

**EFFECT OF TEACHER CHARACTERISTICS ON PRE-SCHOOL
CHILDREN'S PERFORMANCE IN MATHEMATICS IN DAGORETTI
DISTRICT NAIROBI COUNTY, KENYA**

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DECLARATION

This is my original work and has not previously, in its entirety or in part, been presented to any other university or institution for an award.

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DEDICATION

To my beloved husband, Boniface Ngei and my dear son, Ian Muuo. Who never got tired to pray for my success.

ABSTRACT

The purpose of this study was to examine the effect of teacher characteristics on Pre-school children's performance in Mathematics in Dagoretti District in Nairobi County, Kenya. The study was guided by the following research objectives: Teacher academic qualification and Pre-school children's performance in Mathematics, teacher attitude and Pre-school children's performance in Mathematics, teacher experience and Pre-school children's performance in Mathematics and teacher training and Pre-school children's performance in Mathematics. The study employed a survey research design consisting of all Pre-schools, teachers and school administrators in the District. A sample of fifteen Pre-schools was obtained where three pre-school teachers were purposively selected from each of the sampled pre-schools. Thus, a total of forty five preschool teachers and fifteen preschool administrators took part in the study. Data was collected through questionnaires for teachers and interview guides for pre-school administrators. Data was collected to answer questions in the four thematic areas; the effect of teacher academic qualification, teacher attitude, teacher experience, teacher professional training on Pre-school children's performance in Mathematics. Data was analyzed using both descriptive statistics and narrative techniques. From the analysis, the study revealed that teachers' characteristics play a key role on Pre-school children's performance in Mathematics.

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ABBREVIATIONS AND ACRONYMS

ANOVA	Analysis of variance
ECE	Early Childhood Education
KCPE	Kenya Certificate of Primary Education
KICD	Kenya Institute of Curriculum Development
KIE	Kenya Institute of Education
SPSS	Statistical Package for Social Sciences

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

According to UNESCO (2000), the terms pre-school education and Kindergarten emphasize education around the ages 3-6 years. Early Childhood Education (ECE) often focuses on child learning through play. However, many child care centres are now using more educational approaches. They are creating curricular and incorporating it into the early daily routines to foster greater educational learning.

Teachers play a fundamental role in learner's academic achievement. They link together learners, other teachers, school administrators, families, and community members to foster the learning success and healthy development of their learners. The nature of these interactions among different stakeholders varies depending on the teachers' intent and the needs of their learners. Learners, particularly those at risk of school failure, can benefit from certain "protective supports provided by teachers Wang, M.C, Haertel, G.D, & Walberg, H.J. (1994). The teacher's role in creating an environment and building relationships conducive to learning goes beyond the traditional academic duties to include the provision of additional support and care. By developing nurturing, positive relationships with their learners, teachers can buffer the impact of certain basic factors that may negatively impact on a student's academic achievement (Smylie, 1994).

The need to enhance the quality of education has intensified in Brazil since the end of the 1990s (Rios-Neto & Guimaraes, 2010). Despite being a major economic power and having universalized access to primary education, Brazil still stagnates in cross-country comparisons of poor learners' achievement, as shown by PISA results

(OECD, 2011). Consequently, there is an emerging government agenda aimed at improving the quality of education, notably in public schools (Sass, 2007). For these policymakers, quality means that learners are succeeding on standardized tests. In this context, teachers are assigned a central role in delivering a high-quality education by policymakers and international organizations (Hanushek, 2010). Therefore, increasing the quality of education requires understanding the means to increase teacher quality and how teachers can be effective in promoting learning.

Amongst education researchers, teacher quality is widely considered an important school factor – and maybe even the most important factor – of student learning (Ladd, 2008). In the large body of research that has addressed the importance of teacher quality and effectiveness in the learning process, the United States educational system appears most prominently and to a lesser extent studies includes other countries, such as South Africa and Botswana (Ladd 2008). In Brazil, research has mainly explored the influence of school factors on student achievement but there are only a few studies that have conducted a systematic analysis of teacher effect.

Mathematics is the study of measurement, properties, and relationships of quantities and sets, using numbers and symbols (American Heritage Dictionary, 2000). It provides a powerful means for understanding and analyzing the world, therefore, variety of instructional methods used in teaching it creates a subject with interest to learners. Instructional methods are primarily descriptions of the learning objectives, oriented activities and flow of information between teachers and learners (Mukachi, 2006). Hence, several factors determine instructional methods to be used for a particular mathematics lesson (Santrock, 2004). These include: age, learners’

developmental level, their entry behaviour, subject matter or content, lesson objectives, availability of resources, teacher characteristics and classroom dynamics.

Knowledge of foundational mathematical concepts begins during infancy, and important changes in mathematical skills have been documented during the first five years (Geary, 1994; Sarama & Clements, 2009). Also, Fuson (1992) describes how mathematics skills progress through the sixth grade, moving from counting objects, reading and writing symbols. Study by Kipkorir and Njenga (1997), noted that preschool Mathematics which provide mainly for stimulation emphasize the use of learning and play materials and real life experiences as a way of providing effective learning to children.

As children manipulate materials, explore and experiment, they develop language and reasoning skills and acquire concepts of the world around them. According to Worthington and Caruthers (2003) cited in (Tucker, 2010) classrooms which support children's own mathematical graphics are the ones in which children are given dedicated time and space to pursue a chosen activity. They also reported that when planning the learning environment, considerations must be given to: appropriate resources to inspire and motivate children; space to enable interaction with peers and a natural flow from one activity to another; and time dedicated to exploring the opportunities they present. Ginsburg, (2008) recommended an examination of conditions that stimulate children's mathematical performance and suggested the classroom environment involving structural and process elements play an important role.

The classroom structural elements include physical space, routines and materials while the process elements refer to children's direct experiences with people and objects. In addition, Varol and Faran (2006) cited in (Asiago, 2010), reported that it is not just enough to attend a high quality pre-school, but children need to be provided with challenging and accessible mathematics education because experiences during the early years influence later performance in school. For instance, the concept of number value is very important because it is the foundation of such operations in mathematics as addition, subtraction, division and multiplication (KIE, 2008) currently KICD.

In Dagoretti District, it can be noted that unsatisfactory performance in mathematics among pre-school children is not a unique problem. Gakiria (2012) ascertains that poor performance in mathematics is attributed to poor background the learners have had in lower levels of learning starting from pre-schools. Poor teaching methods have also contributed to the dismal performance in mathematics, which are said to be examination-oriented that alienates the key objectives of making the subject part of real life. The journal notes that teachers' level, the blame to poor preparedness in the presiding levels and children's attitude towards the subject, which is predominant in the society Based on available data, there is evidence that mathematics is generally not performed well compared to other subjects offered at primary level in KCPE in Dagoretti District.

Mathematics is poorly performed yet it is regarded by most people as essential, clearly useful and more precisely useful than other subjects in the school curriculum, (Mutunga and Breakell, 1992). The study used KCPE Performance because preschool children are not subjected to National examinations when transiting to primary school

as is the case with other levels of education. Also early mathematics skills are the strongest predictors of later mathematics achievement in school (Jordan, et al. 2006). In addition, mathematics process skills do not change no matter the level of learning (Esler & Esler, 2001).

Table 1: Trend of performance in KCPE

Year	English	Kiswahili	Maths	Science	S/Studies &R.E
2009	59.67	55.90	53.28	54.29	57.82
2010	58.87	55.96	53.36	54.00	55.12
2011	57.05	53.60	53.10	53.90	54.18
2012	58.42	56.27	53.68	54.70	56.65

Source: Dagoretti District Education Office Data

From Table 1. It is evident that mathematics has constantly held the last position in the four years as compared to other subjects; therefore it is worth noting that children's preparedness in pre-school is likely able to affect their performance in higher levels. This is consistent with the study done by Esler and Esler (2001) that the primary process skills taught in preschool and primary levels are taught as integrated process skills in other levels of education. This justified the need for this study to establish whether teachers' characteristics affect Pre-school children's performance in Mathematics with reference to Dagoretti District in Nairobi County, Kenya.

1.2 Statement of the Problem

The topic of pre-school children performance in mathematics has become a topic of concern. Despite the fact that Children have very positive attitude towards mathematics during the preschool years, and opportunities to use mathematics and logical thinking to solve problems help children develop dispositions such as curiosity, imagination, flexibility, inventiveness, and persistence, these children still are not performing well in mathematics in the whole District. This has led to a number of questions concerning whether teachers' characteristics can be attributed towards their poor performance.

Education is the compilation and product of many and varied resources. Among these, teachers stand out as a key to realizing the high standards that are increasingly emphasized in schools and school systems across the country. Despite general agreement about the importance of high-quality teachers, researchers, practitioners, policy makers, and the public have been unable to reach a consensus about what specific qualities and characteristics make a good teacher. Even more concerning is the array of policy statements regarding teacher preparation that have been set forth in the face of volumes of inconclusive and inconsistent evidence about what teacher attributes really contribute to desired educational outcomes (Hanushek, 2010).

Review of literature indicates that there is a strong relationship between teacher qualification and learners performance. Most studies have been done on the influence of training and certification on teacher performance and its effect on learner's performance in different subjects and fields that compare teachers with and without preparation have typically found higher rating and greater student learning gains for teachers who have more formal preparation for teaching. However these studies have

never looked into the effect of teachers' relationship on learners' performance. Moreover, most of the studies were conducted in different environment and employed different methodologies. Thus there is need for the current study to examine the effect of teacher characteristics on Pre-school children's performance in Mathematics in Dagoretti District in Nairobi County, Kenya.

1.3 Purpose of the Study

The purpose of the study was to investigate the effect of teacher characteristics on Pre-school children's performance in Mathematics in Dagoretti District in Nairobi County, Kenya.

1.4 Research Objectives

This study was guided by the following research objectives:

1. To find the effect of teacher academic qualification on Pre-school children's performance in Mathematics.
2. To determine the influence of teacher attitude on Pre-school children's performance in Mathematics.
3. To find out the effect of teacher experience on Pre-school children's performance in Mathematics.
4. To find out the effect of teacher teaching method on Pre-school children's performance in Mathematics.

1.5 Research Questions

The study was guided by the following research questions:

1. What are the effects of teacher academic qualification on Pre-school children's performance in Mathematics?
2. What is the influence of teacher attitude on Pre-school children's performance in Mathematics?
3. What are the effects of teacher experience on Pre-school children's performance in Mathematics?
4. What are the effects of teacher teaching method on Pre-school children's performance in Mathematics?

1.6 Significance of the Study

This study is hoped to be of significant to various stakeholders. These include the school administrators, teachers, policy makers, government and the general knowledge. The schools administrators will benefit from the study in that they will be able to understand the effect of teachers' characteristics on Pre-school children's performance in Mathematics hence come up with strategies to ensure that teachers work effectively in the provision of necessary resources to learners. They will be able to understand the staff needs and ensure that they plan the school programme in the right way bearing in mind the school objectives and the resources required for the objectives to be met.

The teachers will be the most beneficiaries of the study. They will learn various ways to be used in imparting knowledge and skills to learners being the resource persons. It is the teacher who has to establish a warm relationship with the learners and share

some confidence with them for their effective learning. The teacher will know how to organize class for conducive learning atmosphere.

The policy makers will be well served by recognizing the complexity of the issue and adopting multiple measures such as providing government employment to all ECDE centers attached to public primary schools which will make them to have better remuneration and hence be better motivated in the delivery of their work. The policy makers will be more informed as they try to strengthen the ECDE education sub-sector in basic education.

The government on the other hand will be able to learn from the study and come up with policies to ensure that teachers have good teacher characteristics in achieving better performance among not only pre-school children but also the entire learning institutions. The government will also get informed on guiding policies regarding whom to hire, whom to reward, and how best to distribute teachers across schools and classrooms.

The study will be of significance to learners who are taking the course in education. The parent-teacher association will benefit as they try to help teachers to be more knowledgeable about their pupils and their home environment. It will also be a relevant source for scholars who will be conducting a study over the same field.

1.7 Limitations of the Study

Limitations are referred to as conditions that are beyond the researcher's ability to carry out a given research which may affect the results of the study. This study may be faced with some limitations. The respondents might fail to provide full information concerning their institution in that they may fear to expose their weakness hence

leading to skewed results. However, the researcher will personally inform the respondents on the purpose of the study and assure them of confidentiality. Sometimes the return of questionnaires is poor and therefore the researcher will go personally collecting back all the questionnaires and ensuring that they are well completed.

1.8 Delimitation of the Study

This study was conducted in Dagoretti District in Nairobi County, Kenya. It looked at the relationship between teacher characteristics and pupils' performance in Mathematics. In terms of methodology, the study targeted all public pre-schools, pre-school children, pre-school teachers and administrators.

1.9 Assumptions of the Study

The study was based on the following assumptions:

1. Academic performance in mathematics among pre-school children in Dagoretti District is linearly related to teacher's characteristics.
2. The Teachers were assumed to be trained and have characteristics and skills to teach mathematics
3. The respondents were assumed to provide reliable information on the effect of teacher characteristics on pre-school children's performance in mathematics.

1.10 Definition of Operational Terms

Attitude: The way the teachers act to show the inward thoughts and feelings.

Effectiveness: The production of the desired results through the achievement of the learners.

Experience: Number of years the teacher has been teaching.

Teaching: Imparting of knowledge and skills from a teacher to a learner.

Performance: Achievement after the learning process.

Pre-school: Formal school for children from three years old to six years old.

1.11 Organization of the Study

The study comprise of five chapters: The first chapter focus on the introduction. This highlight the background to the problem, statement of the problem, the purpose of the study, research objectives, research questions, significance of the study, limitation of the study, delimitation of the study, basic assumptions, definition of operational terms and organization of the study.

The second chapter concerns with reviewing the related literature within the area of concern (problem). This focus on what both secondary and primary researchers have said about performance in mathematics. The theoretical and conceptual framework is outlined here. This chapter ends with the conceptual framework.

Chapter three outline the research methodology which is used in the study. The research design, research population, sample size and sample techniques, research instruments, validity and reliability, data collection procedures and data analysis procedures. The fourth chapter present the analysis and interpretation of the study findings. Chapter five gives the summary, conclusion and the recommendations of that which emerge from the study.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter presents a theoretical and empirical review of related literature on the effect of teacher characteristics on Pre-school children's performance in Mathematics in Dagoretti District in Nairobi County, Kenya. Sources of information for this chapter include published journals, books and online materials. The first part of the chapter includes the empirical review which is presented based on the research objectives followed by the theoretical review. Summary forms the last part of the chapter.

2.2 Teachers Academic Qualifications and Children's Performance

According to Schmoker (1999), highly qualified teachers are defined as those who hold at least a bachelor's degree, are fully licensed or certified by the state in the subjects they teach, and can demonstrate competence in the subjects they teach. While licensure or certification is a significant indicator of teacher quality, these factors alone are insufficient for teacher effectiveness.

According to McGahie (1991), teacher effectiveness is characterized by a far more complex set of qualities than one's professional preparation. It includes dispositions and an array of planning, organizational, instructional, and assessment skills. Effective teachers are able to envision instructional goals for their learners, and then draw upon their knowledge and training to help learners achieve success. A "highly qualified" teacher is certainly a good starting point, but most of us would want our child to have a highly effective teacher whose teaching effort yields high rates of learner learning.

Gordon (2006) conducted a study to examine the steps districts take and the challenges they face in assessing teacher effectiveness as a precursor to providing effective teachers for all learners USA. The report draws on descriptive information from case studies of five districts that have developed and implemented new measures of teacher effectiveness based on gains in learners' achievement, observations of instructional practice, or based on both types of data.

The report discussed the ways these districts are using such measures in their human resource policies, including efforts to ensure the equitable distribution of effective teachers. The study found that learners who had teachers in the top quartile of effectiveness gained 10 achievement percentile points relative to similar learners who had teachers in the bottom quartile of effectiveness. Geographically, this study was conducted in the US and its scope was wide hence there is need for this study to examine the effect of teacher characteristics on Pre-school children's performance in Mathematics in Dagoretti District in Nairobi County, Kenya.

Heck (2009) carried study on the impact of teacher effectiveness on learner achievement among the selected elementary schools in Kenya. The sample consisted of 9,196 learners, cross-classified in 511 and 527 classrooms, and nested in 156 elementary schools in Kenya. The study found that the effectiveness of successive teachers was related to learner achievement in reading and math. Second, collective teacher effectiveness, as an organizational property of schools, was positively associated with achievement levels. Third, the stability of the school's teaching staff and the quality of its academic organization and teaching processes were positively related to achievement levels. This however limited itself on teachers' effectiveness on learners' performance in math and reading which did tackle on general

performance. Thus, there is need for this study to examine the effect of teacher characteristics on Pre-school children's performance in Mathematics in Dagoretti District in Nairobi County, Kenya.

2.3 Teacher Attitude and Pre-school Children's Performance

The effective attitudes and actions employed by teachers ultimately can make a positive difference on the lives of their learners. By examining prior educational experiences, Pre-school teachers can discuss what they should or should not do with a class of learners. Most of the attitudes and actions of teachers include: a genuine caring and kindness of the teacher, a willingness to share the responsibility involved in a classroom, a sincere sensitivity to the learners' diversity, a motivation to provide meaningful learning experiences for all learners, and an enthusiasm for stimulating the learners' creativity (Handler, 1993).

According to Watson (2003), teaching as an intensely psychological process and believe a teacher's ability to maintain productive classroom environments, motivate learners, and make decisions depends on her personal qualities and the ability to create personal relationships with her learners. These effective attitudes and actions employed by teachers ultimately can make a positive difference on the lives of their learners. It is known that attitudes have a profound impact on teacher practices and behaviors. Richardson (1996) indicates that attitudes and beliefs are a subset of a group of constructs that name, define, and describe the structure and content of mental states that are thought to drive a person's actions. With effective attitudes, teachers and learners can develop relationships of mutual respect and trust.

Carlson and Hastie (1997) urge that teachers' and learners' agendas need to overlap and be in support of each other, and the end result would be a positive learning environment. This way of learning is a challenging way of constructing freedom in the classroom. The strength in a constructivist based classroom is in the lessons and activities of the learners. Carlson and Hastie (1997) believe that the learning process should be organized in such a way that learners take responsibility for their own learning. Learners should be independent and able to make decisions about their learning ability and then plan accordingly. Richardson (1999) indicates that learner-directed learning and curricula have become focal points for all constructivist-based teaching and learning practices.

Yucel (2007) conducted a study on the effect of teachers' attitudes and behaviour on students' academic success in Turkey. A qualitative approach was employed in the research where the influence of teacher attitudes inside and outside the class on learners' academic success was determined freely through learner observation and learner opinions. The study established that learners perceive teachers' way of classroom management, in-class and out-of-class attitudes, and teaching methods and strategies had positive or negative impacts on their academic success and participation in lessons. This study contributes to the current study since it tried to look at teacher attitude on learner achievement of which the current study will expound it so as to come up with sound information on the effect of teacher characteristics on Pre-school children's performance in Mathematics in Dagoretti District in Nairobi County, Kenya.

2.4 Teachers' Experience and Children's Performance

According to Sass (2007), many occupations recognize employees' years of experience as a relevant factor in human resource policies, including compensation systems, benefits packages, and promotion decisions. The idea is that experience, gained over time, enhances the knowledge, skills, and productivity of workers.

In education, teacher experience is probably the key factor in personnel policies that affect current employees: it is a cornerstone of traditional single-salary schedules; it drives teacher transfer policies that prioritize seniority; and it is commonly considered a major source of inequity across schools and, therefore, a target for redistribution (Ladd, 2008).

According to Clotfelter, Charles T., Hellen F. Lad, Jacob L Vigdor and Justine Wheeler. (2007), early-career experience has a clear payoff in teacher effectiveness, and the impact is stronger than the effect of most other observable teacher-related variables including advanced degrees, teacher licensure tests scores, National Board certification at the elementary level, and class size Teachers show the greatest productivity gains during their first few years on the job, after which their performance tends to level off.

According to (Hanushek 2010), less experienced teachers tend to be less effective than more experienced teachers as a whole evidenced by the performance distributions of teachers with no experience and one to two years of experience shifted to the left of the performance distribution of more experienced teachers, many less experienced teachers have value-added scores comparable to or exceeding those of their more experienced counterparts (evidenced by the substantial overlap among the three distributions). Research has shown that other policy-relevant factors such as

a teacher's academic training and preparation program may equal or even outweigh the impact of early-career experience Boyd (2007).

According to Bodenhausen (2006), the more the inexperienced teacher, the lower the pupils' scores in class. Teacher experience, and not advanced degrees, has a greater effect on how well learners succeed. Bodenhausen (2006) further argues that in the first few years on the job, a teacher gains considerably in her or his ability to improve the academic performance of pupils. Further findings indicate that there is a dramatic improvement in learners' achievement between one and five years of teacher experience and a more gradual boost in the years following.

Fisher (2011) conducted a study to examine the stress, burnout, satisfaction, and preventive coping skills of 400 secondary teachers to determine variables contributing to these major factors influencing teachers. Analysis of Variance (ANOVA) statistics were conducted that found the burnout levels between new and experienced teachers are significantly different, with novice teachers having higher burnout, but their difference in stress levels was not statistically significant. In three multiple regression tests, stress and burnout were found to be statistically significant predictors of job satisfaction; years of experience, job satisfaction, and burnout were statistically significant predictors of stress; and job satisfaction, preventive coping skills, and stress were statistically significant predictors of burnout. However, the study did not expound on how teacher experience influences learner's academic performance in mathematics. In addition, the study was carried out among secondary school teachers. Hence, the current study seeks to examine the underlying issues on effect of teacher characteristics on Pre-school children's performance in Mathematics in Dagoretti District in Nairobi County, Kenya.

Boyd (2007) carried out a study on teacher experience and learners' performance using data from North Carolina established that teacher experience or more accurately, teacher inexperience is systematically related to teacher productivity, questions surrounding the distribution of inexperienced teachers have policy significance. Studies offer compelling evidence of an uneven distribution of inexperienced teachers that is systematically related to school and learner characteristics. Teachers with three or fewer years of experience (those shown to be less effective, on average) are more likely to be teaching in high-poverty schools. This study however was conducted in Chicago which is a developed county might not have similar findings to the current study since this study examines the effect of teacher characteristics on Pre-school children's performance in Mathematics in Dagoretti District in Nairobi County, Kenya.

2.5 Teachers Method and Children's Performance

The effective methods and actions employed by teachers ultimately can make a positive difference on the lives of pre-school children. By examining prior educational experiences, pre-school teachers can discuss what they should or should not do with a class of students. Most of the attitudes and actions of teachers include: a genuine caring and kindness of the teacher, a willingness to share the responsibility involved in a classroom, a sincere sensitivity to the students' diversity, a motivation to provide meaningful learning experiences for all students, and an enthusiasm for stimulating the students' creativity (Handler, 1993).

According to Calderhead (1996), Pianta (1999), and Watson (2003), teaching as an intensely psychological process and believe a teacher's ability to maintain productive classroom environments, motivate children, and make decisions depends on her

personal qualities and the ability to create personal relationships with her students. These effective attitudes and actions employed by teachers ultimately can make a positive difference on the lives of their students.

It is known that teaching methods have a profound impact on teacher practices and behaviors, all the methods identified and studied are critical to better learning outcomes, but their effectiveness differ. This suggests that teachers should apply a variety of methods. Castilow (2004) demonstrates that how the teaching techniques are applied is very important because teaching methods are purely pristine, and packed with pedagogical power that is generic in nature. The author further asserts that the techniques can be applied to a wide variety of circumstances. For instance, learning of mathematics can be facilitated when the instructor demonstrates what is to be learned rather than merely telling what is to be learned. In the Ugandan context, and in practice, there seems to be limited application of child-centred methods, which require a lot of preparation on the part of the teacher.

Richardson (1996) indicates that methods of teaching are a subset of a group of constructs that name, define, and describe the structure and content of mental states that are thought to drive a person's actions. With effective teaching methods, children can easily understand various mathematical operations being taught in class. This plays a key role towards improving children's performance in same subject.

Carlson and Hastie (1997) urge that teachers' and students' agendas need to overlap and be in support of each other, and the end result would be a positive learning environment. This way of learning is a challenging way of constructing freedom in the classroom. The strength in a constructivist based classroom is in the lessons and activities of children. Zimmerman (1990) and Claxton (1996) believe that the learning

process should be organized in such a way that children take responsibility for their own learning. Teachers should teach children to be independent and able to make decisions about their learning ability and then plan accordingly. Richardson (1999) states student-directed learning and curricula have become focal points for all constructivist-based teaching and learning methods. However, little is known on whether teaching methods affects pupils' performance in Mathematics. Thus, the current study will expound it so as to come up with sound information on the factors influencing pre-school children's performance in mathematics in Dagoreti District in Nairobi County, Kenya.

2.7 Theoretical Framework

This section reviews some of the theories that have been experimented in the past with relation to learning. This study examines two main theories, namely social development theories and Vygotsky's theory.

2.7.1 Social Learning Theory

The theory of social learning was developed by a psychologist Albert Bandura who discovered the importance of behavioral models. Bandura says individuals can learn novel behavior without any practice or direct reinforcement for its consequences. The action will lie dormant, available for future use, as long as they remember it.

Memory is a cognitive function, so Bandura's theory moves beyond mere behaviorism. Like most other communication theorists, he believes that the ability to use symbols sets humans apart from the limited stimulus-response world of animals. "Humans don't just respond to stimuli, they interpret them.

Bandura observes that individuals store events in two ways-through visual images and through verbal codes. Bandura is convinced, however, that major gains in vicarious learning come when the observer develops a conscious awareness of the technique involved. These insights are stored verbally.

Although Bandura did not suggest that the three factors in the triadic model make equal contributions to behavior. The influence of behavior, environment and person depends on which factor is strongest at any particular moment; this theory finds its application to this study on the influence of parental care on preschool children academic performance. This is due to a fact that it provides information on the importance of observational learning, imitation and modeling. His theory integrates a continuous interaction between behaviors, personal factors - including cognition - and the environment. Thus, this study finds the application of social learning theory on effect of teacher characteristics on Pre-school children's performance in Mathematics more relevant.

2.7.2 Vygotsky's Theory

Vygotsky's theory is widely used in education especially in preschool institutions. According to this theory, children construct knowledge and do not passively reproduce what is presented to them. The theory provides that learning is much more than the mirroring; it always involves learners creating their own representations of new information. For Vygotsky, knowledge is not so much constructed as co-constructed; learning always involves more than one human. Vygotsky developed his own materials to look how children come to understand the world around them. Vygotsky created the lock test to study how children develop the ability to discover categories.

When the teacher structures the activity differently, the same child can perform at a higher level, counting meaningfully to seventeen without missing any bears. Assistance taken from parents'; teachers' hints, clues, or setting up a situation so a higher level of the outcome can occur. This higher level which the child is currently capable of attaining only with help is called the level of assisted performance. The area between the level of independent performance and the level of assisted performance is the Zone of Proximal Development. It is here where the teacher must focus attention. Not only the assistance used by the child needs to be intentionally provided by an adult, Vygotsky believed that a child can perform on a higher level to any type of the social interaction, interaction with peers as equals, with imaginary partners, or with children of other developmental levels. The zone is not static. It shifts as a child could aggressively attain a higher level. With each shift, the child is capable of learning more complex concepts and skills.

This study finds the application of Vygotsky's theory on the effect of teacher characteristics on Pre-school children's performance in Mathematics. This is due to a fact that its tenets which provide that children can perform on a higher level to any type of the social interaction, interaction with peers as equals, with imaginary partners, or with children of other developmental levels. Thus, the theory helps in providing solid information on the effect of teacher characteristics on Pre-school children's performance in Mathematics.

2.8 Conceptual Framework

The conceptual framework of this section shows the relationship between independent variables (teacher qualification, teacher attitude, teacher experience, teacher training) and the dependent variable (performance in Mathematics). Figure 2 shows the effect of teacher characteristics on Pre-school children's performance in Mathematics

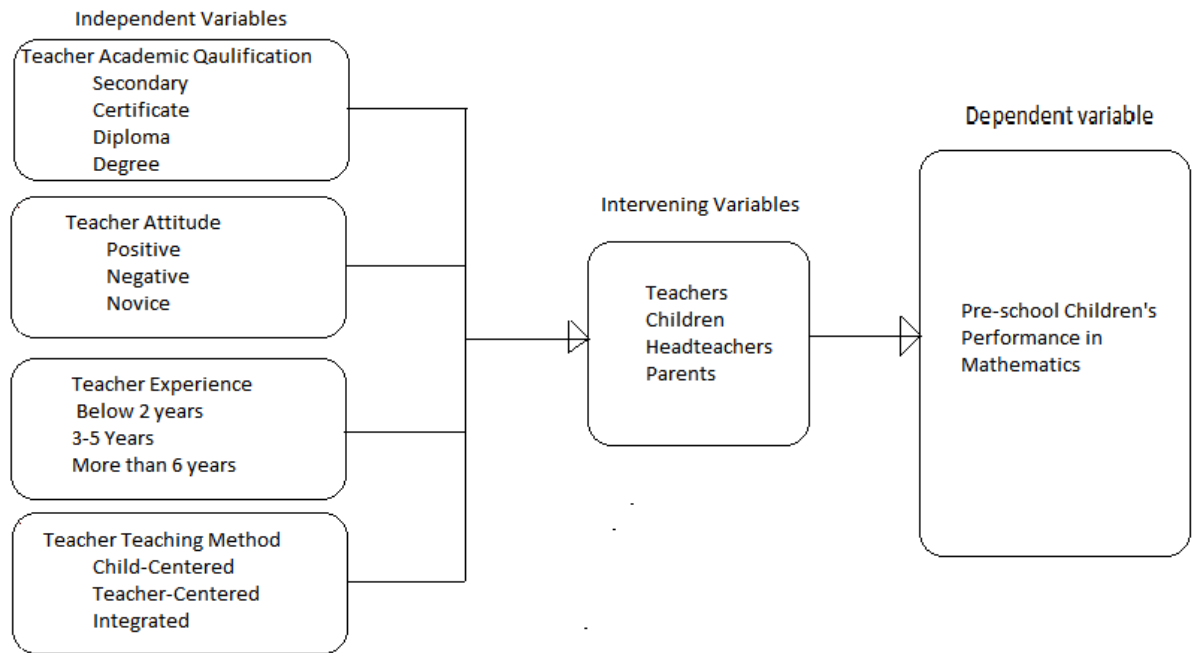


Figure 1: Effect of teachers' characteristics on children's performance.

Source: (Researcher, 2015)

From the Figure 2, it can be noted that teacher academic qualification plays a significant role on children's performance in mathematics. This is due to a fact that qualified teachers employ relevant skills and methods in teaching mathematics. This promotes learner's understanding of the concepts in the subject hence positively influencing pre-school children's performance in mathematics. Teacher attitude is also one of teacher characteristics that affect learners' performance in mathematics. Teachers with positive attitude towards the subject as well as their class exhibit full commitment towards their work. This means that they make sure that all pupils

understand what they are teaching in the classroom hence enhancing pre-school children's performance in mathematics.

Regarding teaching experience, the duration/experience of a given teacher might influence the effectiveness of teaching in class. Teachers who are highly experienced in the subject area teach effectively hence influencing preschool children's performance in mathematics. Finally, teacher teaching method forms a significant factor on learner's understanding of the content being taught as well as learners performance in given subject area.

2.9 Summary

From the literature review a number of studies have been carried out in the areas of preschool academic performance as well as performance in mathematics. Most of the studies reviewed in the literature have addressed on the factors such as school administration and performance of children, teacher and pupils and adequacy of education resources as to influence the academic performance of preschool children. However, most of these studies that have been reviewed none has been carried out in Nairobi County and with specific context of Dagoretti District. Moreover, for those that have happened to be carried out in Kenya none has addressed on the effect of teacher characteristics on Pre-school children's performance in Mathematics in Dagoretti District in Nairobi County, Kenya. In addition, the studies were also wider in scope. Hence there is need for this study to be carried out on the effect of teacher characteristics on Pre-school children's performance in Mathematics in Dagoretti District in Nairobi County, Kenya.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter presents research design and methodology used in carrying out the study on the effect of teacher characteristics on Pre-school children's performance in Mathematics. It involves the following sections: research design, target population, sample and sampling procedure, description of research instruments, validity and reliability of instruments, data collection procedure and data analysis techniques.

3.2 Research Design

According to Orodho, (2003), a research design is referred to as a plan, structure and strategy of investigation to obtain answers to research questions and control variance. It can also be referred to as the conceptual structure within which research is conducted (Kothari, 2003).

This study adopted a survey research design. According to Cohen and Lawrence (1995), survey research designs gather data at a particular point in time with the intention of describing the nature of existing conditions or identifying standards against which existing conditions can be compared to determine relationships that exist between specific events. In addition, survey studies are normally intended to describe and report the way things are. They are characterized by systematic collection of data from members of a given population through questionnaires and interviews. Thus, this design therefore fitted well with the intention of this study, which sought to assess the effect of teacher characteristics on Pre-school children's performance in Mathematics in Dagoretti District in Nairobi County, Kenya.

3.3 Target Population

A population is any set of persons or objects that possesses at least one common characteristic (Busha and Harter, 1980). Any scientific research targets a given population through which interview, questionnaires are distributed to as to get the desired or the required data for analysis. The targeted population in this study consists of all Pre-schools, teachers and school administrators in the District. This population was expected to provide crucial information related to the effect of teacher characteristics on Pre-school children's performance in Mathematics in Dagoretti District in Nairobi County, Kenya.

3.4 Sample Size and Sampling Procedure

Sampling refers to a procedure, process or technique of choosing a sub-group from a population to participate in the study. It is the process of selecting a number of individuals for a study in such a way that the individuals selected represent the large group from which they were selected (Ogula, 2005). In this study, simple random sampling and purposive sampling procedures were used to select Pre-schools, teachers and preschool administrators.

This study targeted all public pre-schools in the District. This District is targeted owing to wanting, academic performance of children in mathematics as indicated in the background to the study in chapter one. According to Mulusa (1994), at least 50% of the total population is representative. Thus, simple random sampling procedure was used to select 50% of the thirty Pre-schools which is fifteen Preschools.

Purposive sampling procedure was used to arrive at a representative number of preschool teachers. In this study, three pre-school teachers were purposively selected from each of the sampled pre-schools. Thus, a total of forty five preschool teachers took part in the study. Purposive sampling procedure was also used to arrive at a representative number of preschool administrators. One pre-school administrator was purposively selected from each of the sampled pre-schools. Thus, a total of fifteen preschool administrators took part in the study. In total, there were sixty respondents who took part in the study.

3.5 Description of Research Instruments

The study instruments included questionnaires for preschool teachers and interview guides for pre-school administrators. Questionnaire was used as the main instrument of data collection. Mugenda and Mugenda (1999) observe that questionnaires give detailed answers to complex problems and therefore, are most effective. The use of questionnaires was also a popular method for data collection in deduction because of the relative ease and cost-effectiveness with which they are constructed and administered. Questionnaires give a relatively objective data.

The questionnaire is structure based on the main research questions except the first section, which covers demographic characteristics of the respondents. Other sections are presented based on the research objectives. Moreover, within the questionnaires, Likert scale was used to measure the attitude of respondents on various elements. Using the Likert scales, the attitude was measured using the responses such as strongly agree (SA), agree (A), disagree (D), undecided (UD) and strongly disagree (SD).

On the other hand, Interview method on the other hand has its strength. It was used in this study since it generally yields highest cooperation and lowest refusal rates, offers high response quality and takes advantage of interviewer presence and its multi-method data collection that is it combines questioning, cross-examination, probing techniques (Owens, 2002). This method was expected to collect in-depth data from preschool administrators regarding the effect of teacher characteristics on Pre-school children's performance in Mathematics in Dagoretti District in Nairobi County, Kenya.

3.6 Validity and Reliability of Research Instruments

3.6.1 Validity

Validity refers to the degree to which evidence and theory support the interpretation of test scores entailed by use of tests. The validity of instrument is the extent to which it does measure what it is supposed to measure (Orodho, 2005). According to Mugenda and Mugenda (1999), validity is the accuracy and meaningfulness of inferences, which are based on the research results. It is the degree to which results obtained from the analysis of the data actually represent the variables of the study.

The researcher validated the research instruments in terms of content and face validity. The content related technique was used to measure the degree to which the question items reflect the specific areas covered. The validation of the questionnaires and interview schedule will be done through the following ways: the researcher was request research experts, professionals of education and administration to review the items on the instrument to determine whether the set of items accurately represent the variables under study. They were asked to read, judge, make recommendations and give feed back to the researcher.

Face validity concerns the extent to which the researcher judges that the instrument is appropriate. The researcher consulted research experts to verify whether the instruments are valid. After the construction of the questionnaires and interview schedule the researcher was review items with the help of supervisors, lecturers and scrutiny of peers. The suggestions given were incorporated to validate the instruments.

3.6.2 Reliability

The term reliability commonly refers to the ability of a research instrument to consistently measure characteristics of interest over time. It is the degree to which a research instrument yields consistent results or data after repeated trials. The achievement of the same results from a single instrument administered twice may lead to the conclusions of the instrument being considered as reliable (Mugenda & Mugenda, 2003).

Moreover, the error may arise at the time of data collection and may be due to inaccuracy by the researcher or inaccuracy by the instrument. Reliability is concerned with consistency, dependability or stability of a test (Nachmias, 1996). The researcher measured the reliability of the instruments to determine their consistency in testing what they were intended to measure. According to Kunbizynard & Burich (1993), a reliable instrument should have a correlation coefficient of 0.95. Though this method of reliability takes time since a duration is required before a second test is administered it is easy to conduct and accurate to measure the reliability index.

3.7 Data Collection Procedure

Upon getting cleared from the institution by the supervisor and the District Education Officer, the researcher then proceeded to the ministry of education science and technology to seek for a research permit. The researcher then proceeded to the field for data collection on the factors affecting the mastery of motor skills among pre-school children. The researcher will first fix an appointment with the administrators of the selected pre-schools in the area of study. This will be done with an aim of getting introduced to the school fraternity. Once this is done, the researcher will proceed to distribute the questionnaires and interview guides to all the selected respondents. The researcher in person made personal follow up to ensure that the entire questionnaires are collected back. The collected data was used to aid in the process of data analysis.

3.8 Data Analysis Methods and Procedure

Data analysis is a process of summarizing the information gathered so as to give meaning to such data. The collected data was analyzed using both quantitative and qualitative data analysis approaches. The data analysis started by editing of the information obtained from the participants. The responses in the questionnaires were assigned numerical values. The coding of categorized data was done according to the various themes stipulated by the question items. Data was then put in tabular forms for analysis for inferential statistics by the help of Statistical Package for Social Sciences (SPSS).

Qualitative data analysis approach was used to analyze data which was collected using interview method from the preschool administrators. This involved grouping the responses according to their respective themes. The themes were basically fall under respective research areas which are informed by research objectives. The key

responses based on respective themes were cited verbatim. These, along with quantitative data, formed the basis of discussion in the light of the available literature. The analyzed data was presented in tables of frequency and percentage distribution, bar graphs and pie charts.

Qualitative approach on the other hand was used to present qualitative data obtained from the interview guides. The data was categorized according to the themes that emerged from the research questions and all the responses were analyzed in a narrative form.

3.9 Ethical Concerns

The researcher carried the research being guided by the ethical principles. This was done by keeping confidentiality of any information given by the respondents since their names were not required in the study. The researcher also used consent from the administration and pre-school teachers to interview children and did not force the children. In brief the research was guided by personal integrity and research ethics to carry out the research. The researcher also made sure that the questions address an ethically sound issues as well as meeting the requirements of the institution. The researcher obtained permission from relevant educational officers. Also the methods appropriate and suitable for intended age range, ability of the participants were highly put into consideration.

CHAPTER FOUR

RESULTS AND PRESENTATION OF THE FINDINGS

4.1 Introduction

This chapter presents results and analysis on the effect of teacher characteristics on Pre-school children's performance in Mathematics in Dagoretti District in Nairobi County, Kenya. The data was analyzed with the help of a computer program, SPSS version 22.0. 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. Other sections are presented based on the following research objectives: influence of teacher qualification, teacher attitude, teacher experience and teacher training on Pre-school children's performance in Mathematics.

4.2 Questionnaire Return Rate

The study used a sample of forty five teachers. Out this sample, forty five questionnaires were administered to all of them. Out of this, the questionnaire return rate was 100%. This shows that all respondents were cooperative in the study.

4.3 Background Information

The study considered background characteristics of all those who participated in the study. These included the pre-school teachers and administrators 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.

4.3.1 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 2 shows the distribution of teachers by their gender.

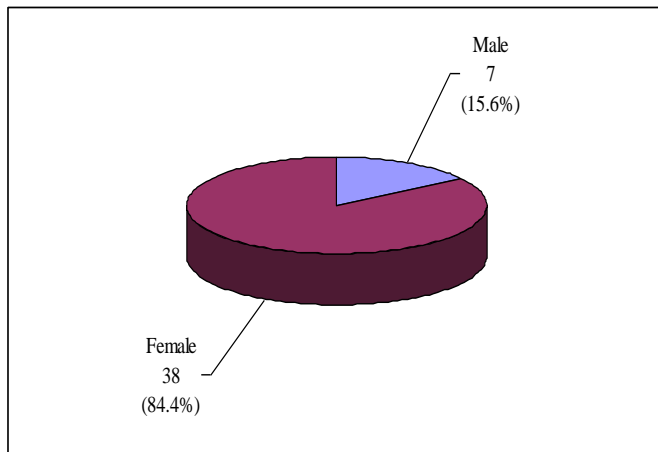


Figure 2: Distribution of Teachers by Gender

When asked to indicate their gender, an overwhelming majority, (84.4%) of the teachers who took part in the study were female. Only 15.6% of them were male teachers. This shows female teachers dominate in pre-school sector because the sector comprises young children who need a lot of care. The female teachers are patient with the young children who need a lot of attention. As they provide environment, similar to the one the children have at home with their mothers.

Level of Education

Teachers were further asked to indicate their highest level of education. This was categorized into; certificate, diploma and degree. Figure 3 shows the distribution of teachers' level of education.

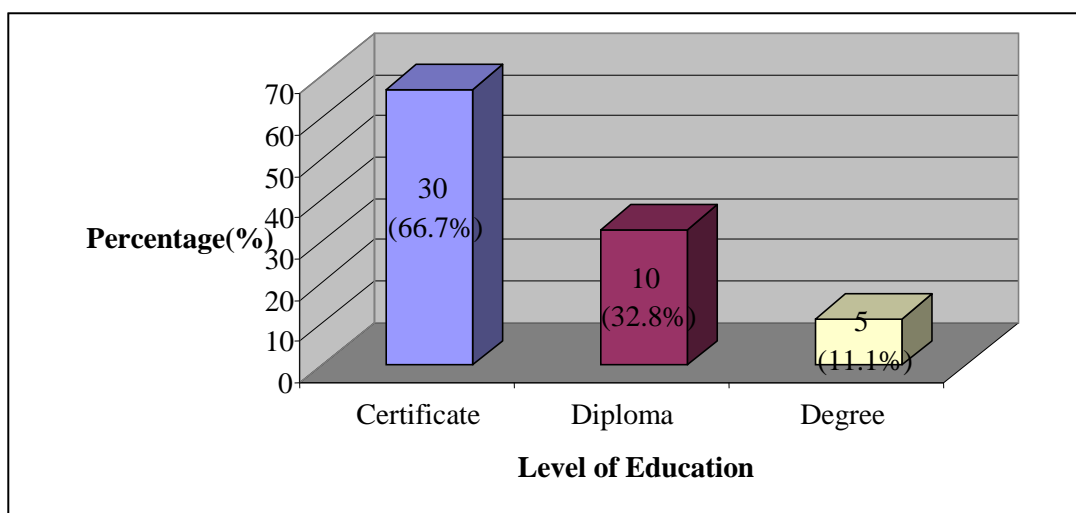


Figure 3: Distribution of Teachers' Level of Education

Majority of teachers, (66.7%) who took part in the study had a certificate level of Education Slightly less than a third of them, (32.8%) had a diploma level of education. Only 11.1% had a degree. This shows that the pre-school sector comprises of educated teaching staff. The teachers' academic level has effect on teaching in that it contributes to how well the teacher is able to prepare him/herself and apply the right methods in teaching children.

The study sought to examine the extent to teachers' qualification affects preschool children's performance in mathematics. Figure 4 shows the distribution of responses on the extent to teachers' qualification affects preschool children's performance in mathematics.

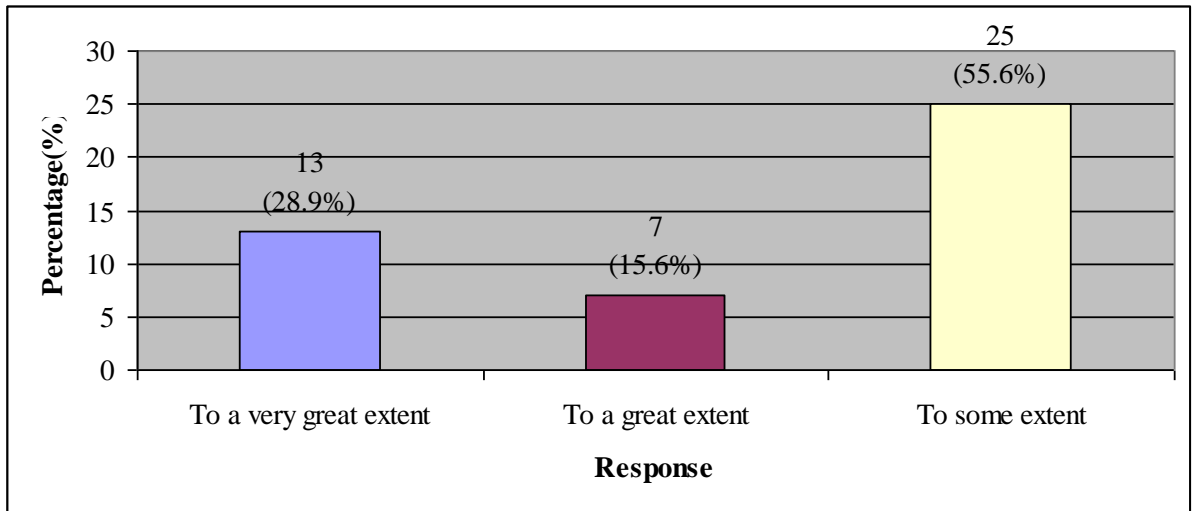


Figure 4: Responses on Academic Qualification

When asked to indicate the extent to which teachers' academic qualification affects preschool children's performance in mathematics, majority of the teachers strongly agreed with the statement that it affects to a great extent. This was supported by majority of the school administrators who strongly agreed with the statement that it affects to a great extent. The teachers' academic qualification is important mainly when it contributes to better results.

The study sought to know various issues concerning the effect of teacher characteristics on Pre-school children's performance in Mathematics. Table 2 shows the distribution of the respondents' responses on various issues concerning teacher characteristics on Pre-school children's performance in Mathematics.

Table 2: Responses on Teacher Characteristics on Children's performance

Statement	A		SA		NS	D	SD
	F	%	F	%	F %	F%	F%
I always prepare myself before mathematics lesson	20	44.4	25	55.6	-	-	-
I love my pupils since we interact well in class during mathematic lesson	33	73.3	12	26.7	-	-	-
I always review the previous topic before starting the lesson of the day	32	71.1	13	28.9	-	-	-
My classroom is always active and pupils interact with me freely in the class during mathematics lessons	38	84.4	7	15.6	-	-	-
I always encourage my pupils to have a positive attitude towards mathematics	32	71.1	13	28.9	-	-	-
I always ensure that all pupils get the content of what I teach at the end my lesson	33	73.3	12	26.7	-	-	-
I ensure that all pupils are active in class by asking them questions	32	71.1	13	28.9	-	-	-
My pupils never feel discouraged of my teaching methodologies	32	71.1	13	28.9	-	-	-
I feel bad when I fail to teach my pupils	32	71.1	13	28.9	-	-	-
I always create time to compensate for the time wasted in teaching whenever I fail to teach my pupils	32	71.1	13	28.9	-	-	-

Majority of the teachers, (55.6%) strongly agreed that they always prepare themselves before mathematics lesson. This was supported by the remaining percentage, 44.4% who agreed with the statement. Majority of the teachers, (73.3%) strongly agreed that they love their pupils because they interact well in class during mathematic lesson. This was supported by slightly more than a quarter of them, (25.7%) who agreed with the statement.

Most of the teachers, (71.1%) agreed that they always review the previous topic before starting the lesson of the day. This was supported by the remaining percentage, 28.9% who strongly agreed with the statement. An overwhelming majority of the teachers who took part in the study, (84.4%) agreed that their classrooms were always active and pupils interacted with them freely in the class during mathematics lessons. This was also supported by 15.6 of the remaining teachers who strongly agreed with the statement.

Generally of the teachers, (71.1%) agreed that they always encourage their pupils to have a positive attitude towards mathematics. This was supported by the remaining percentage, 28.9% who strongly agreed with the statement. Regarding whether teachers always ensured that all pupils get the content of what they teach at the end my lesson, majority of the teachers, (73.3%) supported the statement. This was also supported by 26.7% of them who strongly agreed to the statement.

Majority of the teachers, (71.1%) agreed that they ensured that all pupils were active in class by asking them questions. This was supported by the remaining percentage, 28.9% who strongly agreed with the statement regarding whether pupils never feel discouraged of their teaching methodologies, majority of the teachers, (71.1%) agreed with the statement. This was also supported by 26.7% of them who strongly agreed to the statement.

When asked to indicate whether, they felt bad when they failed to teach pupils, majority of the teachers, (71.1%) agreed with the statement. This was also supported by 26.7% of them who strongly agreed to the statement. Majority of the teachers, (71.1%) agreed that they always create time to compensate for the time wasted in

teaching whenever they failed to teach pupils. This was supported by the remaining percentage, 28.9% who strongly agreed with the statement.

Furthermore, the study sought to find out the extent to which teachers' attitude affects preschool children's performance in mathematics. Figure 5 shows the distribution of the respondents' responses on the extent to which teachers' attitude affects preschool children's performance in mathematics.

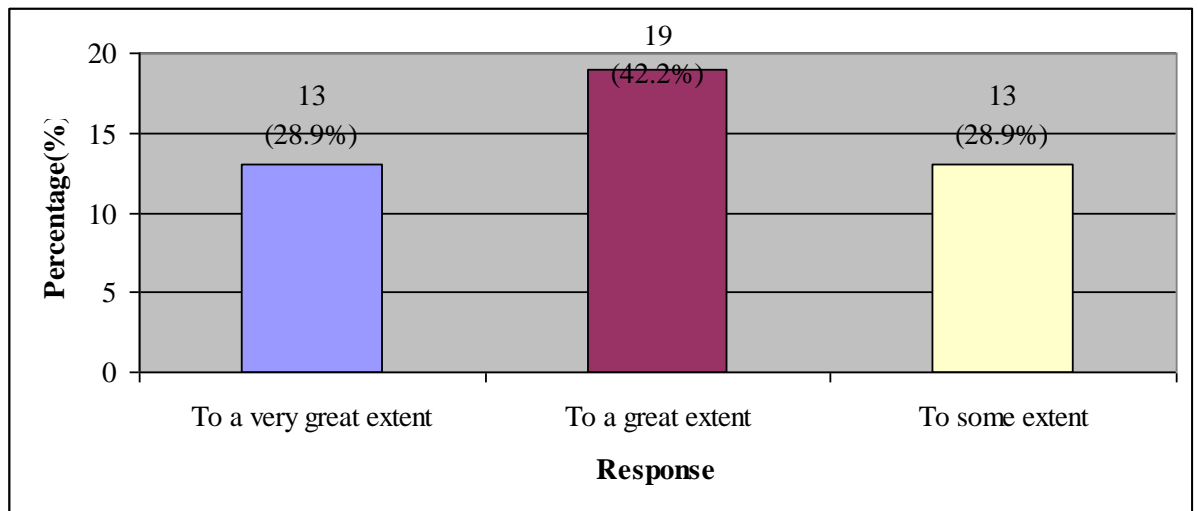


Figure 5: Responses on teachers' attitude effects on performance

Majority of the teachers, (42.2%) who took part in the study agreed that teachers' attitude affects preschool children's performance in mathematics to a great extent. The remaining percentage of them, 57.8% either agreed that it affects preschool children's performance in mathematics either to a very great to some extent.

Teachers were further asked to indicate their teaching experiences. This was categorized into; 2 years and below, 3-6 years, 7-10 years, and 11 years and above. Figure 6 shows the distribution of teachers by their teaching experience.

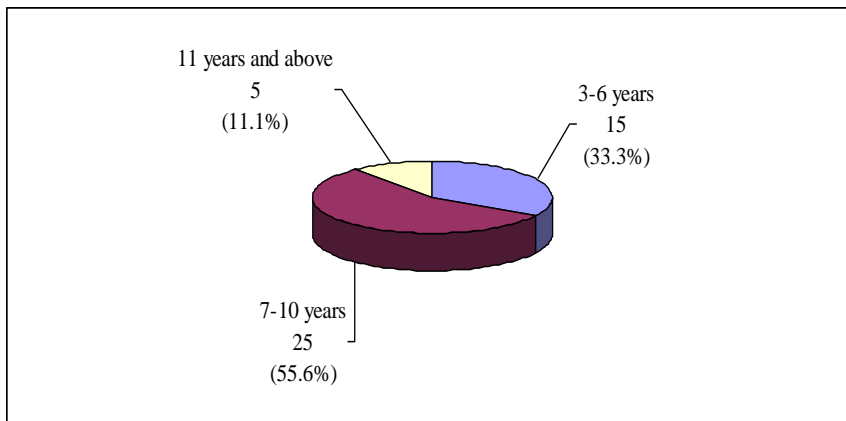


Figure 6: Distribution of Teachers by Teaching Experience

Majority of the teachers, (55.6%) who took part in the study had a teaching experience of between 7-10 years. Slightly more than a third of them, (33.3%) had a teaching experience of between 3-6 years. Only 11.1% of them had a teaching experience of 11 years and above. The study sought to understand the period of which the teachers had stayed in their respective schools. This was categorized into; 2 years and below, 3-5 years, 6-10 years, 11-15 years, 16-20 years, 21 years and above. Figure 7 shows the distribution of teachers' period of stay in their respective schools.

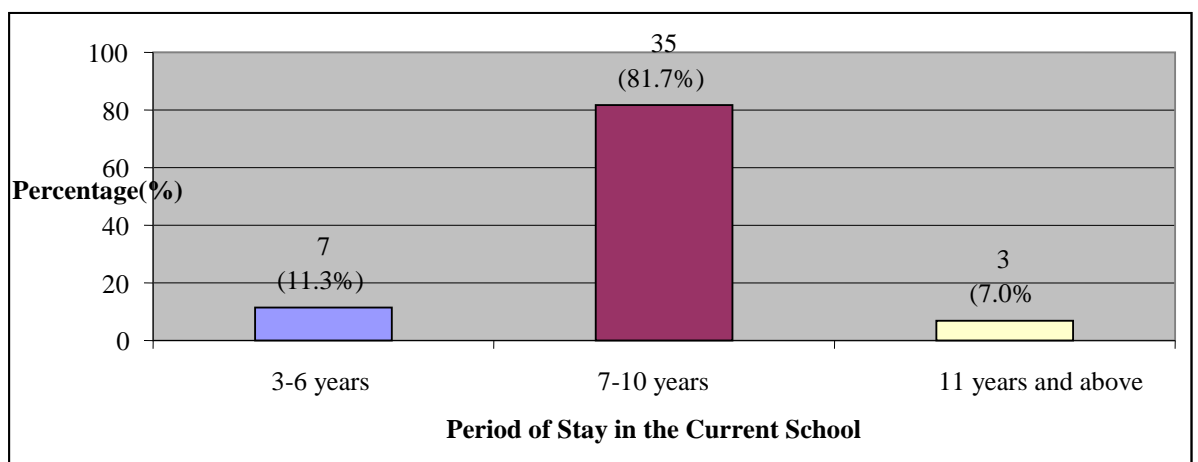


Figure 7: Distribution of Teachers' Period of Stay in Respective Schools

When asked to indicate their period of stay in the current school, majority of teachers, (81.7%) who took part in the study had a stay period of between 7-10 years. Less than a quarter of them, (18.3%) had stayed in their respective schools within a period of either 3- 6 years or above 11 years. The study sought to find out the extent to which teachers' experience affects preschool children's performance in mathematics.

Figure 8 shows the distribution of the respondents' responses on the extent to which teachers' experience affects preschool children's performance in mathematics.

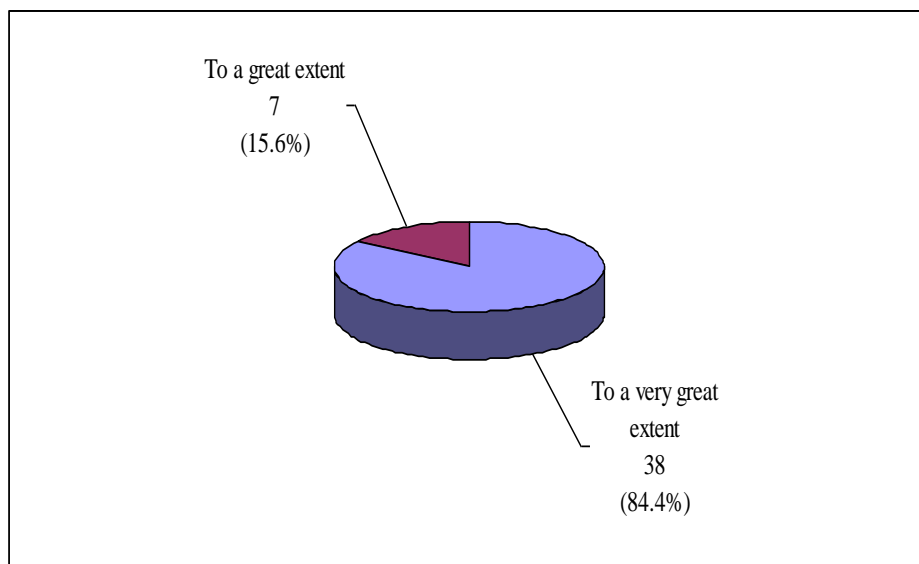


Figure 8: Responses on the Extent to which Teachers' Experience Affects Children's Performance

Majority of the teachers, (84.4%) who took part in the study agreed that teachers' experience affects preschool children's performance in mathematics to a very great extent. The remaining percentage, 15.6% either agreed that it affects preschool children's performance in mathematics to a great extent. When asked to indicate the extent to which teachers' experience affects preschool children's performance in mathematics, all of the school administrators strongly agreed with the statement that it affects to a great extent.

The respondents were asked to indicate the method of teaching they used in their classes. Figure 9 shows the distribution of responses on the method of teaching they used in their classes.

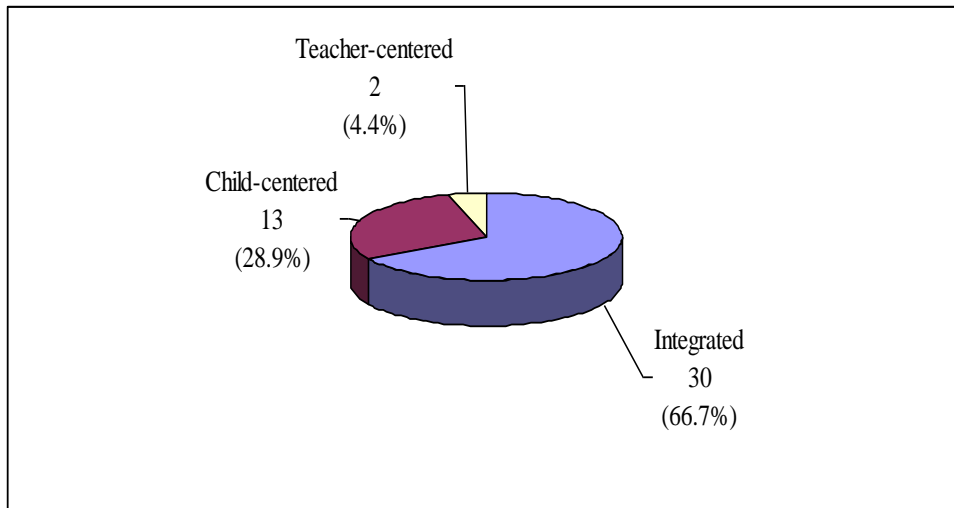


Figure 9: Distribution of responses on the Method of Teaching Teachers Use in Classes

Majority of the teachers, (66.7%) indicated that use integrated method of teaching in their classes. More than a quarter of them, 28.9% were on the view that they use child centered method for teaching in their classes. The remaining percentage of them use teacher centered method. The study sought to examine the effectiveness of the teaching method indicated employed by teachers. Figure 10 shows the distribution of responses on the effectiveness of the teaching method indicated employed by teachers.

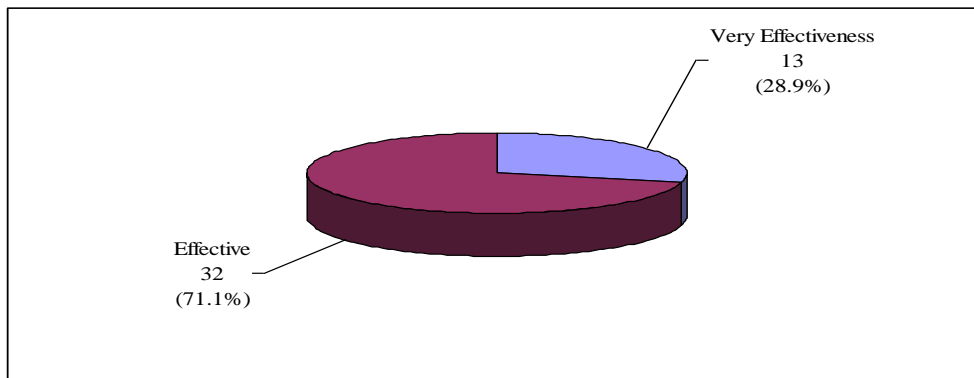


Figure 10: Responses on the Effectiveness of the Teaching Method

Majority of the teachers, (71.1%) agreed that the teaching method they used in their classes was effective. This was supported by the remaining percentage, 28.9% indicated that it was very effective. This was supported by the majority of the school administrators who who observed that teaching method they used in their classes was effective.

The respondents were asked to indicate how often they employed the method of teaching in their classes. Figure 11 shows the distribution of responses on how often they employed the method of teaching in their classes.

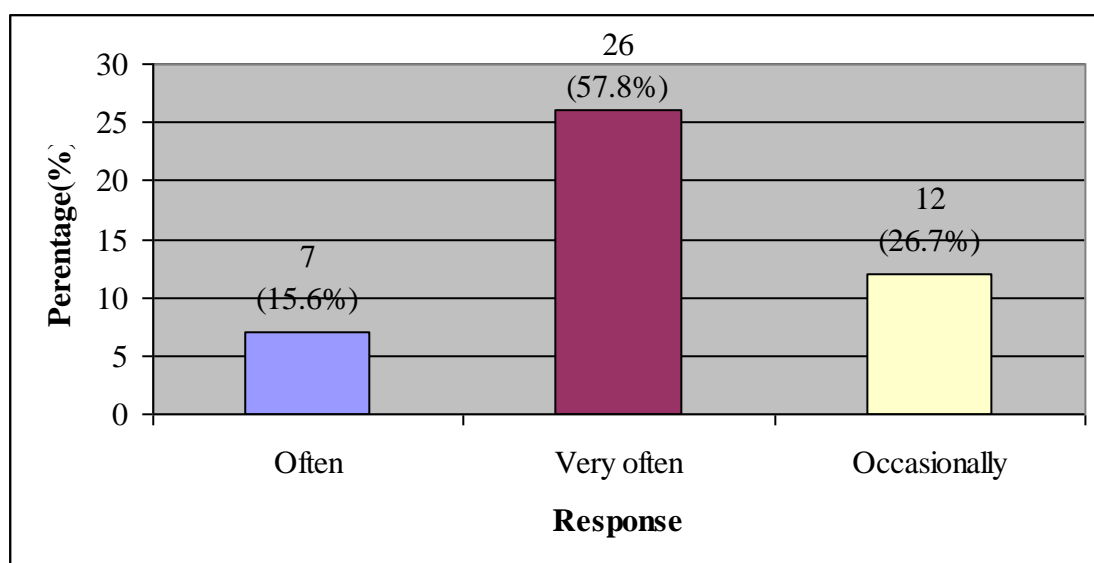


Figure 11: Responses on Method of Teaching

Majority of teachers, (57.8%) who took part in the study employed the method of teaching in their classes very often. Slightly more than a quarter of them, (26.7%) used the method occasionally. The remaining percentage of them, (15.6%) employed the method of teaching in their classes often.

The study sought to examine the extent to which various methods of teaching effect of teacher characteristics on Pre-school children's performance in Mathematics. Table 3 shows the distribution of the respondents' responses on the extent to which various methods of teaching effect of teacher characteristics on Pre-school children's performance in Mathematics.

Table 3: Responses on Effect of Teaching Methods on Performance

Statement	To a Very Great Extent		To a great extent		To some extent		Not at all	
	F	%	F	%	F	%	F	%
Class-grouping	26	57.8	-	-	12	26.7	7	15.6
Pupils read aloud, one by one	-	-	33	73.3	12	26.7	-	-
Teacher Demonstration	7	15.6	12	26.7	26	57.8	-	-
Child centered method	13	28.9	13	28.9	19	42.2	-	-
Question and Answer	12	26.7	33	73.3	-	-	-	-

Majority of the teachers who took part in the study, (57.8%) indicated that class-grouping method of teaching affects Pre-school children's performance in Mathematics to a very great extent. This was supported by slightly more than a quarter of them, (26.7%) who strongly agreed that it affects Pre-school children's performance in Mathematics to some extent. Only 15.6% of them indicated otherwise.

Majority of the teachers, (73.3%) indicated that pupils' reading aloud was one of the teaching methods that affect Pre-school children's performance in Mathematics to a great extent. This was supported by slightly more than a quarter of them, (26.7%) who strongly agreed that it affects Pre-school children's performance in Mathematics to some extent. This was supported by the school administrators who took part in the study who observed that pupils' reading aloud was one of the teaching methods that affect Pre-school children's performance in Mathematics to a great extent.

Regarding teacher demonstration as a method of teaching, majority of the teachers who took part in the study, (57.8%) were in agreement it affects Pre-school children's performance in Mathematics to some extent. This was supported by the remaining percentage of them, (32.3%) who indicated that it affects either to a great or to a very great extent. Majority of the teachers, (57.9%) indicated that child centered method was one of the teaching method that affects Pre-school children's performance in Mathematics either to a very or to a great extent. This was supported by the remaining percentage of them, (42.1%) who indicated that the method affects Pre-school children's performance in Mathematics to some extent.

Majority of the teachers, (73.3%) indicated that question and answer was one of the teaching methods that affect Pre-school children's performance in Mathematics to a great extent. This was supported by slightly more than a quarter of them, (26.7%) who strongly agreed that it affects Pre-school children's performance in Mathematics to some extent.

The study sought to examine the extent to which teachers' training affects preschool children's performance in mathematics. Figure 12 shows the distribution of the respondents' responses on the extent to which teachers' training affects preschool children's performance in mathematics.

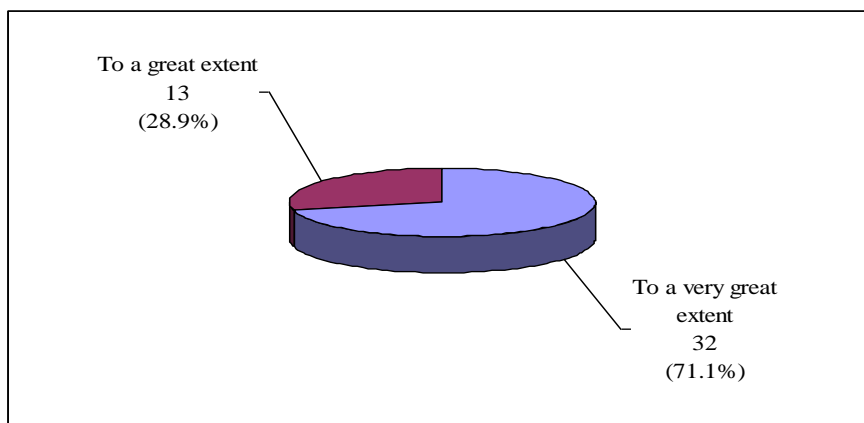


Figure 12: Responses on Teachers' Training Effects on Performance

Majority of the teachers, (71.1%) who took part in the study agreed that teachers' training affects preschool children's performance in mathematics to a very great extent. The remaining percentage of them, 28.9% agreed that it affects preschool children's performance in mathematics to a great extent.

4.4 Discussion

This section presents the discussion of the findings based on the research objectives.

4.4.1 The Effect of Teachers Academic Qualifications Level on Performance

Majority of the teachers, (55.6%) indicated that teacher academic qualification affects pre-school children's performance in mathematics to some extent. This was supported by the remaining percentage of them who indicated that it affects either to a very great or to a great extent. This finding is almost in line with a study carried out by Gordon (2006) conducted a study to examine the steps districts take and the challenges they face in assessing teacher effectiveness as a precursor to providing effective teachers for all learners USA which found that learners who had teachers in the top quartile of effectiveness gained 10 achievement percentile points relative to similar learners who had teachers in the bottom quartile of effectiveness.

4.4.2 The Effect of Teacher Attitude on Children's Performance in Mathematics

According to the findings of the study, it was revealed that majority of the teachers, (42.2%) who took part in the study agreed that teachers' attitude affects preschool children's performance in mathematics to a great extent. Yucel (2007) who carried out a study on the effect of teachers' attitudes and behaviour on students' academic success in Turkey, also found that learners perceive teachers' way of classroom management, in-class and out-of-class attitudes, and teaching methods and strategies had positive or negative impacts on their academic success and participation in lessons.

4.4.3 The Effect of Teachers' Experience on Children's Performance.

From the study, it was revealed that majority of the teachers, (84.4%) who took part in the study agreed that teachers' experience affects preschool children's performance in mathematics to a very great extent. This is in line with the study carried out by Boyd *et al.* (2007) on teacher experience and learners performance in North Carolina. The study established that teacher experience or more accurately teacher inexperience is systematically related to teacher productivity, questions surrounding the distribution of inexperienced teachers have policy significance. He observed that teachers with three or fewer years of experience (those shown to be less effective, on average) are more likely to be teaching in high-poverty schools.

4.4.4 Effect of Teachers' Method on Children's Performance

The effective methods and actions employed by teachers ultimately can make a positive difference on the lives of pre-school children. The study found that majority of the teachers, (71.1%) who took part in the study agreed that teachers' training affects preschool children's performance in mathematics to a very great extent. In accordance to a study carried out by Hastie (1997), teachers' and students' agendas need to overlap and be in support of each other, and the end result would be a positive learning environment. This is also related to Zimmerman (1990) and Claxton (1996) who believed that the learning process should be organized in such a way that children take responsibility for their learning.

It was also found that majority of the teachers, (57.8%) were in agreement that teacher demonstration affects Pre-school children's performance in Mathematics to some extent. This is almost in line with Richardson (1999) who observed that teachers should teach children to be independent and able to make decisions about their

learning ability and then plan accordingly. Richardson (1999) also stated that student-directed learning and curricula have become focal points for all constructivist-based teaching and learning methods. However, little is known on whether teaching methods affects pupils' performance in Mathematics.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents 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 respectively.

5.2 Summary

The main purpose of this study was to examine the effect of teacher characteristics on Pre-school children's performance in Mathematics in Dagoretti District in Nairobi County, Kenya. The study was guided by the following research objectives: Teacher academic qualification and Pre-school children's performance in Mathematics, teacher attitude and Pre-school children's performance in Mathematics, teacher experience and Pre-school children's performance in Mathematics and teacher training and Pre-school children's performance in Mathematics. The study employed a survey research design consisting of all public Pre-schools, teachers and school administrators in the District. A sample of fifteen Pre-schools was obtained where three pre-school teachers were purposively selected from each of the sampled pre-schools. Thus, a total of forty five preschool teachers and fifteen preschool administrators took part in the study. Data was collected through questionnaires for teachers and interview guides for pre-school administrators. Data was collected to answer questions in the four thematic areas; the effect of teacher academic qualification, teacher attitude, teacher experience, teacher professional training on Pre-school children's performance in Mathematics. Data was analyzed using both

descriptive statistics and narrative techniques. From the analysis, the study revealed that teachers' characteristics play a key role on Pre-school children's performance in Mathematics.

5.3 Conclusions

From the findings of this study, it can be concluded that teachers' characteristics affects preschool children performance in mathematics to a great extent. It is quite clear that teacher academic qualification, teacher attitude, teacher experience, teacher professional training are major teachers' characteristics that affects preschool children performance in mathematics in Dagoretti District in Nairobi County.

5.4 Recommendations

On the basis of the findings of this study, the following recommendations were made:

1. Teachers should employ the best teaching method that can promote children's understanding of the subject (Mathematics) being taught. In addition, they also need to ensure that learners take homework, keeping track of their children's academic performance as well as motivating children to work hard among others.
2. The government through the ministry of Education should establish or if it has been established should make functional, centre for the provision of locally developed teaching aids and its function and should include the evaluation and recommendations on specific and relevant instructional materials for pre-schools in the District.
3. The government, Non-Governmental Organizations and the school administration boards should hold seminars and workshops for all the

preschool schools teachers so as to be informed on the importance and role played by the teachers in such schools.

4. Based on the findings of the study, the government is encouraged to providing more financial support to preschools in order to provide sufficient teaching/learning resources as well as the basic infrastructures like classrooms so as to reduce the burden for teachers.
5. All the concerned stakeholders should work towards promoting positive relationships between preschool teachers and children. This can play a significant role in enhancing preschool children' performance in mathematics.

5.5 Suggestions for further study

From the findings of this study, it is recommended that other studies may be carried out on the effect of school related factors on preschool children's performance in mathematics in the same District.

REFERENCES

- Agyemang, D. K. (1993). *Sociology of education for African students*. Accra: Black
- Angrist, J.D. and Lavy, V. (1998). *Does Teacher Training Affect Pupil Learning?*
- Asiago, M. O. (2010). *Effect of inquiry-based instruction on pre-school children's achievement in Science in Dagoretti Division, Nairobi Kenya*. University of Nairobi.
- Bodenhause, H.(2006). *The Narrowing Gap in New York City Teacher Qualifications and Its Implications for Student Achievement in High-Poverty Schools.*" CALDER Working Paper 10.
- Carlson, C. and Hastie, L. (1997). *Teaching Math's in primary schools: What Knowledge do.*
- Clarke, J. (2001). Teachers, beliefs, and knowledge. In D. C. Berliner & R. C. Calfee (Eds.) *Care and Education in Kenya*. Paper prepared for the EFA Forum 1993, New Delhi. Retrieved from <http://www.ecdgroup.com/download/>
- Clotfelter, Charles T., Helen F. Ladd, Jacob L. Vigdor, and Justin Wheeler. (2007). *High-Poverty Schools and the Distribution of Teachers and Principals*. CALDER Working Paper 1. Washington, DC: The Urban Institute education teachers. Paper presented at the annual meeting of the American Educational. Van Nostrand Company.
- Esler, W.K. and Esler, M.K. (2001). *Teaching Elementary Science: A full Spectrum Science Instruction*. (8th edition), USA

- Fisher, M. H. (2011). *Factors Influencing Stress, Burnout, and Retention of Secondary Teachers*. *Current Issues in Education*, 14(1). Retrieved from <http://cie.asu.edu/>
- Fuson, K.C. (1992). *Research on learning and teaching addition and subtraction of whole numbers*. In G. Leinhardt, R.T. Putnam, & R.A. Hattrup (Eds.), *The analysis of arithmetic for mathematics teaching*. (pp. 53-187). Hillsdale, N.J: Lawrence Erlbaum Associates Inc.
- Gakiria, M. P. (2012). *Influence of material and social reinforcers on Mathematics performance in Pre-schools in Mirangine District, Kenya*. Unpublished masters project. University of Nairobi.
- Geary, D. C. (1994). *Children's mathematical development: Research and Practical applications*. Washington, D.C: American Psychological Association.
- Gordon, C. (2006). *Teacher Quality and Equity in Educational Opportunity*.
- Handler, G. (1993). *Enhancing relationships between children and teachers*. Washington, DC: American Psychological Association. Prentice Hall. Research Association, New Orleans.
- Hanushek, E.A. (2010). *Education Production Functions: Developed Countries Evidence*, *Economics of Education* (Amsterdam: Elsevier, pp. 132-136
- Kipkorir, L. & Njenga, A. (1997). *Childhood Care and Education in Kenya*. Nairobi: Focus Publishers.

- Marble, N. and William, W. (2013). The implications of the use of electronic calculators on students performance in mathematics in secondary schools in Kenya. *African Journal of Education and Technology*. Volume 3 Number 1.
- Marks and Printy (2003). *Principal Leadership and School Performance: An Integration*.
- McGhie, W. H. (1991). Evaluating experienced teachers. *Educational Leadership*, 58(5), 48–51, p. 49
- Mugenda, O.M & Mugenda. A.G (1999). *Research methods: Quantitative and Qualitative Approaches*. Nairobi: ACTS Press.
- Mugenda, O.M & Mugenda. A.G (2003). *Research methods: Quantitative and Qualitative Approaches*. Nairobi: ACTS Press.
- Mutunga, P. & Breakell, J. (1992). *Mathematics Education*. Nairobi: General Printers Ltd
- Neagley, R. I., and Evans, N. D. (1970). *Handbook for effective supervision of New Delhi*: New Age International publisher, PP. 1-2.
- Ogula, P.A. (1998). *A Handbook on Educational Research*. Nairobi: New Kemit
- Owens L.K (2002). Introduction to Survey Research Design. Publishers *Qualitative Approaches*. Nairobi: Acts Press. Pearson: Merrill Prentice Hall Inc.
- Richardson, J. E (1992). *An Introductory History to Education*. Nairobi: Nairobi University Press.

- Sarama, J. & Clements, D. H. (2009). *Early childhood mathematics education research: Learning trajectories for young children*. New York: Routledge
- Sass, T. R. (2007). *The Determinants of Student Achievement: Different Estimates for Different Measures*. Paper presented at the first annual CALDER research conference, Washington, D.C.,
- Schmoker, M. (1999). *Results: The key to continuous school improvement*. Alexandria, VA: Association for Supervision and Curriculum Development, p. 70.
- Smylie, M. (1994). Redesigning teachers' work: Connections to the classroom. *Review of Research in Education*, 20, 129-177.
- Tucker, K. (2010). *Mathematics through play in the early years*. (2ndEdn). London: SAGE Publication Ltd.
- Varol, P. and Faran, S. (2006). *Study of student attrition in a first year Electronics Course at a Victorian Metropolitan College*, Masters Thesis. Moorabbin College of TATE.
- Vygotsky, L. S. (1978) *Mind in the society the development of higher psychological process*; Cambridge, MA: Harvard University "Press".
- Wang, M.C., Haertel, G.D., & Walberg, H.J. (1994). Educational resilience in inner cities. *Educational resilience in inner-city America: Challenges and prospects* (pp. 45-72).
- Watson, B. (2003). *The factors that affect child development at pre-school*.
www.educate.com on 17/07/07.

Yucel, G. (2007). Effects of Teachers' Attitudes and Behavior on Students' Attitudes, Behavior, and Academic Success in Turkey. *Journal Articles research reports*.

Zimmerman, L. Claxton, H. (1996). *The factors that affect child development at pre-school*.

www.educate.com on 17/07/07.

APPENDICES

Appendix I: Questionnaire for Teachers

I am a student at the University of Nairobi and am carrying out a research on the effect of teacher characteristics on Pre-school children's performance in Mathematics in Dagoretti District in Nairobi County, Kenya. I am glad to inform you that you have been selected to participate in the study. I would like to assure you that all the information you provide will be used strictly for academic purposes and your identity will be kept confidential.

SECTION A: Background Information

1. Gender

a) Male

b) Female

2. Level of Education

a) Primary

b) Secondary

c) College

b) University

Any other specify _____

Section II: The Effect of Teacher Academic Qualification on Pre-school Children Performance in Mathematics

3. What is your academic level?

a) Certificate

b) Diploma

c) Degree

Any other specify _____

4. Does your academic level have effect on teaching skill in pre-school?

a) Yes

b) No

5. To what extent do you think teachers' academic qualification affects pre-school children's performance in mathematics?

a) To a very great extent

b) To a great extent

c) To some extent

d) Not at all

d) Not sure

Section III: Teacher Attitude and Pre-school Children's Performance in Mathematics

6. Indicate whether you agree 1, Strongly Agree (SA), 2, Agree (A), 3, Not Sure (NS), 4, Strongly Disagree (SD) or 5, Disagree (D) on the extent to which the following statements.

Statement	1	2	3	4	5
I always prepare myself before mathematics lesson					
I love my pupils since we interact well in class during mathematic lesson					
I always introduce the previous topic before starting the lesson of the day					
My classroom is always active and pupils interact with me freely in the class during mathematics lessons					
I always encourage my pupils to have a positive attitude towards mathematics					
I always ensure that all pupils get the content of what I teach at the end my lesson					
I ensure that all pupils are active in class by asking them questions					
My pupils never feel discouraged of my teaching methodologies					
I feel it bad when I fail to teach my pupils					
I always create time to compensate for the time wasted in teaching whenever I fail to teach my pupils					

7. To what extent do you think teachers' attitude affects pre-school children's performance in mathematics?

- a) To a very great extent []
- b) To a great extent []
- c) To some extent []
- d) Not at all []
- d) Not sure []

Section IV: Teacher's Experience and Pre-school Children Performance in Mathematics

8. What is your teaching experience?

- a) Below 3 years []
- b) 3-6 years []
- b) 7-10 years []
- c) Above 11 years []

9. Period of teaching in the current school

- a) Less than 3 years []
- b) 3-6 years []
- c) 7-10 years []
- d) 11 years and above []

10. To what extent do you think teacher's experience influences pre-school children performance in mathematics?

- a) To a very great extent []
- b) To a great extent []
- c) To some extent []
- d) Not at all []
- d) Not sure []

Section V: Teachers' Teaching Method and Pre-school Children's Performance in mathematics

11. Do you employ any method of teaching in your class?

a) Yes []

b) No []

12. What method of teaching do you use in your class?

a) Teacher centered []

b) Child centered []

c) Integrated []

d) Any other []

13. Rate the effectiveness of the teaching method indicated above.

a) Very effective []

b) Effective []

c) Not Sure []

14. How often do you employ the above named method of teaching in your class?

a) Often []

b) Very often []

c) Occasionally []

d) Never []

15. Indicate the extent to which the following teaching methods can enhance pre-school children performance in mathematics.

Statement	To a Very Great Extent	To a great extent	To some extent	Not at all
Partition class-group discussions				
Pupils read aloud, one by one				
Teacher Demonstration				
Child centred method				
Writing on board				
Question & Answer				

16. To what extent do you think teachers' training influences pre-school children's performance in mathematics?

- a) To a very great extent []
- b) To a great extent []
- c) To some extent []
- d) Not at all []
- e) Not sure []

Thank you for your cooperation. God bless

Appendix II: Interview Schedule for Administrators

I am a student at the University of Nairobi and am carrying out a research on the effect of teacher characteristics on Pre-school children's performance in Mathematics in Dagoretti District in Nairobi County, Kenya. I am glad to inform you that you have been selected to participate in the study. I would like to assure you that all the information you provide will be used strictly for academic purposes and your identity will be kept confidential.

SECTION A: Background Information

1. Gender

a) Male

b) Female

2. Level of Education

c) Primary

b) Secondary

c) College

d) University Any other specify _____

Section II: Teachers' Academic Qualification and Pre-school Children's Performance in Mathematics

3. What is your academic level?

a) Secondary b) College c) University

Any other specify _____

4. Does teachers' academic level affect on teaching skill in pre-school? (Yes / No)

Explain

5. To what extent do you think teachers academic level influences pre-school children performance in mathematics? (To a very great extent/ To a great extent/ To some extent/Not at all)

Explain

Section III: Teachers' Attitude and Pre-school Children's Performance in Mathematics

6. Do you think teacher attitude can affects pre-school children's performance in mathematics? (Yes/No)

Explain

7. To what extent do you think teachers' attitude affects pre-school children's performance in mathematics? (To a very great extent/ To a great extent/ To some extent/Not at all)

Explain

Section IV: Teachers' Teaching Experience and Pre-school Children's Performance in Mathematics

8. Does teaching experience have any influence on pre-school children's performance in mathematics? (Yes / No)

Explain

9. For how long have you been in the administrative role in the current school?

- a) Below 5 years [] b) 5-10 years [] c) 11-15 years []
d) 16-20 years [] e) Above 20 years []

10. To what extent do you think teachers teaching experience influences pre-school children performance in mathematics? (To a very great extent/ To a great extent/ To some extent/Not at all)

Explain

11. To what extent do you think teachers teaching experience influences pre-school children's performance in mathematics? (To a very great extent/ To a great extent/ To some extent/Not at all)

Explain

Section V: Teachers' Teaching Method and Pre-school Children's Performance in Mathematics

12. What method of teaching do you think is the best when used by teachers in class? (Integrated/ teacher centered /Child centered)

Explain

13. How often do teachers employ the above named method of teaching in class?

14. To what extent do you think teaching method influences pre-school children's performance in mathematics? (To a very great extent/ To a great extent/ To some extent/Not at all)

Explain

Thank you for your cooperation. God bless

Appendix III: Research Authorization Letter

MINISTRY OF EDUCATION, SCIENCE & TECHNOLOGY
State Department of Education



Telegrams.....
Telephone.....
When replying please quote

SUB-COUNTY DIRECTOR OF
EDUCATION
DAGORETTI SUB-COUNTY
P.O BOX 30124-00100
NAIROBI
Date: 03/07/2015


RE: DAGO/EDU/GA/45/15

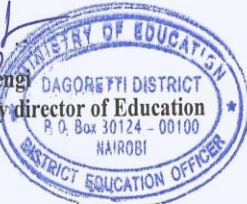
PETRONILAH MBEI NGEI
REG NO.: -E57/61481/2013

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on
“Effects of teacher’s characteristics on preschool children’s performance in Mathematics in
Dagoretti Sub –County in Nairobi County, Kenya”, I am pleased to inform you that the
authority has been granted.

On completion of the research, you are expected to submit a copy of the research to this office.


B.M. Muthengi
Sub-County director of Education
Dagoretti



MINISTRY OF EDUCATION
DAGORETTI DISTRICT
P. O. Box 30124 - 00100
NAIROBI
DISTRICT EDUCATION OFFICER