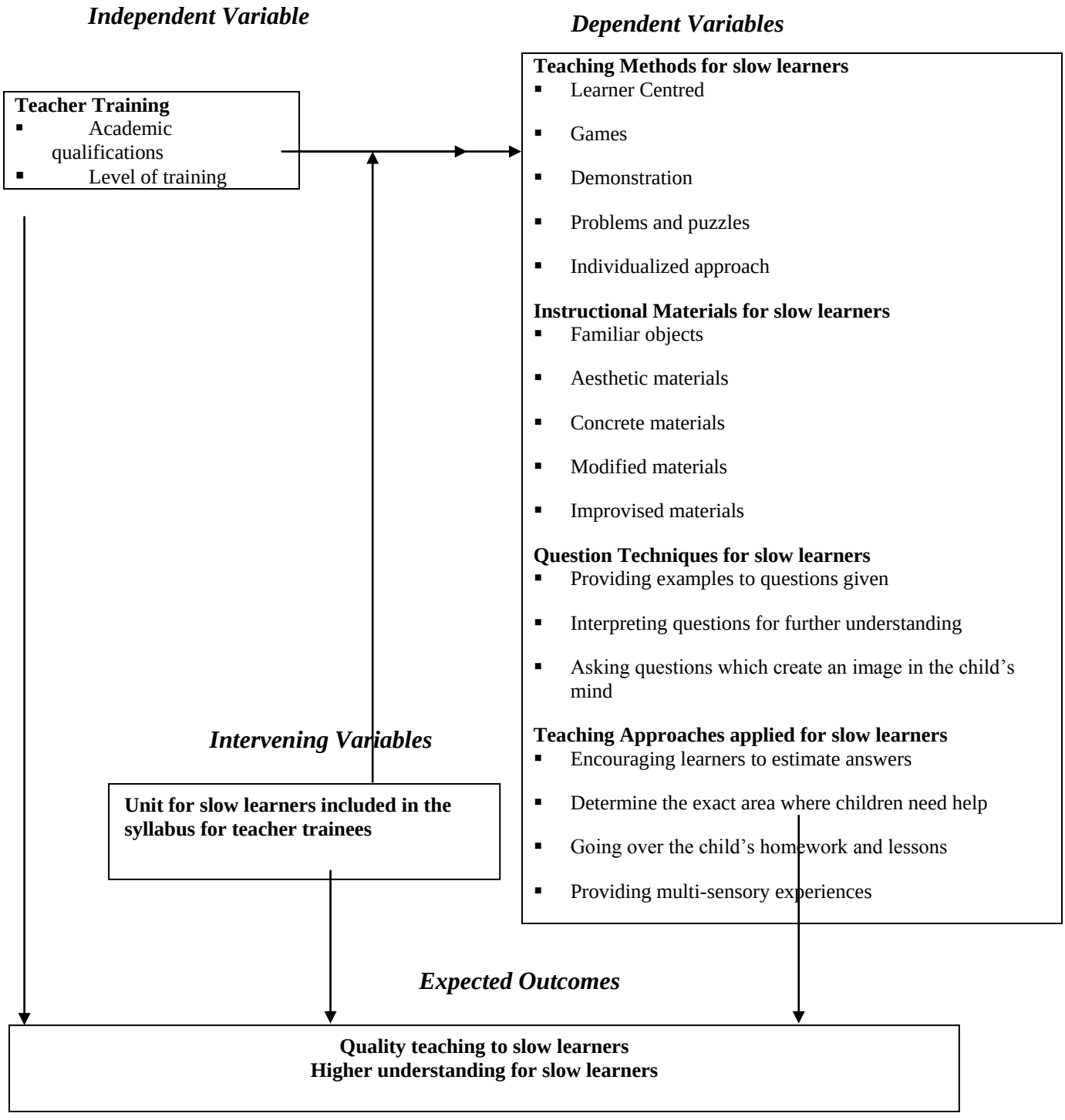
Learning difficulties often indicate inappropriate cognitive processes, especially for slow learners who tend to acquire information less effectively. Teachers need to be aware that all learners are trying to learn something as well as what they are trying to learn. Teachers should therefore provide support to enable learners' perform tasks successfully. Depending on the tasks and the particular learner, teachers can provide a variety of support mechanisms to help learners' master tasks and can also facilitate learners learning by presenting information in an organized manner.

Evidence indicates that slow learners may not have received proper intellectual stimulation in their early years. There is a period during the first three to four years when

the potential for intellectual growth must be properly utilized. If the opportunity is missed, the child may not reach his/her capacity.

1.6.2 Conceptual Framework

The conceptual framework consists of certain abstract blocks which represent the observational, the experiential and the analytical aspects of a process being conceived.


Independent Variable
Dependent Variables
Teacher Training
Academic qualifications
Level of training
Teaching Methods for slow learners
Learner Centred
Games
Demonstration
Problems and puzzles
Individualized approach
Instructional Materials for slow learners
Familiar objects
Aesthetic materials
Concrete materials
Modified materials
Improvised materials
Question Techniques for slow learners
Providing examples to questions given
Interpreting questions for further understanding
Asking questions which create an image in the child's mind
Teaching Approaches applied for slow learners
Encouraging learners to estimate answers
Determine the exact area where children need help
Going over the child's homework and lessons
Providing multi-sensory experiences
Intervening Variables
Unit for slow learners included in the syllabus for teacher trainees
Expected Outcomes
Quality teaching to slow learners
Higher understanding for slow learners

The independent teacher quality training where a teacher needs to have relevant knowledge to cater for the needs of slow learners. The dependent variables are the learning strategies like; the approaches the teachers' use when teaching slow learners, the materials the teachers use for learners to understand the concepts in mathematics, relevant questioning techniques for the learners to solve given sums correctly and remedial teaching for slow learners to be motivated to understand during mathematics lessons. The intervening variable is the unit for slow learners included in the syllabus for teacher trainees. Expected outcomes are; quality teaching to slow learners and higher understanding for slow learners.

1.7 Operational Definition of Terms

Achievement in Mathematics: Pupils scores in mathematics in Continuous Assessment tests and end of term examinations. The lowest mark is 0, while the highest mark is 50.

Lower Primary School: Standard one and two.

Quality Teacher Training: This is measured by evaluating their academic qualifications and their level of training such as attaining a diploma in ECDE or a certificate in PTE. It is also measured by the type of professional records a teacher uses for quality teaching.

Syllabus for Slow Learners: This is a document that lists the units to be taught to ECDE teacher trainees including for slow learners with its recommended reference books. This is measured by getting any supporting teaching/learning resources for slow learners.

Training: This is a set of policies, procedures and provisions designed to equip prospective teachers with the knowledge, attitude, behavior, and skills they require to perform their task effectively while teacher slow learners mathematics in lower primary.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 Introduction

This chapter reviews literature relating to strategies used by teachers to help slow learners in lower primary mathematics. Singh (2004) opines that a good teacher always gives individual attention to slow learners. It is now an admitted fact that not all children do learn quickly. It is the gifted children who learn quickly and quite a large number of ECDE children coming to school learn slowly. Slow learners lack in understanding, comprehension and expression. In an attempt to deal with children who are slow learners in learning mathematics, ECDE teachers usually design intervention instructions that would be most suitable or select teaching methods that are most appropriate (Yusha'u, 2012). Mark (2005) suggests that efforts should be made by ECDE teachers to help children to overcome mathematics problems through the following steps: Educational pedagogy must be broad enough to encompass the many learning styles of children, teaching methods under a holistic approach can include incorporating visual tools and models, utilizing hands-on-lessons, allowing cultural connections, acknowledging the multiple intelligences of every child and advocating gaming both inside and outside of school.

Studies that have been carried out in Kenya and in other countries around the globe have been reviewed. According to NACECE (1995, 2000), the teacher has an important role to play in the stimulation and learning process of a child. The teacher needs to have a deep understanding of the children, their characteristics, behavior, needs, abilities and interests

so that he/she can give children proper care and assistance. The chapter will identify the methods used by teachers when teaching slow learners, discuss the materials used by teachers when teaching lower primary mathematics to slow learners, understand and determine the question techniques teachers administer to slow learners when teaching mathematics in lower primary, and approaches teachers employ when giving remedial teaching to slow learners in mathematics.

2.1 Instructional Methods Used by Teachers When Teaching Mathematics to Slow Learners in Lower Primary

Lee (1999) in her study on slow learners in primary mathematics in Singapore notes that one way to help them is by enhancing their mathematics specific self-esteem through creative and varied teaching strategies. Teaching methods are comprised of principles which ECDE teachers use for instruction. They are about the different ways a teacher can teach a topic in the classroom (Johnsen, 2001). These methods can be group discussion, demonstration, problem and puzzles, question and answers, oral and written testing, games or play, participatory and so forth (The Math's Teacher's Handbook, 2007). Also, Dalen (1982) describes three forms of instruction namely individual instruction, whole class teaching, and group teaching. The uses of variety in teaching methods for ECDE children who are slow learners in mathematical skills motivates them, improve their learning skills, and enables them to learn quickly (The Math's Teacher's Handbook, 2007).

An analysis of 67 studies conducted on effects of the co-operative learning methods on Slow learners in Mathematics in preschools indicated that 61% of them found significantly greater achievement with slow learners taught by use of cooperative learning than in traditionally taught control groups (Slavin, 2011). Yusha'u, (2012) argues that it is the expectations and responsibilities of ECDE teachers to bridge the gap that always exists between the gifted, average and slow learners in every mathematics classroom which include slow learners learning at a slower pace compared to the others. Their level of understanding is shallow, their interests are snuffed out early and therefore their talents are not fully utilized from an early age. Teachers do not create a firm foundation to these learners since their approach of teaching favor the other categories. To achieve this, ECDE teachers need to search for suitable alternative methods that could best address the problems of slow learners in mathematics classrooms.

Alan (2007) advised ECDE teachers to use what he termed as his "three transfer": Be patient but consistent, do not reward unfinished task, and challenge the child. Investigation by Yusha'u, (2012) proved that majority of the researches done in the area of improving mathematical learning difficulties among children was through the use of mastery learning model of Bloom's taxonomy of Educational Objectives (1968). Other methods to be used include group activities engineered by a group leader who is more gifted. Inductive and deductive teaching should also be emphasized for proper review of the lessons.

Pupils with low mathematical skills have deficit of some of mathematics skills. Pupils in ECDE centres normally perform better in other subjects except in mathematics (Kitta, 2004). Hence, different Tanzanian scholars have come to pinpoint mathematics as a national problem that leads to failure for many pupils (Kitta, 2004). Singh (2004) opines that a good teacher always gives individual attention to slow learners. It is now an admitted fact that not all children learn quickly. It is the gifted children who learn quickly and quite a large number of ECDE children coming to school learn slowly. Slow learners lack in understanding, comprehension and expression. In an attempt to deal with children who are slow learners in learning mathematics activities, ECDE teachers usually design intervention instructions that would be most suitable or select teaching methods that are most appropriate (Yusha'u, 2012). Mark (2005) suggests that efforts should be made by ECDE teachers to help children to overcome mathematics problems. He states that Educational pedagogy must be broad enough to encompass the many learning styles of children, teaching methods under a holistic approach can include incorporating visual tools and models, utilizing hands-on-lessons, allowing cultural connections, acknowledging the multiple intelligences of every child and advocating gaming both inside and outside of school.

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that always exit between the gifted, average and slow learners in every mathematics classroom. To achieve this, ECDE teachers need to search suitable alternative methods that could best address the problems of slow learning in mathematics classrooms.

2.2 Instructional Materials for Slow Learners

Dowker (2008) argues that, when considering various cultures, human body parts have been used as aids for counting in the development of some number system. It has now been realized that pupils in all classes of the ECDE centres, and slow learners for all of their formal education, benefit if mathematical concepts are presented initially through the use concrete materials (Duncan, 2012). Therefore, if the teacher decides that learning should be optimized through practical experiences, she or he must also arrange the classroom and use concrete aids (Duncan, 2012). This will greatly help learning of slow learners in mathematics skills.

Twoli et al (2007), insists that instructional materials, teaching resources, learning aids and audio visual aids assist learning and increase interest of learners in the learning process. Furthermore learning is more effective if these learners look at objects and observe a process. Hall and Paulucci (1990), argue that the teachers should learn how to select materials carefully, preview and use them effectively. The modified materials should be accompanied by or more books are almost three times better than those who have no textbooks in school. Wachieye (1990) stated that teaching/learning materials provide significant gains in formal learning by improving the learners' abilities. Learners get the opportunity to handle and manipulate objects hence increasing their

understanding. There should be plenty of manipulatives and concrete materials such as strings, counters, charts and flashcards. When textbooks are available, instructional time is not wasted while teachers and learners copy text on and off the blackboard. The use of materials helps learners retain their knowledge. They promote learning as clear images are found when learners use all their senses which is the easiest way of learning.

2.3. Questioning Techniques for Slow Learners in Lower Primary Mathematics

Classroom teachers spend some of their instructional time conducting questioning sessions (Cotton, 1988). The high incidence of questioning as a teaching strategy, and its consequent potential for influencing student learning, have led many investigators to examine relationships between questioning methods and pupils' achievement and behavior. Oral questions posed during classroom recitations are more effective in fostering learning than are written questions. Asking questions frequently during class discussions is positively related to learning facts. Increasing the frequency of classroom questions does not enhance the learning of more complex material (Ellis 1993). Slow learners tend to focus only on materials that will help them answer questions if these are posed before the lesson is presented.

Lower cognitive questions ask the pupils to recall verbatim material previously taught (Marzano, Pickening & Block, 2001). According to Blooms Taxonomy of Educational objectives, cognitive domain (1968), teachers use questions to engage learners and sustain active style to the learning. Developing questioning techniques requires much emphasis on the time provided for pupils to think deeply to enable them develop answers

and to share better answers. Teachers need a range of open questioning strategies to address different learning needs and situations. Lower cognitive questions are more effective with young children, particularly the slow learners (Wilen, 1991). The questions are more effective when the teacher's purpose is to impart factual knowledge and assist pupils in committing this knowledge to memory (Pickening, 2001). When lower level questions are used, their level of difficulty should elicit correct responses. Slow learners are asked fewer questions than capable learners (Cotton, 1988).

Teaching pupils to draw inferences and giving them practice in doing so results in higher cognitive responses and greater learning gains. Teachers should keep up brisk instructional pacing. In this way, the reasoning goes, classes will cover more materials, pupils' interest will be maintained, and achievement levels will be higher. Pupils whom teachers perceive as slow learners are given less wait-time than those teachers view as more capable. For lower cognitive questions, a wait-time of three seconds is most positively related to achievement, with less success resulting from shorter or longer wait-times.

The 1988 "close-up" report entitled "Instructional Reinforcement" looks at the ways teachers respond to student answers and other student comments, and how the nature of those responses relate to student outcomes. "Monitoring Student Learning in the Classroom", also published in 1988, discusses classroom questioning as one of many approaches teachers can use to track student learning. Questioning slow learners only after material has been studied. Structure questions so that most of them will elicit correct

responses. Use redirection and probing as part of classroom questioning and keep these focused on salient elements of pupils' responses. Increasing wait-time and the incidence of higher cognitive questions, in particular, have considerable promise for improving the effectiveness of classroom instruction. Teachers should therefore provide examples to questions given to slow learners, capture the key points and important details, ask children questions based on their own experiences, interpret questions to the learners for further understanding and ask questions that create an image in a child's mind.

2.4 Remedial Teaching for Slow Learners

When children with mathematics disability retrieve answers from memory, they commit more errors and manifest unsystematic retrieval speeds typically developing counterparts (Geary, Brown, & Samaranayake, (1991); Gross-Tsur et al., (1996); Ostad, (1997). According to Fleischner et al., (1982); Geary et al., (1987) and Goldman et al., (1988) some teachers teaching slow learners consider number counting to be a signature deficit of pupils with mathematics disability, and difficulty with automatic retrieval of number counting is one of the most consistent findings in the mathematics disability literature (Cirino, Ewing- Cobbs, Barnes, Fuchs, & Fletcher, 2007;Geary et al., 2007; Jordan, Hanich, & Kaplan, 2003).

The research literature on remediation of number counting deficits is limited. A scheme has been proposed for sub typing mathematics disability. As Geary (1993) hypothesized, because a key deficit associated with reading difficulty is phonological processing (Bruck, 1992) and because phonological processing deficits are linked to difficulty with

automatic retrieval of Number Combination (NC) (Fuchs et al., 2005) pupils with concurrent difficulty in mathematics and reading experience greater difficulty with number counting compared with students who experience difficulty with mathematics alone.

Research suggests that compared with students with concurrent difficulty, those with mathematics difficulty alone use more efficient counting procedures to solve Number Counting (Geary, Hamson, Hoard, 2000) with faster retrieval times (Anderson & Lyxell, 2007; Hanich et al., 2001; Jordan & Montani, 1997) but comparable accuracy (Cirino et al., 2007). The literature is not, however, consistent (Micallef & Prior, 2004; Reikeras, 2006), and most studies addressing these questions have employed a cross-sectional causal-comparative design. An alternative approach for studying the same issue is experimental, in which learners with these subtypes are randomly assigned to treatment or control conditions with the goal of determining whether the subtypes respond differentially to intervention. This design offers the basis for stronger, causal inferences about the tenability of the sub typing scheme.

The NC remediation relied primarily on counting strategies and practices, although adding and subtracting concepts were addressed, the cumulative property of addition, and the concepts of 1 and 0 was emphasized. Students were taught the main strategy for adding (start with the larger add end; count up to the other add end; the answer is the last number counted) and the missing-addend strategy for subtracting (start with the minus number; count up to the starting number; the answer is the number of counts or fingers

up). Learners are to practice to develop fluency with these counting strategies. Using this remediation protocol, it was hypothesized that students with mathematics difficulty alone would prove more responsive to number counting remediation strategy than those with concurrent reading difficulty. Research shows that many children experience difficulty transferring the math competence they develop in school to their day to day experiences (Foxman, Ruddock, McCallum, &Schagen, 1991, as cited in Boaler, 1993; Larkin, 1989). NCs are viewed as a signature deficit representing a bottleneck for learners with mathematics disability (Fleischner et al., 1982; Geary et al., 1987; Goldman et al., 1988).

Pupils with NC deficits allocate available resources for deriving answers to these simple problems instead of focusing on the more complex mathematics into which NCs are embedded (Ackerman, Anhalt, &Dykman, 1986; Goldman & Pellegrino, 1987). This is true in all subjects as learning is hierarchical as explained by Bloom's Taxonomy of Educational Objectives and especially the Cognitive Domain which talks about Knowledge; Comprehension; Application, Analysis; Synthesis and Evaluation (Bloom, 1968). Findings of the present study should lend support to one of these competing theoretical frameworks and should also provide insight into whether NCs are a signature deficit or simply represent one component among a constellation of difficulties.

The teacher should guide a child from concrete understanding to symbolic understanding, determine exact areas where a child needs help, go over the child's homework and lesson to identify the exact problems that need to be handled, group children with similar needs,

encourage learners to estimate answers and provide multi-sensory experiences in teaching and learning activities.

2.5 Summary of the Reviewed Literature

Alan (2007) advised ECDE teachers to use what he termed as his "three transfer": Be patient but consistent, do not reward unfinished task, and challenge the child. In addition, investigation by Yusha'u, (2012) proved that majority of the researches done in the area of improving mathematical learning difficulties among children was through the use of mastery learning model of Bloom (1968). Pupils should not be compared in national examinations -KCPE but be assessed according to their abilities like they do in United Kingdom- Britain. We also do the same in higher learning institutions.

It is usually a great challenge for teachers to teach slow learners because they are mixed with the gifted and average pupils and they are not fully trained to do so. Different learners may find the subject matter easier or more difficult to grasp, weaker learners may require more time and assistance from the teacher, or more advanced learners may dominate aspects of the lessons. Teachers find it difficult to provide content and activities that are motivating and interesting to all learners in a class. The activities in a lesson may be too easy for some and too difficult for others. Teachers are not able to devote time and attention equally to all learners (Šimanová, 2010). Lack of participation from the teacher, may further affect weaker learners proficiency in the subject.

Teachers need to be fully equipped with relevant knowledge and skills in helping the slow learners. Every country designs a curriculum according to their culture and surroundings. Kenya should not entirely depend on reference materials from other countries but develop their learning materials.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.0 Introduction

In this chapter, the following will be discussed; research design, area of study, target population, sample size and sampling technique, research instruments, data collection procedures, pilot study, Reliability and Validity, data analysis and logistical and ethical considerations.

3.1 Research Design

This study utilized descriptive survey research design. This study employed a mixed approach where both quantitative and qualitative techniques were used. The use of quantitative and qualitative methods of data collection was considered necessary so as to procure valid results. Descriptive survey aims at obtaining information from a representative of the population and from that sample, the researcher was able to present the findings as being representative of the population (Orodho, 2009).

3.1.1. Variables

There were several variables identified in this study. The variables are needed in order to understand how quality teacher training influences teaching strategies for slow learners in lower primary mathematics. The following variables are the logical sets of attributes that benefited this study.

The Independent Variables:

Teacher training: The teacher is equipped with relevant knowledge and skills on how to teach slow learners mathematics in lower primary schools. The study measured how the teacher integrated different teaching/learning activities with the subject content.

The Dependent Variable:

The Dependent Variables observed in this study include teaching methods, instructional materials, question techniques and remedial for teaching slow learners mathematics in lower primary. The study measured monitoring the child's indoor activities including homework which created a teacher monitoring the child's progress.

Intervening variable: This is the syllabus provided to teachers as guidelines and procedures for helping slow learners when learning mathematics in lower primary.

3.1.2. Location of the Study

The study was conducted in Shanzu along Majaoni region, an out suburb of Mombasa town in Mombasa County. The zone boasts of several lower primary schools that are private and public. There are a total of 25 lower primary schools for both private and public. The region was chosen for the study because no study has been conducted on the strategies teachers use when teaching mathematics to slow learners in lower primary along the area. Lower primary classes 1,2 and 3 were selected because learners are able to reason logically and therefore teachers are able to identify different categories of

learners in a more comprehensive way compared to preschool learners who emphasize on activities rather than problem solving skills.

3.2 Target Population

The target population for this study consisted of 25 lower primary schools; 20 private schools and 5 public schools. To sample these schools a table of random numbers was developed and each lower primary school allocated a number. From these numbers, simple random sampling technique was used to select 9 lower primary schools which are more than 30% of the entire population.

3.3 Sampling Techniques and Sample Size

The researcher emphasized on the following sampling techniques and specified on the size that would deem fit for the research.

3.3.1. Sampling Techniques

The study utilized purposive sampling technique based on the characteristics of the target population and the objectives of this study. The focus was to interview mathematics teachers in lower primary. Two mathematics teachers in each of the 9 lower primary schools were selected to participate in this study.

3.3.2 Sampling Size

Out of the nine lower primary schools sampled, seven were public schools while two were private schools. The researcher then purposively selected six teachers teaching

mathematics in lower primary each representing class one to class three. The following table shows the teacher representation of grade levels in the 9 schools sampled.

Table 3.1: Sampling Frame for Teachers Teaching mathematics in Lower Primary

SCHOOLS	CLASS ONE	CLASS TWO	CLASS THREE	**TOTAL**
PUBLIC (7)	7	7	7	**21**
PRIVATE (2)	2	2	2	**6**
TOTAL	**9**	**9**	**9**	**27**

3.4. Research Instruments

The instruments used for data collection were the questionnaires.

3.4.1. Questionnaire

The use of questionnaire was considered appropriate since the data was to be generated from primary source. These questionnaires were designed in such a way that only relevant questions were included to assist in achieving the objectives and administered to mathematics teachers in lower primary. Questionnaires contained both closed and open ended questions. The questionnaire was submitted for filing. A five point Linkert-scale was used in designing close-ended questions where respondents were asked to rate their opinion from two extremes, “Very good extent and no extent”.

3.5. Pilot Study

The pilot study was conducted in one private school and two public schools in Majaoni along Shanzu Teachers Training College which is an out suburb of Mombasa town in Mombasa County. The study emphasized strategies used by teachers when teaching mathematics to slow learners in class two. The two teachers from each school sampled were the respondents under this study. The study was carried once weekly from morning to lunch since most of the schools end their lessons at noon.

3.5.1 Validity

Face and content validities were used to ascertain the validity of the research instruments. To ensure the face validity, the research instruments were given to the supervisor and fellow students to judge the appropriateness of each item of the instrument. This helped the researcher to familiarize with data collection procedures. It also helped to further revise the instruments. Clear explanation or suggested study guide. The content validity of the instruments was done by the experts in statistics and mathematics department, who were helpful in assessing the contents of the research instruments and from their recommendation, necessary corrections were effected accordingly. The content validity was also considered by the researcher through checking whether all variables were covered by the instruments.

3.5.2. Reliability

Reliability of research instruments is influenced by random error. As random error increases reliability decreases. Random error is the deviation from true measurements due

to factors that are not effectively being addressed by the researcher. Errors may arise from inaccurate coding and ambiguous instructions to the subject (Olive Mugenda, 1999). The question items were divided into two sets and administered to two different groups. The Pearson's product moment formula was then used to compute the correlation coefficient (r).

A correlation coefficient of r $\geq$0.6 will be considered high enough to judge the questionnaire as reliable for the study (Mugenda and Mugenda, 1999). Singleton and Straits (1999) gave the following interpretations for various correlation coefficients:

0.8 to 1.0	very strong
0.6 to 0.8	strong
0.4 to 0.6	moderate
0.2 to 0.4	weak
0.0 to 0.2	very weak

The Pearson's product moment formula is given by:

$$r = \frac{\sum (x_i - \bar{X})(y_i - \bar{y})}{\sqrt{\sum \{[x_i - \bar{X}]^2 \sum [y_i - \bar{y}]^2\}}}$$

Where:

Xi is the individual score in set 1

$\bar{X}$ is the mean of the set 1 scores

y_i is the individual score in set 2

$\bar{y}$ is the mean of the set 2 scores

3.6 Data Collection Techniques

The questionnaires were administered to the respondents to collect data. The research assistants and the researcher visited schools, to establish the influence of teachers' training and teaching strategies used with slow learners in lower primary mathematics. The teacher questionnaire was self-administered to the respondents. Before collecting data, the researcher obtained a letter authorizing collection of data from Graduate School, Kenyatta University. The same letter was used to apply for a research permit from National Commission for Science, Technology and Innovation then proceed to the CEO for further permission

3.7 Data Analysis

Questionnaire cleaning, coding of responses, data validation, error checking, exploratory analysis, tabulation and finally statistical analysis were carried out. Primary data collected for analysis coded, stored, retrieved and analyzed using Statistical Package for Social Sciences (SPSS) version 17.0. The study was analyzed using calculations based on means, frequencies and percentages of the responses given for each variable. This enabled making of conclusions from numerical values through the process of quantification. The analyzed data was then presented in tables for easy interpretation. The data was analyzed through inductive approach since the researcher used actual data to derive the structure of analysis.

3.8 Logical and Ethical Considerations

People who were interviewed were given a brief description of the purpose and procedure of the research, what risks and benefits that could be associated with participation and a statement that participation was voluntary and could be terminated at any time. Confidentiality was guaranteed and it was the researcher's ethical responsibility to verify the collected data. Only summarized data would be available for public consumption.

CHAPTER FOUR

PRESENTATION OF FINDINGS, INTERPRETATION AND DISCUSSION

4.0 Introduction

This chapter presents the findings of the study, interpretation and discussion of results. It is divided into three sections: introduction, general and demographic information, and results, interpretation and discussion of results. Findings are presented in the order of objectives. The objectives of the study were to; to determine the methods used by teachers when teaching mathematics to slow learners in lower primary; to identify materials used by teachers when teaching mathematics to slow learners in lower primary; to identify the questions teachers use when teaching slow learners and to find out approaches teachers employ on remedial teaching to slow learners in mathematics. The study employed a questionnaire and interview. Data analysis and results are discussed under the following headings:

i. Demographic information
ii. Methods used by teachers when teaching mathematics to slow learners in lower primary
iii. Materials used by teachers when teaching mathematics to slow learners in lower primary
iv. Questions teachers use when teaching mathematics to slow learners in lower primary
v. Approaches teachers employ on remedial teaching mathematics to slow learners in lower primary

Findings of the study were presented in line with study objectives. For the quantitative data where necessary, descriptive statistics related to each objective were given, followed by inferential analysis. A discussion of findings from quantitative analyses was then done.

4.1 Demographic Information

Data was collected from a total of 36 respondents. They included teachers from nine schools - two private and seven public schools from Majaoni, Mombasa County. Four teachers representing preschool to class three in each of the 9 schools were purposively sampled to participate in this study. Results of demographic information are presented on Table 4.1.

Table 4.1: ***Demographic Information***

Teachers		f	%
Gender	Female	19	52.8
	Male	17	47.2
Age	21-30	11	30.6
	31-40	16	44.4
	41-50	7	19.4
	Above 50	2	5.6
Level of education	KCSE	1	2.8
	'A' level-Form 6	1	2.8
	P_1 Certificate	18	50
	Diploma	10	27.8
	B.ED (Trained Graduate)	5	13.8
	Master of Education	1	2.8
Years of teaching experience	0-5	8	22.2
	6-10	21	58.3
	11-15	4	11.1
	16-20	2	5.6
	Over 20 years	1	2.8

Table 4.1 shows that out of the 36 teachers sampled, females accounted for 52.8%. Half of the respondents had a P1 Certificate 9 (50%) while a minority had a Degree qualification; Only one teacher had Masters of Education Degree 1 (2.8%). More than half of the respondents (58.3%) had served for 6-10 years. Only one teacher had served for more than 20 years. Majority of the teachers (44.4) was aged between 31 and 40 years. Only 2 teachers were aged above 50 years.

4.2. Methods Used by Teachers When Teaching Slow Learners Mathematics in Lower Primary

The first objective of this study sought to determine the methods used by teachers when teaching slow learners lower primary mathematics in Majaoni Mombasa. Table 4.2 presents results on the extent to which teachers use teaching methods to teach mathematics to slow learners in lower primary, the analysis has been categorized on teachers' level of education whereas teachers who completed Form IV and Form IV have been place on the category of Secondary Education; those who completed P1 Certificate and Diplomat have be placed on the category of College Education and those who have Bachelors and Masters Degree have been place on the category of University Education.

Table 4.2: Methods Used by Teachers when Teaching Mathematics to Slow Learners in Lower Primary

Methods of teaching mathematics to slow learners		***Secondary Education***		***College Education***		***University Education***		***Total***	
		Less Extent	*Great Extent*	*Less Extent*	*Great Extent*	*Less Extent*	*Great Extent*	*Less Extent*	*Great Extent*
Learner Centered Approach	(n)	2	0	16	12	1	5	19	17
	%	*5.6*	*0.0*	*44.4*	*33.3*	*2.8*	*13.9*	*52.8*	*47.2*
Games	(n)	1	1	8	20	3	3	12	24
	%	*2.8*	*2.8*	*22.2*	*55.6*	*8.3*	*8.3*	*33.3*	*66.7*
Demonstration	(n)	1	1	10	18	2	4	13	23
	%	*2.8*	*2.8*	*27.7*	*50*	*5.6*	*11.1*	*36.1*	*63.9*
Problems & Puzzles	(n)	2	0	22	6	1	5	25	11
	%	*5.6*	*0.0*	*61*	*16.7*	*2.8*	*13.9*	*69.4*	*30.6*
Oral & Written Testing	(n)	0	2	0	28	0	6	0	36
	%	*0.0*	*5.6*	*0.0*	*77.7*	*0.0*	*16.7*	*0.0*	*100.0*
Individualized Approach	(n)	1	1	2	26	1	5	4	32
	%	*2.8*	*2.8*	*5.6*	*72.2*	*2.8*	*13.9*	*11.1*	*88.9*

Table 4.2 indicates that majority of the respondents agrees that Oral & Written Testing (100%) and Questions and Answers (91.7%) were the most applied methods by teachers when teaching mathematics to slow learners in lower primary. Problems & Puzzles (30.6%) and Learner Centred Approach (47.2%) were the least applied methods by teachers when teaching mathematics to slow learners. This analysis found out that all teachers prefer to a great extent Oral and Written Testing as a method for teaching mathematics to slow learners in lower primary. Further analysis revealed that teachers

with University Degree frequently used Individualized Approach, which is in agreement with Singh (2004) who opines that a good teacher always gives individualized attention to slow learners. The teachers with University Degree also indicated that Problem & Puzzles methods was also used to a great extent. Teachers with College Diploma/Certificate preferred Oral & Written Testing, Question & Answers and Individualized Approached methods, and those who completed up to Secondary Level of Education applied to a great extent Oral & Written and Questions & Answers Methods for teaching mathematics to slow learners in lower primary.

4.3. Materials Used by Teachers when Teaching Mathematics to Slow Learners in Lower Primary

Materials used by teachers when teaching slow learners in lower primary mathematics was measured using teachers' responses on the items of the questionnaire and also the interview. Table 4.3 presents the results of the questionnaire and interview.

Table 4.3: Materials Used When Teaching Mathematics to Slow Learners in Lower Primary

Materials Used for teaching mathematics to slow learners		***Secondary Education***		***College Education***		***University Education***		***Total***	
		Less Extent	*Great Extent*	*Less Extent*	*Great Extent*	*Less Extent*	*Great Extent*	*Less Extent*	*Great Extent*
Familiar objects	(n)	0	2	8	20	4	2	12	24
	%	*0.0*	*5.6*	*22.1*	*55.6*	*11.1*	*5.6*	*33.3*	*66.7*
Aesthetic materials	(n)	1	1	9	19	3	3	13	23
	%	*2.8*	*2.8*	*25*	*52.8*	*8.3*	*8.3*	*36.1*	*63.9*
Concrete materials	(n)	0	2	6	22	1	5	7	29
	%	*0.0*	*5.6*	*16.7*	*61.0*	*2.8*	*13.9*	*19.4*	*80.6*
Modified materials	(n)	1	1	7	21	1	5	9	*27*
	%	*2.8*	*2.8*	*19.4*	*58.3*	*2.8*	*13.9*	*25.0*	*75.0*
Improvised materials	(n)	2	0	16	12	0	6	18	18
	%	5.6	0.0	44.4	33.3	0.0	*16.7*	50.0	50.0
Variety of materials	(n)	1	1	6	22	3	3	10	26
	%	*2.8*	*2.8*	*16.7*	*61.1*	*8.3*	*8.3*	*27.8*	*72.2*

Table 4.3 indicates that teachers prefer the use of all the materials that were indicated in the study instruments when teaching mathematics to slow learners in lower primary with a score of 50% and above. The analysis revealed that most teachers are using to a great extent Concrete Materials (80.6) and Modified Materials (75%) in teaching mathematics

to slow learners in lower primary. Improvised Materials (50%) are the least used by teachers when teaching slow learners in lower primary school. Further analysis revealed that teachers with University Degrees use to a great extent Improvised Materials, followed by Concrete Materials, while Familiar Objects were the least used by them when teaching mathematics to slow learners in lower primary. Teachers with a college Diploma or P1 Certificated preferred use of Concrete Materials and Variety Materials when teaching mathematics to slow learners in lower primary, while teachers who only completed secondary education used to a great extent Concrete Materials and Familiar Objects when teaching mathematics to slow learners in lower primary. Teachers with both college and secondary levels of education used to a less extent Improvised Materials when teaching mathematics to slow learners in lower primary.

The finding is consistent with the finding of Duncan (2012) who established that pupils in all classes of the ECDE centres, and slow learners for all of their formal education, benefit if mathematical concepts are presented initially through the use of concrete materials.

4.4. Questions Teachers Use when Teaching Mathematics to Slow Learners in Lower Primary

The study then sought teachers' opinions on the questioning techniques frequency the schools use when teaching mathematics to slow learners in lower primary. These questions were as follows; providing questions given, capturing key points and important details, asking questions basing on each child’s experiences, interpreting questions for

further understanding, and asking questions that create an image in a child's mind. The findings were presented in Table 4.4.

Table 4.4: Questioning Techniques when Teaching Mathematics to Slow Learners in Lower Primary

Questioning Techniques Used When teaching mathematics to slow learners		***Secondary Education***		***College Education***		***University Education***		***Total***	
		Less Extent	*Great Extent*	*Less Extent*	*Great Extent*	*Less Extent*	*Great Extent*	*Less Extent*	*Great Extent*
The teacher providing examples to questions given	(n)	1	1	7	21	2	4	10	26
	%	*2.8*	*2.8*	*19.4*	*58.3*	*5.6*	*11.1*	*27.8*	*72.2*
The teacher asking questions based on each child's experience	(n)	2	0	20	8	3	3	25	11
	%	*5.6*	*0.0*	*55.5*	*22.2*	*8.3*	*8.3*	*69.4*	*30.6*
The teacher interpreting questions for further understanding	(n)	2	0	19	9	1	5	22	14
	%	*5.6*	*0.0*	*52.7*	*25*	*2.8*	*13.9*	*61.1*	*38.9*
The teacher asking questions that create an image in a child's mind	(n)	2	0	22	6	4	2	28	8
	%	*5.6*	*0.0*	*61.1*	*16.7*	*11.1*	*5.6*	*77.8*	*22.2*

From Table 4.4, it is evident that teachers prefer Questioning Techniques of providing examples to questions given (72.2%) and least prefer Questioning Techniques of asking questions that create an image to a child (77.8%). Teachers with University Degree responded that in applying questioning techniques when teaching mathematics to lower primary there is a great extent for the teacher capturing key points and important details, and the teacher interpreting questions for further understanding. Teachers with Diploma and P1 Certificate preferred the teachers providing examples to answers given and the

teacher capturing key points and important details as Questioning Techniques when teaching mathematics to slower learners in lower primary. Teachers with secondary level of education indicated that there is less extent for them to majority of the Questioning Techniques provided in the study instrument.

According to various literature on Questioning Techniques reviewed, there were suggestions that teachers school provide example to questions given to slow learners, capture the key points and important details, ask children based on their own experiences, interpret questions to the learner for further understanding and ask questions that create an image in a child's mind.

4.5. Approaches Teachers Employ on Remedial Teaching of Mathematics to slow learners in Lower Primary

The final objective of the study was to determine approaches teachers employ during remedial teaching to slow learners in mathematics.

Towards this objective, teachers responded to checklists to determine the types of reinforcements teachers use. The responses were then summarized into two categories of 'great extent' and 'less extent'.

Table 4.5: Approaches Teachers Employ During Remedial Teaching on Mathematics to Slow Learners in Lower Primary

Approaches Teachers Employ During Remedial teaching on mathematics to slow learners		***Secondary Education***		***College Education***		***University Education***		***Total***	
		Less Extent	*Great Extent*	*Less Extent*	*Great Extent*	*Less Extent*	*Great Extent*	*Less Extent*	*Great Extent*
Guiding a child from concrete understanding to symbol understanding	(n)	1	1	15	13	1	5	17	19
	%	*2.8*	*2.8*	*41.7*	*36*	*2.8*	*13.9*	*47.3*	*52.7*
Determining the exact areas where a child needs help	(n)	2	0	8	20	2	4	12	24
	%	*5.6*	*0.0*	*22.2*	*55.6*	*5.6*	*11.1*	*33.3*	*66.7*
Going over the child's homework and lessons	(n)	0	2	2	26	0	6	2	34
	%	*0.0*	*5.6*	*5.6*	*72.2*	*0.0*	*16.6*	*5.6*	*94.4*
Grouping children with similar needs	(n)	2	0	14	14	3	3	19	17
	%	*5.6*	*0.0*	38.9	*38.9*	*8.3*	*8.3*	*52.8*	*47.2*
Providing multi-sensory experiences	(n)	2	0	5	23	1	5	8	28
	%	*5.6*	*0.0*	*13.8*	*63.9*	*2.8*	*13.8*	*22.2*	*77.8*
Encouraging learners to estimate answers	(n)	1	1	4	24	5	1	30	6
	%	*2.8*	*2.8*	*66.7*	11.1	*13.8*	*2.8*	*83.3*	16.7

In table 4.5, findings show that there is a preference of going over the child's homework and lessons (94.4%) to other approaches that teachers employ during remedial teaching in

mathematics. Encouraging learners to estimate answers is an approach that is least employed (83.3%). Further analysis revealed that teachers with University Degrees prefer guiding a child for concrete understanding to symbol understanding and also providing multi-sensory experiences as approaches employed during remedial teaching of mathematics in lower primary. Providing multi-sensory experience was also use in great extent by teachers with Diploma and P1 Certificates. This finding is also in agreement with various literatures reviewed on this learning strategy.

Table 4.6 presents the rating by the respondents on the extent used on different learning environment to help slow learners learn mathematics in lower primary, whereas 5 means very great extent, 4 means great extent, 3 means moderate extent, 2 means less extent and 1 means no extent.

Table 4.6: Teachers Helping Slow Learners using Stimulating Learning Environment

Stimulating Learning Environment for Slow Learners		***Secondary Education***		***College Education***		***University Education***		***Total***	
		Less Extent	*Great Extent*	*Less Extent*	*Great Extent*	*Less Extent*	*Great Extent*	*Less Extent*	*Great Extent*
Reducing classroom distractions	(n)	1	1	15	13	1	5	17	19
	%	*2.8*	*2.8*	*41.7*	*36*	*2.8*	*13.9*	*47.3*	*52.7*
Changing sitting position to promote attentiveness	(n)	2	0	8	20	2	4	12	24
	%	*5.6*	*0.0*	*22.2*	*55.6*	*5.6*	*11.1*	*33.3*	*66.7*
Using shorter assignments and with more variation	(n)	0	2	2	26	0	6	2	34
	%	*0.0*	*5.6*	*5.6*	*72.2*	*0.0*	*16.6*	*5.6*	*94.4*
Repeating class work in various forms	(n)	0	2	3	25	0	6	3	33
	%	*0.0*	*5.6*	*8.3*	*69.4*	*0.0*	*16.7*	*8.3*	*91.7*
Using oral testing and redoing tests	(n)	2	0	26	2	6	0	34	2
	%	*5.6*	*0.0*	*72.2*	*5.6*	*16.7*	*0.0*	*94.4*	*5.6*
Developing individual educational plan for individual child	(n)	2	0	14	14	2	4	18	18
	%	*5.6*	*0.0*	*38.9*	*38.9*	*5.6*	*11.1*	*50.0*	*50.0*
Giving extra tutorial help to the slow learners	(n)	2	0	16	12	3	3	21	15
	%	*5.6*	*0.0*	*44.4*	*33.3*	*8.3*	*8.3*	*58.3*	*41.7*
Solving problems with the child	(n)	1	1	7	21	1	5	9	27
	%	*2.8*	*2.8*	*19.4*	*58.3*	*2.8*	*13.9*	*25.0*	*75.0*

Findings show that the respondents strongly recommended most of the stimulating learning environments with using shorter assignments and with more variation (94.4%) and repeating class work in various forms (91.7%). Using oral testing and redoing tests (94.4) was the least recommended by the teachers in stimulating learning environments. Further analysis revealed that teachers with University Degrees preferred solving problem with the child for stimulating learning environment.

Table 4.7 shows different types of reinforcement measures that teachers use when motivating learners to perform a specific task to slow learners when teaching mathematics in lower primary.

Table 4.7: Types of Reinforcement Teachers Use When Motivating Learners to Perform

	Yes (%)	No (%)
A teacher rewards a child every time a skill has been mastered	83	17
A teacher rewards a child when he/she masters a skill at a specified number of times	37	63
A teacher rewards a child after finishing a given task after a fixed time	73	27
A teacher rewards a child less frequently as the performance improves	67	33
A teacher rewards a child after unpredictable amount of time has passed	80	20
A teacher rewards after a child has completed a task	53	47
A teacher is rewarded when a child has not completed a task	23	77

Table 4.7 indicates that majority (83%) of the teachers, reward a child every time a skill has been mastered. The result shows that 80% reward a child after unpredictable amount of time has passed 73% reward a child after finishing a given task after a fixed time, while 67% reward a child less frequently as the performance improves and finally 53% reward after a child has completed a task.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

In this chapter the summary and implications are presented and then conclusions drawn from the study findings. In addition, recommendations for various stakeholders and suggestions for future study are discussed.

5.1 Summary of Findings

The first objective of the study was to determine the methods used by teachers when teaching slow learners lower primary mathematics. The findings revealed that there is a great extent of teachers employing Questions and Answers. Teachers with University Degree also preferred Individualized Approach and Problems and Puzzles as methods used when teaching mathematics to slow learners in lower primary. Teachers with college Diploma or PI Certificates also used to a great extent Oral and Written and teachers who completed secondary education indicated that they also use Oral and Written methods when teaching mathematics to slow learners in lower primary mathematics.

The second objective of the study sought to identify materials used by teachers when teaching mathematics to slow learners in lower primary. The findings indicated that teachers preferred concrete objects. Teachers with Bachelors or Masters Degree indicated that they also used to a great extent improvised materials to familiar objects and modified

materials. Teachers with Diploma and PI Certificates also used Variety of Materials while those who completed Secondary Education also preferred familiar objects.

The third objective of the study sought to identify the questions teachers use when teaching mathematics to slow learners in lower primary. The findings indicated that there is a great extent for teachers with different levels of education to provide examples to questions. Teachers with University Degree and College Diploma & PI Certificate preferred to a great extent capturing key points and important details, and interpreting questions for further understanding.

The fourth objective of the study was to find out approaches teachers employ when doing remedial teaching in mathematics to slow learners in lower primary and come up with recommendations for stimulating learning environment and motivating slow learners in lower primary mathematics. The findings indicated that the top most approach was going through the child's homework and lessons while the least approach was determining exact area where a child needs help. It also indicated that teachers overwhelmingly endorsed two stimulating environment to help learners in lower primary mathematics; using shorter assignment and with more variations and repeating class work in various forms.

5.2 Conclusion

The level of education that a teacher possesses was found to influence learning strategies like methods, materials, questioning techniques, and approaches used when teaching mathematics to slow learners in lower primary. In determining learning strategies to use

when teaching mathematics to slow learners in lower primary, the findings revealed that the methods, materials, questioning techniques and approaches employed was in great contrast depending on the level of education possessed by a teacher. For example, strategies used by teachers holding university degrees to a great extent was most likely not preferred by teachers holding college Diploma and PI Certificates and those who completed Secondary School. Some of the strategies preferred to a great extent by teachers who completed Secondary School was preferred to a less extent by teachers holding University Degree.

5.3 Recommendations

Based on the findings of this study, the researcher recommends the following:

5.3.1 Recommendations for the School Managers and Administrators

The main purpose of this study was to establish influence of teachers' training on strategies used with slow learners in lower primary mathematics lessons in Majaoni, Mombasa county Kenya. The findings revealed that even though there is a common preference by most teachers in the methods, materials, questioning techniques, and approaches applied when teaching slow learners in lower primary mathematics, some learning strategies were influenced by level of education that a teacher possessed. Therefore, there is need for school managers and administrators to device programmes that bring uniformity to learning strategies by teachers with different levels of education that would enhance improved learning experience when teaching mathematics to slow learners in lower primary. The programmes should help teachers to be aware and

understand different strategies that can be applied. The school managers should also device mechanisms of monitoring and evaluating the programmes for effectiveness.

5.3.2 Recommendations for the Policy Makers in the Ministry of Education

Findings from this study revealed that teachers prefer and use some teaching strategies to others because there are no clear guidelines to cater for the performance of slow learners in curriculum activities. In the light of these finding, the policy makers at the Ministry of Education should develop policies that would establish specific unit to guide teachers in teaching slow learners in lower primary mathematics. This can be done by use of seminars, workshops and focus group discussions to bring all education stakeholders together in participatory development of the curriculum. This can also be done by developing a handbook or manual on best teaching strategies for teachers when teaching mathematics to slow learners in lower primary. There is need for the Kenya Institute of Education (KIE) now renamed the Kenya Institute of Curriculum Development (KICD) to develop a curriculum and a training manual aimed at facilitating training of teachers on teaching strategies that would enhance the performance of mathematics to slow learners in lower primary.

5.4 Suggestions for Future Research

There is need for a longitudinal study to be carried out in future where the relationship between teachers' preferences in teaching strategies and slow learners academic performance in lower primary mathematics will be studied in all schools across the

country. The study will fill the gap left by the current study that only targeted schools in Majaoni Mombasa County.

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APPENDIX I: QUESTIONNAIRE

Dear respondent**,**

This questionnaire is purely academic and information given will be used for academic purposes. This questionnaire is focused on how lower primary teachers help slow learners in mathematics activities. Your survey response will be strictly confidential and data from this research will be reported only in the aggregate. Your information will be coded and will remain confidential. Please mark your answer by selecting the necessary box or button, or entering an answer in the text box; where applicable.

SECTION A (Tick where appropriate)

PART A: BACKGROUND INFORMATION

Please tick the correct box

1. What is your gender?

   Male [ ] Female [ ]

2. What is your age bracket?

   21 – 30 years [ ]

   31 – 40 years [ ]

   41 – 50 years [ ]

   Above 50 years[ ]

3. What is your level of education?

   KCSE [ ]

   'A' level- Form 6 [ ]

   P_1 Certificate [ ]

   Diploma [ ]

   B.ED (Trained Graduate) [ ]

   Master of education [ ]

Other specify ……..

4. How long have you been in the teaching profession?

   0-5 years [ ]

   6-10 years [ ]

   11-15 years [ ]

   16-20 years [ ]

   Over 20 years [ ]

SECTION B: SPECIFIC RESEARCH QUESTIONS

(i) Methods used by teachers when teaching mathematics slow learners

Instructions

On a scale of 1-5, rate the extent you use the following teaching methods to teach slow learners in mathematics in your school? Where (5=Very great extent, 4=great extent, 3=moderate extent, 2= less extent, 1= no extent)

Methods of teaching mathematics to slow learners	5	4	3	2	1
Learner Centered approach					
Games					
Demonstration					
Problems & Puzzles					
Oral & Written Testing					
Individualized approach					
Question and answer					

1. What kind of activities do you give pupils with low mathematical skills?

   ……..

   …….

2. What are your general suggestions that you think can improve the teaching of mathematics to slow learners?

   ……..

   ……

(ii) Materials used when teaching slow learners in lower primary mathematics

Instructions

On a scale of 1-5, rank the materials you use when teaching slow learners in mathematics in your school Where (5=Very great extent, 4=great extent, 3=moderate extent, 2= less extent, 1= no extent

Teaching/Learning materials	5	4	3	2	1
Familiar objects					
Aesthetic materials					
Concrete materials					
Modified materials					
Improvised materials					
Variety of materials					

3. Do you have any other teaching aids that you use to facilitate pupils with low mathematical skills?……

(iii) Questioning techniques for slow learners

Instructions

On a scale of 1-5, rate the extent you use the following questioning techniques when teaching slow learners in mathematics in your school, Where (5=Very great extent, 4=great extent, 3=moderate extent, 2= less extent, 1= no extent)

Questioning techniques to slow learners	5	4	3	2	1
The teacher providing examples to questions given					
The teacher capturing key points and important details					
The teacher asking questions basing on each child's experience					
The teacher interpreting questions for further understanding					
Asking questions that create an image in a child's mind					

(iv) Approaches teachers employ during remedial teaching

The researcher will use a checklist to determine the types of reinforcements teachers use when employing remedial teaching to slow learners.

Remedial teaching	5	4	3	2	1
Guiding a child from concrete understanding to symbol understanding					
Determining the exact areas where a child needs help					
Going over the child's homework and lessons					
Grouping children with similar needs					

Providing multi sensory experiences					
Encouraging learners to estimate answers					

(v) Teachers helping slow learners in lower primary mathematics

Instructions

On a scale of 1-5, rate the extent you use the following ways to help slow learners when learning mathematics in lower primary classes Where (5=Very great extent, 4=great extent, 3=moderate extent, 2= less extent, 1= no extent)

Stimulating learning environment

Stimulating learning environment	5	4	3	2	1
Reducing classroom distractions					
Changing seating positions to promote attentiveness					
Using shorter assignments and with more variation					
Repeating class work in various forms					
Using oral testing and redoing tests					
Developing individual educational plan for individual child					
Giving extra tutorial help to the slow learners					
Solving problems with the child					

APPENDIX II: MAP OF MAJAONI – MOMBASA COUNTY

Source: Google Map

APPENDIX III: PERMIT

conduct research in *Mombasa County*

on the topic: *RELATIONSHIP BETWEEN QUALITY TEACHER TRAINING AND TEACHING STRATEGIES FOR SLOW LEARNERS IN LOWER PRIMARY MATHEMATICS IN MAJAONI MOMBASA COUNTY KENYA*

for the period ending:
17th August,2018

.....
Applicant's Signature

.....
Director General
National Commission for Science, Technology & Innovation

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RESEARCH CLEARANCE PERMIT

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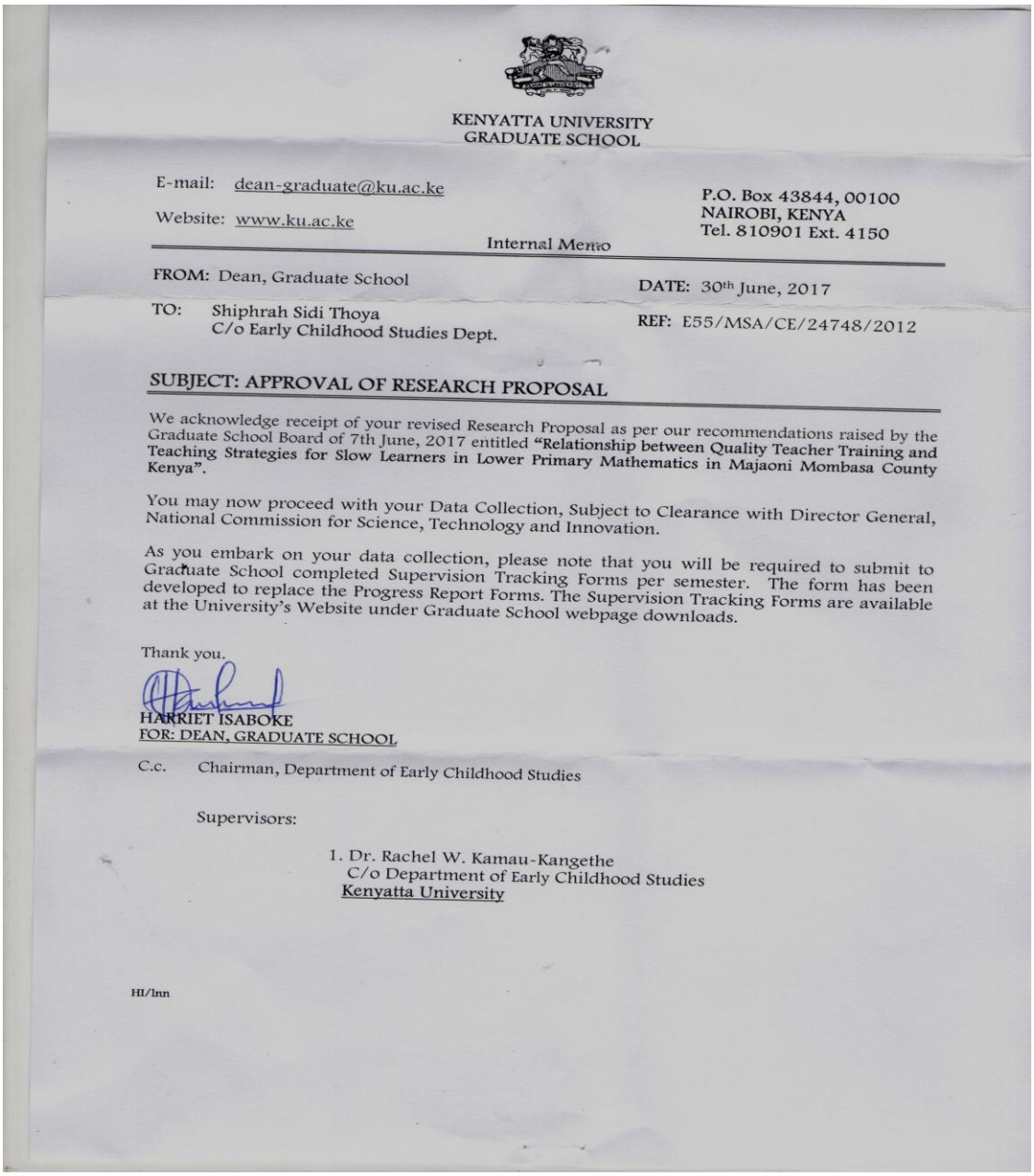
APPENDIX IV: APPROVAL FROM GRADUATE SCHOOL



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Internal Memo

FROM: Dean, Graduate School

DATE: 30th June, 2017

TO: Shiphrah Sidi Thoya
C/o Early Childhood Studies Dept.

REF: E55/MSA/CE/24748/2012

SUBJECT: APPROVAL OF RESEARCH PROPOSAL

We acknowledge receipt of your revised Research Proposal as per our recommendations raised by the Graduate School Board of 7th June, 2017 entitled **"Relationship between Quality Teacher Training and Teaching Strategies for Slow Learners in Lower Primary Mathematics in Majaoni Mombasa County Kenya".**

You may now proceed with your Data Collection, Subject to Clearance with Director General, National Commission for Science, Technology and Innovation.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed Supervision Tracking Forms per semester. The form has been developed to replace the Progress Report Forms. The Supervision Tracking Forms are available at the University's Website under Graduate School webpage downloads.

Thank you.

HARRIET ISABOKE
FOR: DEAN, GRADUATE SCHOOL

C.c. Chairman, Department of Early Childhood Studies

Supervisors:

1. Dr. Rachel W. Kamau-Kangethe
C/o Department of Early Childhood Studies
Kenyatta University

HI/lnn