

**A SITUATIONAL ANALYSIS ON IMPLEMENTATION OF PHYSICAL
INFRASTRUCTURE POLICY IN PUBLIC PRE-SCHOOLS IN
MARIGAT SUB COUNTY, BARINGO COUNTY, KENYA**

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MOI UNIVERSITY

JUNE, 2015

DECLARATION

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DEDICATION

This research project is dedicated to all those who are very dear and special to me; to my parents Mr. and Mrs. Kiprono for having started it all, to my wife Eunice and children, Dennis, Purity and Timothy for always being by my side and my friends for their sincere encouragement.

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ABSTRACT

The world conference on EFA held in Jomtien – Thailand in 1990 and subsequently in Dakar-Senegal in 2000 initiated a significant global educational agenda in relation to ECDE. Among the aims of the conference was to strengthen pre-school education in the world to ensure holistic integrated services that create a strong foundation for children. Physical infrastructure cut across all aspects of holistic growth and development (physical, cognitive, emotional, moral and spiritual). It is on this premise that the current research focused on physical infrastructure in public pre-school in Marigat Sub County, Baringo County. This research was guided by the following objectives; examine the adequacy of classrooms and furniture in public pre-school, find out the state of the provision of water and sanitary facilities, establish availability of outdoor play space and playing equipment, determine the toilet: pupil ratio and recommend measures that can be put in place to improve physical infrastructure in public pre-school in Marigat Sub County, Baringo County. The study used descriptive research design. The target population comprised of 201 headteachers, 201 pre-school teachers and one Sub County Early Childhood Education Officer. Simple random sampling technique was used to obtain sample of 60 public pre-schools. Purposive sampling was used to select 60 Head teachers, 60 pre-school teachers and a Sub County Early Childhood Education Officer (DICECE). Structured questionnaire, interview and observation schedule instruments were used to collect data. The data obtained was analyzed using descriptive statistics and presented in form of tables and charts. The classrooms, desks and chairs, play equipment's, toilets/latrines, kitchen and water and sanitation were insufficient, while outdoor play space were available but not well maintained. The ECD classes were not provided with the appropriate child size furniture. The classrooms were not of standard sizes according to the MOE guidelines and there was no adequate lighting system within the classrooms. The schools do not provide safe drinking water to be used in the kitchen, drinking, play activities and washing hands. The pre-schools had toilets/latrine for boys, girls but not specifically designed for young children. Teacher's toilets were also available. The play equipment's were not appropriate for all children and were not safe and securely fixed to protect children from injury. The study recommended that physical facilities should be regularly monitored and provided in ECD in accordance with the policy. The study is significant to the management of pre-schools in Marigat Sub County on provision of physical infrastructure in ECDE centres.

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LIST OF ACRONYMS AND ABBREVIATIONS

ASAL	-	Arid and Semi-Arid Lands
CBO	-	Community Based Organization
DEO	-	Sub County Education Officer
DICECE	-	Sub County Centre for Early Childhood Education
ECD	-	Early Childhood Development
ECDE	-	Early Childhood Development and Education
EFA	-	Education For All
EMIS	-	Education Management Information System
ERS	-	Economic Recovery Strategy
FBO	-	Faith Based Organization
FPE	-	Free Primary Education
KESSP	-	Kenya Education Sector Support Programme
MDG	-	Millennium Development Goals
MOE	-	Ministry of Education
MOEST	-	Ministry of Education Science and Technology
NGO	-	Non-Governmental Organization
OAU	-	Organization of African Unity
PRSP	-	Poverty Reduction Strategy Paper
SPSS	-	Statistical Package for Social Science
UNCRC	-	United Convention on the Rights of the Child

CHAPTER ONE

INTRODUCTION TO THE STUDY

1.1 Introduction

This chapter gives an overview of the study. It examines the background of the study, statement of the problem, purpose of the study, objectives of the study, research questions, justification of the study, significance of the study, scope and limitations of the study, assumptions of the study, the theoretical framework, conceptual framework and definition of key terms.

1.2 Background of the Study

Pre-school or Early Childhood Development and Education (ECDE) can be seen as the downward extension of primary education to cover a young age-group, a common characteristic of pre-school education or ECDE is free for all children. According to the UNCRC, (1989) the first function of pre-school services developed to provide substitute care to children whose parents both worked (employed) or where conditions of home living were found to be detrimental for development. The second function was more educational and advocated the value of complementing children's experiences at home by providing carefully planned learning activities in the company of other children, which would promote all aspects of their personal growth and development.

The world conference on Education for All (EFA) held in Jomtien – Thailand in 1990 and subsequently in Dakar-Senegal in 2000 initiated a significant global educational agenda in relation to ECDE. An agenda that not only emphasized the need for improved

access to education of all school aged children but also learning and acquisition of quality basic education and skills training, thereby enabling the possessor to participate actively in the various economic activities of a nation. The Kenyan Government became a partner in this great global educational agenda in 2003 through the introduction of Free Primary Education (FPE) (MOEST, 1999).

The Universal Declaration of Human rights adopted in 1948, declared that “everyone has a right to education”. The world conference of Education for All (EFA) held in Jomtien, Thailand in 1990, sparked off a new impetus in basic education especially in the so-called vision and renewed commitment. In 2000 the Dakar Conference renewed the development in achieving Universal Primary Education (UPE) in the African continent and set one of the EFA goals; “Eliminating gender disparities in basic education by 2005 and achieving gender equality by 2015. This was further endorsed by the Millennium Development Goals (MDG), which among other things has set a target to “ensure that by 2015, children everywhere, boys and girls alike will be able to complete a full course of primary school.” (OAU 1990).

The EFA has been recognized as an international commitment with an intention of bringing the benefits of education to ‘every citizen in every society’ (Education Human Development Network, 2008). The world conference on education for all (EFA) also articulated the significance of the early years as the foundation for the life of an individual. These deliberations have been corroborated by recent research on brain development (Shore 1997), which emphasizes that the first six years of life are extremely

important because the environmental experiences during this period are significant in influencing one's life. The experiences of this period are known to either enhance or inhibit realization of one's potential in life. MOE: ECDE Guideline (2006), further notes that early years of life are also important in that this is the period when the brain is most malleable and also highly impressionable. Environmental influences, especially care, nurture and stimulation, have the greatest impact on the brain. The needs of children are complex and diverse and thus involve catering for all areas of development including physical, mental, social, emotional, moral and spiritual. For children to realize their full potential in life, they require quality health care, nutrition, early stimulation, protection, and care and training services.

The Kenyan government's policy on free primary education is also in line with Poverty Reduction Strategy Paper (PRSP) and the Economic Recovery Strategy (ERS) for Wealth and Employment Creation goal of achieving universal primary education by 2015 (Rob *et al.*, 2004). The forgone events constitute significant landmarks in the development of basic education. Early childhood Development and Education (ECDE) interventions are significant to the social and economic developments of a country as they provide children (learners) with a better start in life. Children who access ECDE services are more likely to enroll in primary school at the right age and less likely to drop out of schools or repeat grades. There is also a high probability that they will have improved performance and cognitive abilities than those who do not attend ECDE (KESSP report, 2005).

The Koech Commission (1999) observed that the physical facilities in Kenyan pre-schools, range from permanent classrooms in urban settings to mud-walled grass thatched or even under-tree arrangement in rural areas. It was also noted by the commission that the quality and adequacy of such physical facilities have a direct bearing and determine how effectively the curriculum is implemented. Creating conditions that motivate ECD teachers to initiate positive interactions with children and a physical environment that is conducive both to teachers' work and children's development is essential. Communities who sponsor about 70% of the ECD centres in Kenya (Republic of Kenya, 1998) need to participate and address what Herzberg, Mausner, & Snyderman (1959) termed 'hygiene' factors or 'job context' needs.

Studies have shown that most centers lacked the necessary facilities, equipment and materials that would promote teacher motivation and holistic development of children. According to Ngome (2002), most public ECD centres supported unfriendly working conditions characterized by windowless, rough mud walled and unfloored classrooms, and others that were iron-sheet walled and roofed. In such classrooms, temperatures went very high or very low, ventilation was inadequate, dust was a problem and children were easily distracted. Most of these classrooms were also congested (Gakii, 2003 & Ng'asike, 2004). Further, findings of the Ministry of Education Science and Technology (MOEST, 1999) had revealed that on average, preschools even within primary school compounds were worse off than their lower primary counterparts, in terms of provision and appropriateness of facilities.

1.3 Statement of the Problem

The world conference on EFA held in Jomtien -Thailand in 1990 initiated a significant global educational agenda, that not only emphasized the need for improved access to education of all school aged children but also learning and acquisition of quality basic education skills, thereby enabling the possessor to participate actively in the various economic activities of a nation. This therefore triggered the need for a curriculum to be geared toward attaining holistic development among the ECD learners. The KESSP report, of 2005-2010 indicated that children who do not access ECD services, recorded poor performance in the later age and are likely to repeat grades or drop out of school. The Koech Commission (1999) observed that many ECDE centers in Kenya are characterized by inadequacies in basic facilities such as inadequate classrooms, playground, toilets and kitchen with safe drinking water.

Physical infrastructure cut across all aspects of holistic growth and development (physical, cognitive, emotional, social, moral and spiritual). It is on this premise that the current research focused on physical infrastructure in public pre-schools in Marigat Sub County, Baringo County. The Sub County is within an Arid and Semi-Arid Lands (ASAL) region. Parents are poor and are not able to finance construction of physical infrastructure. The region has pre-schools with physical infrastructure in bad shape. However few research has been carried out in the Sub County to establish the situation. Therefore the study was carried out to analyze the situation of physical infrastructure in public preschools in Marigat Sub County, Baringo County.

1.4 Purpose of the Study

The purpose of this study was to carry out a situational analysis on implementation of physical infrastructure in public preschools in Marigat Sub County, Baringo County. The analysis was guided by the MOE, ECDE policy framework of 2006, which entails the prerequisite requirements for the physical infrastructure at the ECDE centres.

1.5 Objectives of the Study

The study was guided by the following specific objectives;

1. To examine the adequacy of classrooms and furniture in public pre-schools in Marigat Sub County, Baringo County.
2. To investigate the state of the provision of water and sanitary facilities in public pre-schools in Marigat Sub County, Baringo County.
3. To examine availability of outdoor play space and playing equipment in public pre-schools in Marigat Sub County, Baringo County
4. To identify the toilet pupil ratio in public pre-schools in Marigat Sub County, Baringo County.

1.6 Research Questions

The study was guided by the following research questions;

1. How adequate are the classrooms and furniture in public pre-schools in Marigat Sub County, Baringo County?
2. What is the state of the provision of water and sanitary facilities in public pre-schools in Marigat Sub County, Baringo County?

3. What outdoor play space/playground and playing equipments in public pre-schools in Marigat Sub County, Baringo County available?
4. What is the toilet-pupil ratio in public pre-schools in Marigat Sub County, Baringo County?

1.7 Assumptions of the Study

The assumptions which this study made include:

1. All pre-schools in Marigat Sub County have head teachers, teachers and learners.
2. Marigat Sub County has a DICECE officer
3. All pre-schools are under the Ministry of Education
4. All pre-schools have a common syllabus and physical infrastructure policy guidelines.
5. All respondents involved in the study were a true representative sample of the entire population of Marigat Sub County.
6. Information provided by the respondents was true and accurate.

1.8 Justification of the Study

The physical infrastructure in the ECD centres have an impact on the academic performance and overall holistic growth and development of the ECD learners. Majority of ECD learners are in public ECD centres. To ensure that these pupils attain holistic development and realize their full potential in future, it is important that the pupils learn in an environment that is in conformity with the guidelines stipulated by the MOEST. The purpose of this study is to analyse physical infrastructure in public pre-schools in Marigat Sub County, Baringo County, to allow for appropriate measures to be taken by the relevant Education stakeholders. The researcher narrowed down to physical

infrastructure in public pre-schools in Marigat Sub County, Baringo county due to the fact that provision on physical infrastructure is not catered for under Free Primary Education (FPE), hence there is need to establish the status, since it is known to have a greater impact on the ECD learners.

1.9 Significance of the Study

The study provides information on the prevailing conditions of physical infrastructure in public pre-school. The information is of importance to the management of the individual ECD centres in Marigat Sub County, Baringo County on the priority areas in provision of physical infrastructure. The findings will be of use to development agencies (NGOs, CBOs and FBOs) working in the area in setting up intervention measures to uplift education in the area. The results guides educators and policy makers on the areas that require urgent measures in order to realize the overall objectives of ECD learning. The study will also be of significance as it will also shed light to the government through the Ministry of Education so as to plan and formulate policies in favor of early childhood education as a sub-sector. The findings gave the conditions of physical infrastructure in public pre-schools in Marigat Sub County.

1.10 Scope of the Study

The study was done in public pre-schools in Marigat Sub County, Baringo County. The respondents included the head teachers, pre-school teachers and DICECE officers. The situational analysis of physical infrastructure in pre-school concerned with examining the adequacy of classrooms and furniture, availability of outdoor play space and playing

equipment, the toilet: pupil ratio and recommend measures that can be put in place to improve physical infrastructure in public pre-school. The sample size consist of one DICECE officer, 60 head teachers and 60 pre-schools teachers. The study was done between May and August 2012.

1.11 Limitations of the Study

The researcher experienced a problem of non response from respondents given the questionnaires to fill. However, the researcher assured the respondents that any information given was treated with maximum confidentiality. The researcher experienced time constraint in data collection, analyzing of data and in final presentation of the report. However, the researcher ensured that the time was put into consideration and that all appointments agreed upon with respondents are fully meet.

The study was limited by variation in the respondents understanding of the physical infrastructure policy implementation, considering their possible diversity. To overcome this, the researcher employed random sampling technique and collected data from a large proportion of respondents. The study was limited by unavailability of related studies conducted on physical infrastructure policy implementation in Kenya, as the concept was new. It was believed that the recommendations emanating out of this study would generally be useful in the rest of the schools in Baringo County.

1.12 Theoretical Framework

The theoretical framework for this study was based on needs assessment theory advanced by English and Kaufman in 1975. They defined needs assessment as a tool which

formally identifies the gaps between the current results or out-comes/ products and the required or desired results (English and Kaufman in 1975). A needs assessment is a systematic process for determining and addressing needs, or "gaps" between current conditions and desired conditions or "wants". The discrepancy between the current condition and wanted condition must be measured to appropriately identify the need. The need can be a desire to improve current performance or to correct a deficiency (Kizlik 2010). A needs assessment is a part of planning processes, often used for improvement in individuals, education/training, organizations, or communities. It can refine and improve a product such as a training or service a client receives. It can be an effective tool to clarify problems and identify appropriate interventions or solutions (Fulgham & Shaughnessy 2008).

By clearly identifying the problem, finite resources can be directed towards developing and implementing a feasible and applicable solution (Altschuld, James and Kumar (2010). Gathering appropriate and sufficient data informs the process of developing an effective product that will address the groups needs and wants (NOAA, 2011). Needs assessments are only effective when they are ends-focused and provide concrete evidence that can be used to determine which of the possible means-to-the-ends are most effective and efficient for achieving the desired results (Kaufman, Roger, Alicia, Rojas and Mayer 1993).

Within a performance improvement framework, needs assessments play a critical role in starting the improvement process. Assessments inform future decisions; at the same time, they are informed by the results of past decisions. Needs assessments thereby link

together past and future performance, guiding decisions throughout the improvement effort (Watkins, West Meiers, and Visser, 2012).

The theory was further improved by Suarez in 1999, who further defined needs assessment as an information gathering and analysis process in the identification of the needs of individual groups, institutions and communities or societies (Suarez, 1999). Needs assessments can help improve the quality of policy or program decisions—thus leading to improvements in performance and the accomplishment of desired results. Improving results—that is, moving from current to desired performance— is typically a worthwhile and valuable (and often valiant) effort. The results of a needs assessment will guide subsequent decisions—including the design, implementation, and evaluation of projects and programs that will lead to achieving desired results (Watkins, West Meiers, and Visser, 2012). In this study the researcher carried out a situational analysis of physical infrastructure needs for pre-schools, and identified the gap between the desired needs as stipulated in ECDE physical infrastructure policy (MOE, 2006) and what is present in public pre-schools in Marigat Sub County.

1.13 Conceptual Framework

During the study the implementation of physical infrastructure policy in public pre-school was the dependent variable. The independent variables included the adequacy of classrooms and furniture, the provision of water and sanitary facilities, availability of outdoor play space and playing equipment as well as the toilet pupil ratio as summarized in Figure 1.1. The interaction between the independent variables and dependent variable gave either positive or negative influence. This framework showed that the

implementation of physical infrastructure policy in public pre-school depends on the availability of these facilities.

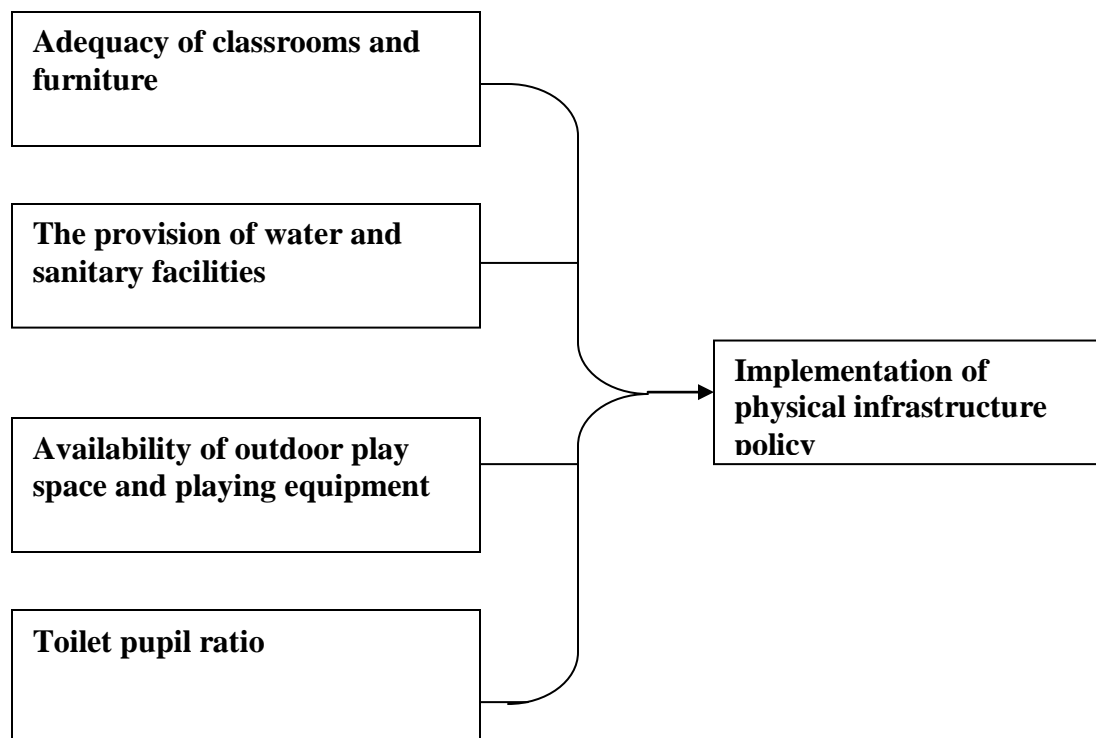


Figure 1.1 Conceptual Framework

1.14 Operational Definitions of Key Terms

Early Childhood Education: - refers to education obtained in pre-school.

Education Stakeholders- refers to groups of people or organizations with roles to play in the running of a school such as school committee members, parents, sponsors, NGOS supporting the school, local community etc.

ECDE Center- refers to a place where the total needs of children aged between 3-6 years

Learner- a learner is a person who has presented himself/herself in a learning situation ready to be taught. In this study it refers to a pre-school child aged between 3-6 years in an educational institution.

Physical Infrastructure — refers to any built facility for use in the school to facilitate the provision of services.

Public School- also referred to as a state school, refers to a school funded with tax revenue and administered by government or governmental agency.

Standard — refers to the level of quality achievement in relation to the physical facilities in a pre-school.

Teachers- child Ratio- is the total number of children one teacher is assigned to teach.

Implementation: To put into practice structures or mechanisms as per certain requirements

Situational analysis: refers to assessment of pre-school physical infrastructure as it exist in relation to the prescribed standards.

Pre-School- refers to an institution where children between 3-6 years attend to attain formal preprimary education.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter deals with the review of literature related to this study. In reviewing the related literature the researcher has drawn heavily from research journal, dissertations, books, magazines, and Ministry of Education circulars, pamphlets as well as seminar papers. The literature review was summarized basing on the following areas; the adequacy of classrooms and furniture in public pre-school, the provision of water and sanitary facilities, availability of outdoor play space and playing equipment, toilet pupil ratio and measures which would be used to improve physical infrastructure.

2.2 Physical Facilities in Early Childhood Education in Schools

The present status of early childhood education is not satisfactory. The physical facilities provided by the government, curriculum taught in pre-primary classes and the teachers training is not appropriate for the young child. Practical changes are not made in the classes of early childhood education and for the training of ECE teachers. The schools are running in rented residences. The neglect of pre-schools is the most serious imbalance in the present education system in Kenya. Government of Pakistan recognized the importance of Early Childhood Education fast than other countries, the young children are given more attention, thus Pakistan has establishes different ECE centers. Berson (1966) pointed out that before determining the physical facilities needed, outline the characteristics, aims, objectives, and purposes of the program first and then determine how many learners, teachers, resources are to be accommodated.

All facilities must be provided to the school for the learners' better, concrete, and real experiences. Leeper *et al.*, (1968) claimed that the child learn through concrete rather than abstract experiences. The Kenyan Government has set a target that by 2015 that all children, both boys and girls, will be provided with all facilities to complete a full course of primary schooling throughout the country (The News, April 25, 2007). Studies about learner academic achievement and building conditions conclude that the quality of the physical environment significantly affects learner achievement. 'There is sufficient research to state without equivocation that the building in which learners spends a good deal of their time learning does in fact influence how well they learn' (Earthman, 2004:18). Desirable designs include having 'friendly and agreeable' entrance areas, supervised private places for learners, as well as public spaces that foster a sense of community, with particular attention to the colour used (Fisher, 2000 in McGregor 2004:2). Today's schools must create spaces that learners want to go to, similar to the way cafes attract people, rather than the space being purely functional (Bunting, 2004:12).

Other research has acknowledged that learners' achievement lags in shabby school buildings' but go on to say that this research 'does not show that learner performance rises when facilities go from decent buildings to those equipped with fancy classrooms, swimming pools, television studios and the like' (Stricherz in Higgins *et al.*, 2005:36). In one study the significant improvements in the learning environment were attributed to the better attitudes to teaching and learning the improvements in the physical environment created amongst all users (Berry in Higgins *et al.*, 2005:14).

Decent facilities make additional contributions to teachers work. Siegel has found there was a direct relationship between architecture and the collaboration of teachers. The arrangement of space has immediate and far reaching consequences for teachers' ability to effectively and efficiently accomplish daily activities; the formation of social and professional relationships and the sharing of information and knowledge' (Siegel, 1999:4). Consideration of the spaces where teachers meet and collaborate is just as important as the design of the classroom.

While there can often be a separation between the designer and user in school design, there is a growing movement towards involving users in the design of teaching and learning spaces, with benefits for learners and teachers alike – 'making meaning around what they want from education' (McGregor, 2004:5). Fisher and Wright in (McGregor, 2004; 2) propose that school designs should not be imposed or bought off the shelf – they must be the result of an articulated vision which should be facilitated by architects and designers 'to create integrated solutions' (Higgins *et al.*, 2005:3).

Initiatives which aim to encourage young people to actively participate in the design process are enacting citizenship, rather than teaching it through transmission, and are opportunities to re-engage learners with learning (McGregor 2004:5). Keep also cites schools where the 'environment – walls, grounds, lights, mechanical systems – serve as active contributors to the learners' learning process' (Keep, 2002:1). He says that 'learning opportunities can be woven into the structure of a school, making it an active space rather than a passive space housing a disarray of "things"' (Taylor & Aldrich, 1998 in Keep, G 2002:1). Another proponent for schools needing to have a clearly articulated vision when

considering design is the fact that parents and learners now have a greater choice about the school attended. Schools are placed in a position where they can offer specific learning opportunities to learners. 'Planners and educators may increasingly find themselves challenged to develop individualized renovation and construction plans that support a particular school's mission' (Stevenson 2007:1)

2.2.1 Physical Conditions of School Facilities

There are many research that examines the effect of the physical conditions of teaching spaces (which includes seating, furnishings, spatial density, privacy, noise and acoustics, climate and thermal control, air quality, windowless classrooms, vandalism and playyards, light and colour) on learners' engagement, attainment, attendance and wellbeing (Keep, 2002; Higgins *et al.*, 2005; Lackney & Jacobs, 2002; Earthman 2004; Sundstrom 1987 and Weinstein 1979).

Some interesting contentions about the physical aspects of learning spaces include: Temperature, heating and air quality are the most important individual elements for student achievement (Earthman, 2004: 11–16); Chronic noise exposure impairs cognitive functioning, with numbers of studies finding noise-related reading problems, deficiencies in pre-reading skills, and more general cognitive deficits. (Higgins *et al.*, 2004:18); 'Colour remains the topic of some of the most optimistic claims about morale and efficiency' (Sundstrom, 1987:751). According to some research, the choice of the best use of colours is dependent on the age of children (brighter for younger learners, more subdued for adolescents), as well as differences between males and females (males – bright colours, females – softer). Much research findings about colour is conflicting, and remains hotly debated (Higgins *et al.*, 2004: 21–22); Using visual displays in classrooms

breeds success because 'learners are provided with specific examples of how success is obtained' (Culp 2006:14).

2.3 Adequacy of Classrooms and Furniture

In spite of expectations to the contrary, there have been cases where larger class size was associated with improved performance. This argument is advanced by Hanushek (1999) in his study on the influence of class size on students' achievement. Studies conducted by Boissiere (2004) point out how instructional time on task is related to other factors often identified as determinants of education outcomes. Class size is therefore related to time on task insofar as many educators believe that smaller classes allow for more time and attention to each learner.

Class size is an important factor in school design and derives a host of costly facility-related issues that are part and parcel of the school building's planning, design, construction, cost, maintenance, and operation. Given that education is labour intensive, class size is a big factor in determining the number of teachers needed and, hence, how much education will cost. While social scientists are engaged in an intense debate over the effects of class size on educational outcomes, there is widespread popular belief that smaller classes are better, (Hanushek, 1999). The idea that smaller classes are better is supported by studies conducted by Pinell (2000) in the US. He concluded that small class size is more important to learner achievement than bigger class size. He found out that nearly half the states in the US have enacted legislation and are spending hundreds of millions of dollars each year to reconfigure school buildings to reduce the student-teacher ratio to twenty or fewer students per teacher. Ferguson (1991) found significant

relationships among teacher quality, class size, and student achievement from first through seventh grades, using student/teacher ratio as a measure of class size. In Indiana, the Prime Time project reduced class size from approximately twenty-two to nineteen students in first grade and from twenty-one to twenty students in second grade.

According to Egelson *et al.*, (1996), increased time on task decreased disciplinary problems substantially. Smaller classes allow more time for instruction and require less time for discipline. This conclusion was reported by Molnar *et al.*, (1999). His studies revealed that students in small classes did better in math and reading tests at the end of kindergarten. The kindergarten achievement gap between the two class sizes remained the same in first, second, and third grades. Students from smaller classes behaved better than students from larger classes, and these differences persisted through at least to fourth grade. The effects were stronger for students of lower, rather than higher, socio-economic status.

Boissiere (2004) postulates that many educators relate the class size argument to that of "time-on-task" issues, claiming smaller class size minimizes disruption and allows teachers to give more individual attention to students, thereby increasing the effective time of instruction. He further argues that some research studies of actual classroom teaching practices show that teachers often do not change their method of teaching in response to a smaller class size. Instead they still lecture and go about assigning homework in much the same way.

Boissiere (2004) reviewed the class debate worldwide and concluded that the uncertainty of research results over such a seemingly simple issue illustrates how truly complex the research question is, with results varying across time, context and content. Still the overall conclusion was that a policy of promoting relatively small class size (below 40 students per teacher) is not cost effective in developing countries, compared to providing more textbooks, increasing the total hours of class instruction over the year, or restructuring overcrowded curricula, so that more time is spent in class on the core subject of reading and mathematics. He argues that excessively large classes (above 60 students per teacher) are also unacceptable, since they are detrimental to learning.

Furniture is one of the important physical facilities provided in classrooms where the children spend most of their time working with different learning activities (Khanam Reddy and Mrunalini, 2006) such as reading, writing, drawing and other related activities in the classroom, they sit continuously for long hours. Hence it is necessary that schools should be provided furniture that is fit to the requirement of school children. The use of poorly designed furniture that fails to accommodate the anthropometric characteristics of its user have a negative influence on human health. A surprising number of school children are reported to have regular back pain, neck pain and headache by using ill designed furniture that result in bad postural habits, while good posture habits reduces organ crowding, strain on soft bone and muscle. Most of the researches have revealed that in most of the schools, the furniture is designed by manufacturer without considering the anthropometric dimensions of the users of different age groups. As an outcome, benches and desks become unsuitable, uncomfortable, inconvenient, affecting classroom

learning activities of school children while attending their classes (Dhara, Khaspuri and Sau, 2009).

Thus anthropometric measurements are an important factor that should be taken in to account the design of classroom furniture. Specific measurements, such as elbow rest height, popliteal height, buttock popliteal length, hip breadth are necessary in order to determine school furniture dimensions that facilitate correct sitting posture. Correct designed furniture that promotes proper posture is more important to children than adults because it is the biological stage of life where sitting habits are formed. Bad sitting habits that are acquired in childhood are very difficult to change in later life (Daneshmandi, Isanezhad and Hematinezhad, 2008).

Schools and classrooms can be more than a place to inhabit: they can also acquire an emotional significance. One perspective is that educators play an important role in constructing classrooms and schools, and therefore learners' identities. An extension of this idea is that children's environments have an effect on their cognitive and behavioural development and on childhood vulnerability (Ellis, 2005:57–61). Looking at learning space is about more than the structures – it is about the social relationships within the space. Space can be conceptualized as being an interaction between physical and social spaces. McGregor claims that the space is 'made' by the social aspects (McGregor, 2004:2). This attitude is increasing in popularity as we move again towards creating more open spaces to improve social interactions and pupil learning opportunities.

Spaces and how we organize them can tell pupils much about adult expectations and power structures – for example, when grouping pupils according to 'ability' (McGregor 2004:3). Similarly, a seminal work in the 1970,s argued that 'a broadly academic ethos seemed to promote academic achievement' (Rutter 1979:14). Bunting also makes the link between the physical school environment influencing general attitudes to learning. He argues that if pupils do not leave school with a love of learning, they will be disadvantaged in today's 'knowledge society' (Bunting 2004:12). Classroom activities are strongly influenced by areas where schools are located and the facilities that are provided to the children in their schools. Recent studies have presented a conflicting picture of rural verses urban preschool qualities. A prominent study concludes that students in rural preschools in comparison to urban preschools perform less because of affected learning environment and classroom facilities.

In rural preschools it is often seen that the same size of furniture are used in several classes either in pre-classes or in secondary. Urban preschools allocate various types of furniture for different classes. The reason is that such type of furniture is less costly to manufacture and easier to purchase at the lower price. The urban and rural preschools vary in terms of their facilities, type of education and furniture too because majority of urban preschools use good furniture, matched with the anthropometric dimensions of the students, reduces organ crowding and strain on soft bones and muscles. It can be seen that if the seat surface is too high the underside of the thighs becomes compressed causing discomfort and restriction in blood circulation.

When the seat surface is too deep, the front edge of the seat will press into the area just behind the knee cutting off circulation; the person in the seat will slide forward but will lose proper backrest and support for the lower thighs. Thus, good type of furniture, facilitate perfect match with the individual body dimensions would help to reduce, eventually eliminate stress during learning period in preschoolers because incorrect sitting posture pose extreme physiological strain on muscles. Hence the present study is taken up to identify the mismatch between the individual body dimensions of children and the existing furniture in preschools.

2.3.1 Organizing Classroom Space

There is a volume of research that suggests 'less attentive and less successful pupils are particularly affected by the desk arrangement, with their on-task behaviour increasing very significantly when seated in rows instead of tables' (Higgins *et al.*, 2005:26). At a more erudite level researchers argue that teachers require a good knowledge of their learners to implement an effective seating arrangement. Seating arrangements can be territorial (space organized by individual desk ownership) or functional (space organized for a specific activity).

There can often be an 'action zone' where an increased involvement between teacher and learners occurs across the front and down the middle of the room (Higgins *et al.*, 2005:6; Weinstein 1979:), whereas some favour a horseshoe formation to overcome the fact that often when clustering learners, group size and placement can be driven more by furniture and arrangement than pedagogy (McNamara & Waugh, 1993 in Higgins *et al.*, 2005:26). It may be that a 'one size fits all' model or solution is not possible. It seems that different

arrangements are required for different teaching and learning contexts. What researchers do agree upon is that it is imperative for a school to have a clear vision in order to design facilities which can accommodate this (Stevenson, 2007:3; Higgin *et al.*, 2005:14).

2.4 Provision of Water and Sanitary Facilities

Based on the responses of the stakeholders, drinking water can be managed in one of the three ways. First, each child is required to bring drinking water by himself or herself, as stated by some of the facilitators. Second, as stated by MC chairperson/members and parents, clay or plastic pots and mugs should be managed by the ECD centre itself (UNICEF, 1994). For these two ways of managing drinking water facility, no external support is required. Third, piped water supply/tube well was preferred by some of the grassroots level stakeholders for those ECD centres having their own land and building (UNICEF, 1995).

For this, the parents, facilitators and the MC members expected partial support from DDC, water supply agency, INGO and many others in the form of materials such as pipe, hand-pump etc. If such supports are available, the community people are ready to provide labour contribution. However, the opinions of some of the Sub County level stakeholders were not found in conformity with those of the grassroots level stakeholders (WHO/UNICEF, 2013). Schools provide excellent opportunities to support sanitation and hygiene promotion programs. The curriculum naturally offers opportunities to teach about dirt and disease and what can practically be done to improve health through better sanitation and hygiene. Construction and use of appropriate child friendly sanitary

facilities (hand washing stations, soap and toilets) can be especially effective in reducing the incidence of diarrhea (UNICEF, 1992)

Schools may be better to enforce certain behaviors in children than the home. Schools can also provide an arena where sanitation can be shown at its best, and certain positive hygienic behaviors (hand washing with soap before eating and after going to the toilet) can become an engrained habit at a young age (UNICEF, 1996). Nevertheless, hygiene promotion in school cannot rely solely on teaching and enforcing certain habits. Research has shown that children will more willingly change behavior if they are having fun and if they are following their peers. Imitation is one of the most successful forms of learning; hence young children will look to their older brothers and sisters or to older school friends to adopt new behaviors and life skills (UNICEF, 1988).

Implementing school sanitation and hygiene programs the main users of the facilities are children and designs need to be appropriate. This is particularly critical for young children around the age of 4 to 5 who are just starting to use the toilet and will be put off if toilets are too large, dirty or dark (UNICEF, 1988). According to the latest estimates of the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP), released in early 2013, 36% per cent of the world's population – 2.5 billion people – lack improved sanitation facilities, and 768 million people still use unsafe drinking water sources. Inadequate access to safe water and sanitation services, coupled with poor hygiene practices, kills and sickens thousands of children every day, and leads to impoverishment and diminished opportunities for thousands more (WHO/UNICEF, 2013).

Poor sanitation, water and hygiene have many other serious repercussions. Children – and particularly girls – are denied their right to education because their schools lack private and decent sanitation facilities. Women are forced to spend large parts of their day fetching water. Poor farmers and wage earners are less productive due to illness, health systems are overwhelmed and national economies suffer. Without WASH (water, sanitation and hygiene), sustainable development is impossible (WHO, 1994). UNICEF works in more than 90 countries around the world to improve water supplies and sanitation facilities in schools and communities, and to promote safe hygiene practices. We sponsor a wide range of activities and work with many partners, including families, communities, governments and like-minded organizations. In emergencies we provide urgent relief to communities and nations threatened by disrupted water supplies and disease. All UNICEF WASH programmes are designed to contribute to the Millennium Development Goal for water and sanitation: to halve, by 2015, the proportion of people without sustainable access to safe water and basic sanitation (WHO, 1993).

Factors related to water, sanitation and hygiene affect children's right to education in many ways. In an atmosphere of poor health, children are unable to fulfil their education potential. For example, 400 million school-aged children a year are infected by intestinal worms, which, research shows, sap their learning abilities. UNICEF and its partners focus resources on improving the health of school-aged children, highlighting the need for hygiene promotion, life skills development and water, sanitation and hand-washing facilities in schools (UNICEF, 1987).

Schools partly determine children's health and well-being by providing a healthy or unhealthy environment. Although water and sanitation facilities in schools are increasingly recognized as fundamental for promoting good hygiene behaviour and children's well-being, many schools have very poor facilities. Conditions vary from inappropriate and inadequate sanitary facilities to the outright lack of latrines and safe water for drinking and hygiene. This situation contributes to absenteeism and the high drop-out rates of girls (UNICEF, 1992.)

Schools can also be a key factor for initiating change by helping to develop useful life skills on health and hygiene. Children are often eager to learn and willing to absorb new ideas. New hygiene behaviour learned at school can lead to life-long positive habits. Teachers can function as role models new hygiene behaviour learned at school can lead to life-long positive habits, not only for the children but also within the community. School children can influence the behaviour of family members - both adults and younger siblings - and thereby positively influence the community as a whole. It is also more cost-effective to work with children in school-based programmes than with adults. UNICEF, together with its partners at global and country level, is involved in many different programmes to improve sanitation and promote hygiene in schools. This has resulted in the development of the Manual on School Sanitation and Hygiene Education. School sanitation is an integral part of UNICEF's efforts in more than 30 countries (UNICEF, 1996).

Household chores, such as fetching water, keep many girls out of school. Even if girls do manage to go to school, they are sent to fetch water when it is needed. Most other

household chores – including cleaning latrines and garbage disposal – also fall to women and girls. When family members become sick (often due to hygiene-related diseases), girls are more likely to be kept home to care for them. Providing water closer to homes increases girls' free time and boosts their school attendance. All children need a sanitary and hygienic learning environment, but the lack of sanitation and hygiene facilities in schools has a stronger negative impact on girls than on boys. Girls need safe, clean, separate and private sanitation facilities in their schools. UNICEF water and sanitation programmes try to ensure that a community's discriminatory attitudes and practices are not reinforced in schools. Girls should not have to haul water and clean latrines at school as well as at home (UNICEF, 1995).

2.5 Outdoors and Indoor Play Equipment

Outdoor provision can easily lend itself to supporting young children's natural means of learning. Sensory experiences are readily available. The Curriculum Guidance for the Foundation stage suggests that provision of an outside space should give scope for children to work and play on a larger scale. (Bruce, 2006). Additionally, Leeper *et al.*, (1968) explained that selection of the outdoor area stimulate learning and interest of the child in the natural environment as well as encourage him to contact his physical world. Children need space to move, make and do things and to develop these interests without disturbing others (Bruce, 2006). He also believed that when given a choice, children often prefer to play outside.

In open space children become more excited and energetic, so the outdoor activities should be provided in a way that should provide the appropriate physical development of

the children. Bruce (2006) implied that children are offered more scope for challenges outside. Leeper *et al.*, (1968) also viewed that if the outdoor space is adjacent to indoor play space, much of the equipment can be used in either indoor or outdoor activities. Bruce (2006) claimed that the indoor and outdoor environments should complement rather than duplicate each other. Simple and safe facilities, equipment, and furnishings permit freedom of activity and provide for creativity on the part of the child.

Hochman (1958) stated that a room efficiently organized in terms of space, orderliness, comfort, and convenience gives the children better opportunity for working effectively and creatively. In addition, Leeper, *et. al.* (1968) assumed that concept of the learning environment makes it essential that all physical facilities, equipment, and materials are considered carefully in their relationship to the total learning situation and those they are selected and used in accordance with basic principles of child growth. The school environment should invite the child to participate in activities and to have experiences. The classroom is for the child and it needs to reflect children's tastes, interests, and activities. Olson (1959) points out that health, comfort and safety are the primary concern in planning the environment for children and youth. The classroom building needs to be adaptable for use. Suitable light, both artificial and natural, is required for program development.

When the child is welcomed by the teachers and the classroom environment, he/she easily adjust in the classroom and enjoy doing activities. The room should give the freedom of activity, movement and space. Jaffke (1996) (as cited in Bruce, 2006) claimed

that the aim is to carefully select the impressions which confront and surround the children. Leeper *et al.*, (1968) believed that space is an important factor in providing a rich environment for learning, but it is only significant to the degree that it assists in providing a suitable climate for learning. Leeper (1954) observed that the best learning environment is one which stimulates the individual to reach constantly for new understandings, and new experiences.

Furthermore, Bruce (2006) stated that environment should provide a rich range of resources which is always available to children. This gives them scope to build on developing interests and to practice and apply what they have learned. Children then make their own learning. Leeper *et al.*, (1968) stressed that the room should be on the ground floor and has no hidden areas so that it can be easily supervised. It should also be adjacent to toilet facilities, approximately 40 to 60 square feet per child is recommended. Bruce (2006) stated both indoor and outdoor environments can tempt children to learn. Leeper *et al.*, (1968) cited that indoor and outdoor space will not only differ according to climate, location, and situation, but also in terms of the program to be developed.

Toys present in the classroom include Water play equipment, Puzzles of varying types, games, transportation toys of all types, building blocks. Likewise there are wheel toys that include wagons, tricycles, wheelbarrow, and trucks. There are some other classroom equipments called Stationary Play Equipment which include Jungle gym, climbers of different varieties, swings, bridges, ladders, boards, mazes, and sandboxes. In addition to that there are Number games including calendar, measuring cups, containers, measuring

spoons, play money, scales, rulers, tape measure, abacus, beads, buttons, and sticks (Leeper, *et al.*, 1968).

Moreover, the furniture in the classroom should be movable, durable, comfortable, attractive, child-sized, and storable. Specifically for chairs it is required that it should be light enough for child to handle, movable without noise, and with backs about 22 inches high. Chairs need to be varied sizes, from 15 to 20 inches high, depending on ages and sizes of children. Display Rack and bookshelves need to be movable and to be easily accessible to child. Each class should have a Clock with a large face (Leeper, *et al.*, 1968). Walls and windows are important factors in classroom formation. Therefore, the arrangement of windows and doors should allow large spaces for bulletin boards, for attaching things, and for a small amount of chalkboard. Green chalkboards are preferred.

Walls that are washable, especially to the height of the child, are recommended. Rooms with walls in a variety of colors provide beauty. Primary colors, which children like, need to be carefully selected and utilized for toys and equipment. The windows should be low enough so that a child can see out. All outside doors should be light in weight so that the children can handle them easily. The door knobs should be low enough to be in easy reach of the child and of the type that can readily turn. No self-locking or swinging doors should be included. The floors should be of a material that can easily be kept clean, as much of the child's activity is on the floor (Leeper, *et al.*, 1968). The toilet and hand washing facilities should be adjacent to or easily accessible both to the outdoor and the indoor space. Well-planned storage space should be provided for large toys, and blocks.

2.6 Toilets in Pre- schools

While gains made in sanitation coverage over the last 15 years, some regions and countries are not on track to meet the MDG sanitation target by 2015. It is now clear that new approaches are necessary to sustainably increase coverage levels. UNICEF is increasingly emphasizing sanitation, expanding its own programmes of support in countries around the world and advocating for an increased focus on sanitation by governments and funding partners. UNICEF is also active in the development of improved sanitation technology, developing and promoting latrines and toilets that are affordable but also satisfy criteria for safety, effectiveness, sustainability, environmental impact and child-friendliness (UNICEF, 1995).

Though the toilet is one of the basic infrastructures for ECD centres, it has been largely overlooked as found in the field observation. In this regard, the toilet should be constructed by the community people with the partial support in the form of construction materials such as cement and roofing materials from DDC and INGOs, as stated by MC chairperson/members. However, this view was not similar to that of some of the Sub County level stakeholders as the responsibility of constructing the toilet is to be taken by the community people themselves (Ahmed, 1995).

Each ECD centre must have an appropriate toilet with adequate water supply. If permanent toilet is to be constructed, the MC needs to seek full or partial support from INGOs or DDC. Where this support is not available, the temporary toilet needs to be constructed with locally available materials by the community people themselves. An

insufficient toilet/student ratio contributed to overuse, filthy conditions and a consequent return to open defecation around schools, or absenteeism in order to use a home toilet. The World Health Organisation suggest toilet/student ratio of 1:30 (WHO, 2010).

New community based approaches for sanitation promotion is showing considerable promise in some countries. Instead of focusing on latrine construction, these approaches stress the elimination of open defecation in communities. Communities are encouraged to carry out an analysis of existing defecation patterns and threats, and to use local resources to build low-cost household latrines and ultimately eliminate the practice of open defecation.

2.7 Strategies for Infrastructure Development

As in other educational programmes, physical facilities like building, furniture, playground, toilet and drinking water, are the infrastructure needed for the ECD centre. These aspects of physical facilities should be developed in order to establish the centre in a rapid way throughout the country and run them in a sustainable manner. But the government is certainly unable to manage the physical facilities for the centres. This is why the government is seeking support from the community. The government has targeted to expand the ECD centres in a rapid way on the one hand and on the other, the government could not provide support adequately even for physical facilities. It is in this context, the opinions on possibilities on managing physical facilities for the ECD centres to be established throughout the country, collected from all the groups of stakeholders. The analysis and interpretation of these responses are presented under each aspect of physical facilities separately (Komal *et al.*, 2004).

2.7.1 Availability of School Land

In order to establish and run ECD centres in a sustainable way, land should be managed by the community for building and playground. Based on the opinions of a cross-section of stakeholders, land for ECD centre can be acquired in any one of the four ways. First, as stated by all the stakeholders, VDC/municipality should be requested to provide land. For this, the MC of ECD needs to take the initiation for getting land from VDC/Municipality through Village/Municipality Child Development Committee, as stated by the FP, NGO officials and the teachers of Islam. Second, in the communities where VDC/municipality-land is not available, almost all the stakeholders identified the individual donors to acquire land for ECD centre. As suggested by some of the stakeholders, potential individual donors are to be identified in the community gathering and they are to be approached and encouraged to donate land.

Third, in the communities where both the above-mentioned ways are not possible, land for ECD centre should be purchased at the lowest possible cost which should be borne by the community people and the VDC/Municipality, as stated by some of the MC chairperson/members. Similarly, the fourth way of acquiring land for ECD centre, as identified by the teachers, is to approach the schools. Of the four ways mentioned above, acquiring land for ECD centre from VDC/Municipality and individual donors is the most appropriate one. Field information shows that most of the sample centres which had their own land were found to have acquired land through these two ways. The individual donors will be encouraged to donate land if the name of ECD centre is kept in his/her name. In some cases, the schools particularly of Terai which had adequate land may be

one of the land donors. However, purchasing land for ECD centres will not be practical in most of the cases.

2.7.2 School Buildings

In order to establish ECD centres in a rapid and sustainable way, all the stakeholders viewed that a significant participation of community people is required to construct buildings for ECD centres. Different views from them were received with respect to the types of support they are required to provide. Some stakeholders stated that the construction materials need to be provided by the community people whereas some of them stressed the need to provide donation in cash. But, all the grassroots level stakeholders agreed that the local community needs to provide labour contribution during the construction of the building.

Most of the Sub County level stakeholders stressed the fact that roofing materials should be managed by VDC/Municipality and/or DDC for the ECD building. This type of support was also expected by all the grassroots level stakeholders. Besides, construction materials such as cement and iron rods, as stated by some of the MC chairperson/members, should also be provided by VDC/Municipality and/or DDC. Contrary to this, there are a few grassroots level stakeholders who opined that the entire responsibility of constructing the ECD building is of the community people. Again, contrary to this view, since the community people are not able to construct the building in most of the cases, INGOs should be approached for receiving the support, as stated by some of the MC members. Based on the above mentioned opinions, it can be concluded that the community people should construct ECD building in partnership with

VDC/municipality and/or DDC and/or INGO. In the disadvantaged areas, ECD building is to be constructed by the government and/or INGO. Moreover, community building, where available, can also be used for rapid expansion of ECD centre's.

2.7.3 Provision of Educational Facilities

Execution of educational programmes demands that facilities are provided if success is to be achieved. Government, school proprietors, parents and other stakeholders are expected to provide the facilities for- their schools, The Government stated that all stakeholders would be involved in every aspect of school management. Provision of facilities is inclusive however, this aspect is one of the most neglected areas in the school system (Olagboye, 2004). As a result there is disparity in provision of facility from one school to another in urban center. While the schools located in rural areas are neglected.

2.7.4 Utilization of Educational Facilities

Adeboyeje (2000) stated that utilization is the-degree or extent to which an item has been put into effective use. According to him, various degrees of utilization include non-utilization, under-utilization, maximum utilization, optimum utilization and over-utilization. Non-utilization occurs when a facility is not put into use at all. When a facility is not used in its full capacity, under-utilization occurs. There is over-utilization when a facility is used more than its capacity. These degrees of utilization constitute a waste of resources and are counterproductive. On the other hand maximum utilization occurs when facilities are put into effective usage in line with primary objectives. Optimum utilization occurs when facilities are used for many purposes by the school and members

of the community resources put into maximum and optimum usage are not wasted. They are likely to enhance achievement of educational objectives.

2.7.5 Maintenance of Educational Facilities

Facilities tend to depreciate as soon as they are provided-and put into use. Therefore, there is need for maintenance through repair and servicing of components in order to restore their physical condition and sustain their working capacity. Maintenance enhances performance and durability. It also prevents wastages. There are preventive, corrective, breakdown and shutdown maintenance services (Adeboyeje, 2000). Preventive maintenance occurs regularly by checking and rechecking the available facilities and taking necessary measures to prevent mal functioning or non-functioning of a particular facility. Prevention is not only better: it is also cheaper than any other measures, it is ' proactive in nature. Corrective maintenance involves reactivation or replacement of facilities in order to normalize their performances. When a Facility or equipment breaks down completely, a major repair or replacement may be needed. There may be a time when the institution may need to close down in order to allow a major repair to be carried out. Flood, fire or wind disaster may .warrant• Closure of an institution for a major repair to be effected.

2.7.6 Improvement of Educational Facilities

Apart from depreciation, facilities tend to be outdated as a result of changing needs of the society which necessitate a change in school curriculum. In this regard, facilities will need to be improved during different periods. Improvement of facilities implies alteration or modification of Facilities to suit a new demand, new situation or new programme.

Whenever there are changes in any part of the education system, the existing facilities will require modification or replacement.

2.8 Summary

Lyons (2012) documented that learning is a complex activity that supremely tests pupils' motivation, physical condition, teaching resources, their skills of teaching and curriculum. All these play a vital role in a child's development. He further concluded that there was an explicit relationship between the physical characteristics of school buildings and educational outcomes, while good maintenance, modern systems, and flexible designs are clearly required. Linkages between different subject areas were growing and teachers were enhancing their multi-disciplinary capabilities. All these changes in teaching methods required changes in school facilities. The old saying "the building fits the curriculum" developed because the physical structure limited the learning experience. School facilities can be flexible enough to accommodate changing learning patterns and methods.

In Latin America, a study conducted by Willms (2000) found that children whose schools lacked classroom materials and had an inadequate library were significantly more likely to show lower test scores and higher grade repetition than those whose schools were well equipped. Fuller *et al.*, (1999) revealed that physical learning environments or the places in which formal learning occurs, range from relatively modern and well-equipped buildings to open-air gathering places. The quality of school facilities seems to have an indirect effect on learning, an effect that is hard to measure. Some authors argued that "

empirical evidence is inconclusive as to whether the condition of school buildings is related to higher pupils' achievement after taking into account student's background".

Reddy (2006) reported that in physical facilities area problems emerged at times of booming enrollments. During a period of total pupil increase, the impact was felt first at the elementary level. Many communities had found it necessary to expand their facilities but they had no sufficient time and resources to recover, through normal amortization, to turn their attention to added facilities. With heightening demands on the pre-schools, maintenance factors and the most efficient use of existing facilities has been given more importance.

American Association of School Administrators (1999) reported that pupils were more likely to prosper when their environment was conducive to learning. Environmentally responsive heating, air conditioning and ventilating systems, either in a new or renovated school, provided a more comfortable learning environment. Physical facilities are the plant facilities provided in the school in order to facilitate teaching learning process. It includes school building, availability of enough rooms, proper lighting and ventilation, seating and furniture, provision of pure and safe drinking water, availability of play grounds, writing boards, enough washrooms. In order to improve teaching learning process provision of physical infrastructure is a basic ingredient for good education programmes in public pre-schools. However, there are no studies that has been carried out in pre-schools in Marigat Sub County on situational analysis of physical infrastructure and the study tend to establish this phenomena.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter dealt with the procedures and methods the researcher used in order to obtain data needed for the study. It comprises of the research design, study area, research population/target population, sampling design and sample size, research instruments, the research variables, data collection procedures and data analysis techniques.

3.2 Study Area

The study was conducted in Marigat Sub County, Baringo County, Kenya. It borders Baringo Central to the west, Baringo East and Laikipia to the East, Baringo North to the North and Mogotio to the South. Marigat is inhabited by the Tugen (Samor) mainly from the upper regions such as south, southeast and southwest, the Njemps (Ilchamus) mainly from the lowlands and Pokot communities to the west who are mainly pastoralists. The lowlands in the Sub County have an average altitude of about 700meters above sea level and most of it is rangeland. Temperature is above 32⁰c and average annual rainfall is about 600mm. These conditions are not conducive for crop farming and therefore livestock rearing is the main economic activity. The crop farming entirely depends on irrigation. Marigat Sub County has a total of 201 public pre-schools.

3.3 Research Design

The study applied the descriptive survey research design. It is a self-report study that requires the collection of quantifiable information from the sample by interviewing or administering questionnaire to a sample of individuals (Orodho, 2008; Mugenda 2008). It

involves gathering of facts or obtaining pertinent and precise information concerning the current status of phenomenon and whenever possible draw possible conclusions from the facts discovered. Descriptive methods are widely used to obtain data useful in evaluating present practices and providing for decision. This method was appropriate because it described the state of physical infrastructure as it exist, which can be generalized to other parts of Kenya. The method also lends itself to the administration of questionnaire to the sampled individuals.

3.4 Target Population

Target population refers to the entire group of individuals, objects, item, cases, articles or things with common attributes or characteristics from which samples are taken for measurements. In this study, the target population comprised of 201 head teachers and 201 pre-schools teachers and a District Centre for Early Childhood Education (DICECE) officer in Marigat Sub County, Baringo County.

3.5 Sampling Design and Sample Size

Sampling means selecting a given number of subjects from a defined population as representative of that population (Orodho, 2005). Sampling is that part of statistical practice concerned with the selection of individual observations intended to yield some knowledge about a population of concern, especially for the purposes of statistical inference (Mugenda and Mugenda, 2008). The researcher adopted simple random sampling technique to select 30% of the 201 public pre-schools to take part in the study. Simple random sampling was appropriate because the entire population was

relatively large, diverse and sparsely distributed, hence random sampling technique would help to achieve the desired objective. This technique was appropriate for the study as it is cost effective and efficient in administration. The sampling technique gave each element in the population an equal probability of getting into the sample. Table of random numbers were assigned to desired schools and a lottery was used to select the sample.

The researcher used purposive sampling to select 1 DICECE Officer, 60 head teachers and 60 pre-school teachers from the target population of 403 as summarized in table 3.2. Purposive sampling was used to sample DICECE officer, head teachers and pre-school teachers because they are more informed, had similar characteristic such as equal level of education. Therefore they were more homogeneous to be included as part of the sample.

Table 3.1. The Sample Size and Sampling Procedure

Respondents	Target population	Procedure	Sample size
DICECE officer	1		1
Head teachers	201	30% *201	60
Pre- school Teachers	201	30%*201	60
Total	403		121

Source: Researcher (2011)

3.6 Research Instruments

The researcher used questionnaires, interview schedule and observation techniques to collect both qualitative and quantitative data.

3.6.1 Questionnaire

According to Kombo and Tromp (2006), a questionnaire is a research instrument that gathers data over a large sample. A questionnaire is “a set of questions on a topic or group of topics designed to be answered by a respondent” (Richards, 1992). The researcher constructed closed- ended and open- ended questionnaires, which were administered to head teachers and pre- school teachers. This allowed the researcher to draw conclusions based on comparisons made from the responses. The advantage of the questionnaire is that it generates a considerable amount of data and enables the researcher to obtain a wider coverage of data at a comparatively low cost in terms of time, money and effort.

The researcher was able to collect information from various pre-schools over a short period of time and allowed for uniformity in the manner in which questions are asked and makes it possible to be compared across respondents (Cohen and Manion, 2003). The researcher also used questionnaire to cover the geographically wide study area and respondents had adequate time to give well thought out answers and large samples can be made use of. The same questionnaire was designed to collect information from 60 head teachers (Appendix III) and 60 pre-school teachers (Appendix IV) with respect to objectives of the study.

3.6.2 Interview Schedule

Orodho (2005) postulates that many people are willing to communicate orally than in writing and they would provide data more readily and fully than on a questionnaire. In this case structured interview was used as a method of research typically involving face to face meeting as a researcher (interviewer) asking a series of

questions. This method was appropriate where the respondent provided the most required information based on the objectives of study. As a result, the key informant for this study was DICECE officer selected purposively on the basis of their information and knowledge on issues of physical facilities in pre-schools. The interview schedule was prepared in advance containing prompts on physical facilities in pre-schools. This method was advantageous in the sense that the key informant provided an even expounded precisely on most of the issues in detail. This method elicited qualitative data based on the objective of the study (Appendix II).

3.6.3 Observation Schedule

Observation is whereby the researcher participates together with the subjects in the activities carried out during data collection (Kasomo, 2006). In data collection, the researcher observed whether the physical facilities are constructed in accordance with the ministry of education guideline and requirements. Therefore, the information obtained from the observation schedule supplemented data from questionnaires and interview schedule. This technique was useful in obtaining first hand information on the nature and status of physical infrastructure within the preschools (Appendix V).

3.7 Validity and Reliability of the Research Instruments

3.7.1 Validity of the Research Instruments

According to Mugenda and Mugenda (2008), validity is the accuracy and meaningfulness of inferences based on the research results. Validity therefore has to do with how the data obtained in the study represents the variables of the study. If such data is a true reflection of the variable then the inferences based on the data were accurate and meaningful.

Validity is thus the extent to which differences found with a measuring instrument reflect true differences among those being tested (Kothari 2004).

To ascertain the validity of the research instruments, the researcher sought supervisor's assistance from the Department of Educational Management and Policy Studies, Moi University. The advice given by supervisors includes suggestions, clarifications and other inputs helped in making necessary amendments to the instruments. Content validity of the instrument was determined through piloting, where the responses of the subjects were checked against the research objectives.

3.7.2 Reliability of the Research Instruments

Mugenda and Mugenda (2008) define reliability as a measure of the degree to which a research instrument yields consistent results or data after repeated trials. The pilot study enabled the researcher to assess the clarity of the questionnaire items so that those items found to be inadequate or vague were modified to improve the quality of the research instrument thus increasing its reliability. The questionnaire was therefore being said to be valid when it actually measured the intended parameters. Although a number of factors influence the reliability of any measuring instrument or concept under study, determining the accuracy of the data, discussing the possibilities of generalizing the accuracy of the data, and advancing the possibilities of replicating a study, always remained the scientific evidence of a scholarly study (Creswell, 2008).

Before the actual data was collected, the researcher conducted a pilot study in the neighbouring Mogotio Sub County among 10 head teachers and 10 pre-school teachers. The questionnaires were administered to pre-school teachers and head teachers twice

with the same questionnaires at different intervals of a week. The questionnaires were tested for reliability using Cronbach's Coefficient Alpha which combines all the items and shows which item to discard if it does not capture what it is intended (Neuman, 2000).

Cronbach's Coefficient Alpha was computed for each item to determine the reliability of the research instrument. A reliability coefficient of 0.7 or over was assumed to reflect the internal reliability of the instruments (Fraenkel & Wallen, 2000). From the results the Cronbach's Coefficient Alpha was found to be 0.705 and showed that the research instrument was consistent. The entire questionnaire indicated similar responses and therefore it is deemed as straight forward and reliable. The instrument was administered in a consistent fashion to enhance reliability of the measurement instrument. Several typographical errors and omissions was detected and corrected in the instrument confirming that it is sufficient to be used in the main study. To measure the reliability of the instrument, the questionnaire was subjected to reliability test to ensure that the measuring instrument yields consistent results every time.

3.8 Data Collection Procedures

The researcher secured an introductory letter from Moi University, school of education to seek a research permit from the ministry of Education (MoE), through the Sub County Education Officer to conduct this study. The researcher sought permission from the school heads of pre-schools in order to inform him of the intent to conduct the research. An introduction statement at the top of the questionnaire guided the respondents on how to answer the questionnaire and give the assurance of confidentiality. The questionnaire administered to the respondents by the researcher from May to August 2012. The completed questionnaires were picked after they were fully responded to.

3.9 Data Analysis Techniques

After data collection, the data was cleaned, coded and entered in the computer for analysis using the Statistical Package for Social Sciences (SPSS) version 17.0. This research yielded both qualitative and quantitative data. Qualitative data from interviews and observation schedule was analyzed using content and thematic analysis based on meanings and implications emanating from respondents information, while quantitative data were analyzed using descriptive statistics; mean, frequencies and percentages. As observed by Gray (2004) qualitative data provides rich descriptions and explanations that demonstrate the chronological flow of events as well leading to chance findings. According to Kothari (2004) it ensures that all relevant data are captured for making comparison and analysis. The statistics used include frequency counts percentages and presented using frequency distribution tables.

3.10 Ethical Considerations

The researcher obtained research permit from the Ministry of Education Science and Technology, the permit was presented to Education County director, Baringo County in which the study was to be carried out. The letter from the county director together with the research permit was used to obtain permission from the head teachers of the selected schools. The respondents were assured of privacy and confidentiality of the information obtained from them. The respondent informed consent was obtained before the commencement of the study. The researcher preserved the anonymity of the informant by not writing the names on the research instruments.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSION

4.1 Introduction

This chapter presents the analysis, presentation, interpretation and discussion of data collected and analysed. Presentation of results was done using frequency tables and percentages based on the objectives of the study:

1. To examine the adequacy of classrooms and furniture in public pre-schools within Marigat Sub County, Baringo County
2. To find out the state of the provision of water and sanitary facilities in public pre-schools within Marigat Sub County, Baringo County.
3. To examine availability of outdoor play space and playing equipment in public pre-schools within Marigat Sub County, Baringo County
4. To determine the toilet pupil ratio in public pre-schools within Marigat Sub County, Baringo County.

4.2 Background Information

The background information of schools was obtained from the DICECE officer, headteachers and pre-school teachers in Marigat Sub County, Baringo County. This was relevant to the study because it provide information on enrolment of pupils in preschools, their age, number per class and caregivers.

4.2.1 Enrolment of Boys and Girls

The information on enrolment of boys and girls in pre-schools was sought in order to establish the class size ratio and toilet pupil ratio. The descriptive statistics were used to determine the mean enrolment of pupils. The data obtained from document analysis was entered into Statistical Package of Social Scientist (SPSS) and mean enrolment computed. The enrolment of boys and girls in Marigat Sub County, Baringo County was varied during the study as summarized in Table 4.1.

Table 4.1 Enrolment of Boys and Girls

Enrolment (number)	Boys	Girls	Total
Minimum number of pupils	6	6	12
Maximum number of pupils	550	450	1000
Total pupils	8343	7807	16,150
Mean	42	39	67

However from the study the minimum number of boys and girls enrolled per class were six but the maximum showed that more boys were enrolled than the girls. From the study it showed that mean enrolment of boys 42 were higher than that of girls 39, thus there was disparity in enrolment.

4.2.2 Age of Pupils

The age of pupils in pre-schools was sought in order to establish the age ranges of boys and girls for purposes of class size furniture and indoor and out door equipments in the school as summarized in table 4.2.

Table 4.2 Age of Pupils

Age ranges (years)	Under three	4 years	5 years	Total
Minimum age of pupils	3	4	1	8
Maximum age of pupils	52	90	80	222
Mean age	17	21	21	59

The average minimum age comprised of 3 for pupils less than 3 years, 4 for those aged 4 years and 1 for those aged 5 years. However the mean maximum age comprised of 52 pupils less than three years, 90 pupils aged 4 years and 80 pupils aged 5 years. The findings further revealed that most of the pupils in pre-schools in Marigat Sub County, Baringo County were aged 4 and 5 years since the mean ages were 21 respectively. However the mean of those under three was 17 and fewer as compared to those aged 4 and 5 years.

4.2.3 Average Number of Children per Class

The number of the children per class was sought in order to establish the class size ratio. From the study the mean average number of pupils was found to be approximately 25 pupils per class as summarized in table 4.3.

Table 4.3 Average number of Children Per Class

	Mean number of children
Minimum number of pupils per class	7
Maximum number of pupils per class	61
Mean	25

The minimum average pupils were found to be 7 and maximum being 61 pupils per class. The findings showed that there was disparity on the average number of pupils per class despite the overall mean within the recommended figure of 25 pupils per class as per policy. This showed that the class size ratio was high in some pre-schools and low in others.

4.2.4 Number of Caregivers/Teachers

The number of caregivers/teachers in pre-schools was sought during the study so as to provide information on toilet to teacher ratio in pre-schools. The mean average number of caregivers/teachers during the study was found to be approximately 3 as summarized in table 4.4.

Table 4.4 Number of Caregivers/Teachers

Caregivers/ teachers	Mean number of caregivers/teachers per school
Minimum	1
Maximum	7
Mean	3

The minimum number of teachers/caregivers was found to be 1 and maximum being 7 caregivers/teachers. The findings showed that there was disparity on the average number of caregivers/teachers per school and the government need to employ more ECDE teachers.

4.2.5 Enrolment from 2007 to 2011

The enrolment of pupils was sought during the study so as to establish the class size ratio and toilet pupil ratio. The enrolment trend of pupils in Marigat Sub County, Baringo County between 2007 and 2011 was varied during the study as summarized in table 4.5.

Table 4.5 Enrolment from 2007 to 2011

Year	2007	2008	2009	2010	2011	Total
Minimum	8	11	12	18	22	71
Maximum	700	900	780	800	900	4080
Mean	77	77	84	87	94	418

The minimum number of ECDE children was found to increase from 8 in 2007 to 22 pupils in 2011 and the maximum enrolment did not increase gradually but ranged between 700 in 2007 and 900 in 2011. The findings showed that the enrolment of pupils in ECDE centres increased during the five years of study. The average mean enrolment of pupils in Marigat Sub County, between 2007 and 2011 was found to increase from 77 pupils in 2007 to 94 pupils in 2011. From the study it showed that mean enrolment of pupils in Marigat Sub County, Baringo County greatly increased for the last five years. Thus there was need to increase the physical infrastructure to meet the demand of pre-school education.

4.3 Physical Facilities in Pre-schools

In order to ascertain the physical facilities in pre-school the information was sought from the schools on the sufficiency of the facilities as summarized in table 4.6.

Table 4.6 Physical Facilities in Pre-schools

Physical facilities	Very sufficient		Sufficient		Fairly insufficient		Not sufficient	
	Freq	%	Freq	%	Freq	%	Freq	%
Classrooms	21	17.5	35	29.2	55	45.8	9	7.5
Desks/chairs	12	10.0	35	29.2	44	36.7	29	24.1
Play facilities	0	0.0	16	13.3	56	46.7	48	40.0
Swings	2	1.7	10	8.3	15	12.5	93	77.5
Play ground	14	11.7	48	40.0	47	39.1	11	9.2
Toilets/latrines	41	34.2	13	10.8	13	10.8	53	44.2
Kitchen	21	17.5	40	33.3	36	30.0	23	19.2
Water and sanitation	20	16.7	26	21.6	44	36.7	30	25.0

The classrooms were found to be insufficient by 64 (53.3%) of the respondents and 56(46.7%) rated the classrooms to be sufficient. The desks and chairs were rated by 73(60.8%) of the respondents to be insufficient and 47(39.2%) rated it to be sufficient. The Play facilities were rated by 104(86.7%) to be insufficient and only 16(13.3%) rated them to be sufficient. The swings were rated by 108 (90%) of the respondents to be insufficient and only 12 (10%) rated them to be sufficient.

The playground were identified by 62 (51.7%) identified it to be sufficient while 58 (48.3%) of the respondents was found to be insufficient for the pupils to play. Most of the

respondents 66 (55%) identified that toilets/latrines were not sufficient with 54 (45%) identified the toilets and latrines to be sufficient for pupils. Most of the respondents 61(50.8%) identified that the kitchen were sufficient and 59(49.2%) of them rated the kitchen to be insufficient. The water and sanitation were rated by 74(61.7%) of the respondents to be insufficient and only 46(38.3%) rated it to be sufficient.

From the study, the sufficiency of physical facilities in pre-schools was varied among the schools with most of them being insufficient. The findings showed that the classrooms, desks and chairs, play facilities, swings, toilets/latrines, kitchen and water and sanitation were insufficient. Playground was sufficient for the pupils to play. The findings agree with Leeper, *et al.*, (1968) who argues that learning environment makes it essential for learners when all physical facilities, equipment, and materials are considered carefully in a learning situation and those selected and used should be in accordance with basic principles of child growth. The school environment should invite the child to participate in activities and to have experiences. The classroom is for the child, it needs to reflect children's tastes, interests, and activities.

4.4 The Adequacy of Classrooms and Furniture

The adequacy of classrooms and furniture was sought from the public pre-school within Marigat Sub County, Baringo County using the teachers and head teacher's views and their responses were summarized below.

4.4.1 The Adequacy of Classrooms in Pre-Schools

To establish the adequacy of classrooms in public pre-school within Marigat Sub County, Baringo County the teachers and head teachers views were sought and their response were varied as summarized in table 4.7.

Table 4.7 Adequacy of Classrooms

Classrooms	Strongly agree		Agree		Not sure		Disagree		Strongly disagree	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
The classrooms are not enough for all the children in the school	25	20.8	54	45.0	3	2.5	32	26.7	6	5.0
The enrolment of pupils has overwhelmed the available classroom capacity	25	20.8	49	40.8	11	8.8	29	24.2	6	5.0
Classrooms are of standard sizes according to the MOE guidelines	22	18.8	14	11.3	7	6.3	19	15.4	58	48.3
Classrooms are well ventilated	20	16.7	64	53.3	7	5.8	13	10.8	16	13.2
There is adequate lighting system within the classrooms	24	20.0	26	21.7	9	7.5	27	22.5	34	28.3
The roofs are well designed to prevent leakages	32	26.7	52	43.3	10	8.3	15	12.5	11	9.2
The floors are well designed and cemented for easy mobility of pupils.	25	20.8	22	18.3	8	6.6	16	13.3	49	40.8
Classrooms are accessible for use by children with special needs, and have ramps, rails and lower door handles.	13	10.8	6	5.1	16	13.3	45	37.5	40	33.3
The classroom doors and windows are adequate according to the recommended sizes	11	9.2	63	52.5	13	10.8	27	22.5	6	5.0

Most of the respondents 79 (65.8%) agree that the classrooms are not enough for all the children in the school and 38 (31.7%) disagree that classrooms are not enough for all the children in the school and 3 (2.5%) were not sure. Most of the respondents 74 (61.7%) agree that the enrolment of pupils has overwhelmed the available classroom capacity and 34 (28.3%) disagree that enrolment of pupils has overwhelmed the available classroom capacity and 12 (10.0%) were not sure.

Most of the respondents 84 (70.0%) agree that classrooms are well ventilated and 29 (24.2%) disagree that classrooms are well ventilated and 7 (5.8%) were not sure. Majority of the respondents 84 (70.0%) agree that the roofs are well designed to prevent leakages and 26 (21.7%) disagree that the roofs are well designed to prevent leakages and 10 (8.3%) were not sure. Majority of the respondents 74 (61.7%) agree that the classroom doors and windows are adequate according to the recommended sizes and 33 (27.5%) disagree that the classroom doors and windows are adequate according to the recommended sizes and 13 (10.8%) were not sure.

Most of the respondents 76 (63.3%) disagree that the classrooms are of standard sizes according to the MOE guidelines and 36 (30.0%) agree that classrooms are of standard sizes according to the MOE guidelines and 8 (6.7%) were not sure. Most of the respondents 61 (50.8%) disagree that there is adequate lighting system within the classrooms and 50 (41.7%) agree that there is adequate lighting system within the classrooms and 9 (7.5%) were not sure. Most of the respondents 65 (54.2%) disagree that the floors are well designed and cemented for easy mobility of pupils and 47 (39.2%)

agree that the floors are well designed and cemented for easy mobility of pupils and 8 (6.6%) were not sure. Majority of the respondents 85 (70.8%) disagree that classrooms are accessible for use by children with special needs, and have ramps, rails and lower door handles and 19 (15.9%) agree that classrooms are accessible for use by children with special needs, and have ramps, rails and lower door handles and 16(13.3%) were not sure.

From the study most of the pre-schools had the physical facilities and materials that enhance the creativity of the child. Some areas of the classes were so dark that the pupils had the problem in looking at the class work and other material during activities. Most of the schools had the odourless environment. Environment has the effects on the pupils learning and should be clean and safe. Most of schools had no electricity and chalkboard was available for pupils in the classroom. Nearly all ECD teachers selected physical equipments which permit a wide range of abilities and growth patterns in the child.

From the observation schedule it was identified that 84 (70.0%) of classrooms were well ventilated and iron roofed, with 36(30%) were not well ventilated classrooms and not well designed to prevent leakages as shown in Figure 4.1. Majority of the schools 76(63.3%) had classrooms that were not of required standard sizes and 44 (36.7%) had classrooms are of standard sizes according to the MOE guidelines. From the observation schedule 79 (65.8%) of the classrooms were identified to be enough for all the children in the school and 41 (34.2%) were not enough for all the children in the school. The classrooms cemented floor comprised of 55 (45.8%) and 65 (54.2%) had no cemented floors.

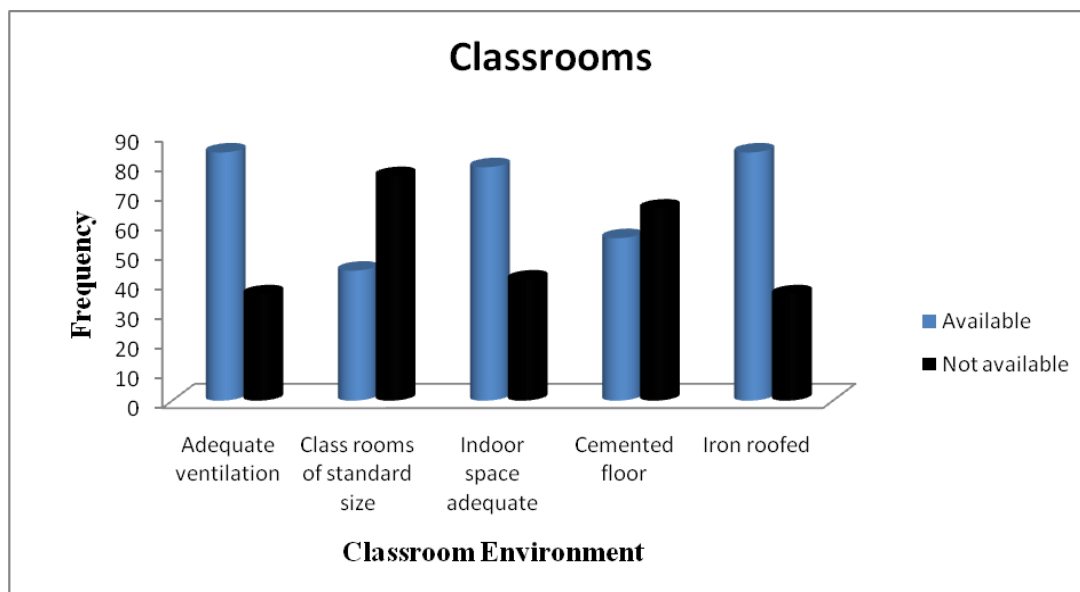


Figure 4.1 Classroom Environment in Public Pre-School

The classrooms were enough for all the children in the schools and the enrolment of pupils has overwhelmed the available classroom capacity. The classrooms were well ventilated, the roofs are well designed to prevent leakages and doors and windows were adequate. The findings agree with Olson (1959) who points out that health, comfort and safety are the primary concern in planning the environment for children and youth. The classroom building needs to be adaptable for use.

Suitable light, both artificial and natural, is required for program development. When the child is welcomed by the teachers and the classroom environment, he/she easily adjust in the classroom and enjoy doing learning activities. The room should give the freedom of activity, movement and space. Leeper *et al.*, (1968) also believed that space is an important factor in providing a rich environment for learning, but it is only significant to the degree that it assists in providing a suitable climate for learning.

The classrooms were not of standard sizes according to the MOE guidelines and there was no adequate lighting system within the classrooms. The floors were not well designed and cemented for easy mobility of pupils and classrooms were not accessible for use by children with special needs, lacked ramps, rails and lower door handles. The findings agree with Leeper, *et al.*, (1968) that the furniture in the classroom should be movable, durable, comfortable, attractive, child-sized, and storable. Specifically for chairs, it is required that it should be light enough for child to handle, movable without noise, and with backs about 22 inches high. From the interview schedule the DICECE officer identified that most of the classrooms were not of the required sizes. The classrooms were enough for all the children however the enrolment of pupils has overwhelmed the available classroom capacity. The classrooms were well ventilated, the roofs are well designed to prevent leakages and doors and windows were adequate.

4.4.2 The Adequacy of Furniture in Pre-Schools

To establish the adequacy of furniture in public pre-school within Marigat Sub County, Baringo County the teachers and head teachers' views were sought and their responses were varied as summarized in table 4.8. Majority of the respondents 65 (54.2%) disagree that the desks and chairs are enough for all the pupils and 46 (38.3%) agree that desks and chairs are enough for all the pupils and 9 (7.5%) were not sure. Most of the respondents 78 (65.0%) disagree that the size of chairs and desks are of recommended sizes and 29 (24.2%) agree that the size of chairs and desks are of recommended sizes 13 (10.8%) were not sure. Majority of the respondents 66 (54.9%) disagree that teacher's chair, table and cupboard are available in the ECD classroom and 46 (38.4%) agree that

teacher's chair, table and cupboard are available in the ECD classroom and 8 (6.7%) were not sure.

Table 4.8 Adequacy of Furniture in Pre-Schools

Furniture	Strongly agree		Agree		Not sure		Disagree		Strongly disagree	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
The desks and chairs are enough for all the pupils	14	11.7	32	26.7	9	7.5	56	46.6	9	7.5
The size of chairs and desks are of recommended sizes	18	15.0	11	9.2	13	10.8	40	33.3	38	31.7
Teacher's chair, table and cupboard are available in the ECD classroom.	5	4.2	41	34.2	8	6.7	31	25.8	35	29.1

From the observation checklist 65 (54.2%) of the pre-schools had desks and chairs that were not enough for all the pupils and 55 (45.8%) had adequate desks and chairs for all the pupils as shown in Figure 4.2. From the study 78 (65.0%) of the schools had chairs and desks that were not of recommended sizes and 42 (35%) had chairs and desks of recommended sizes.

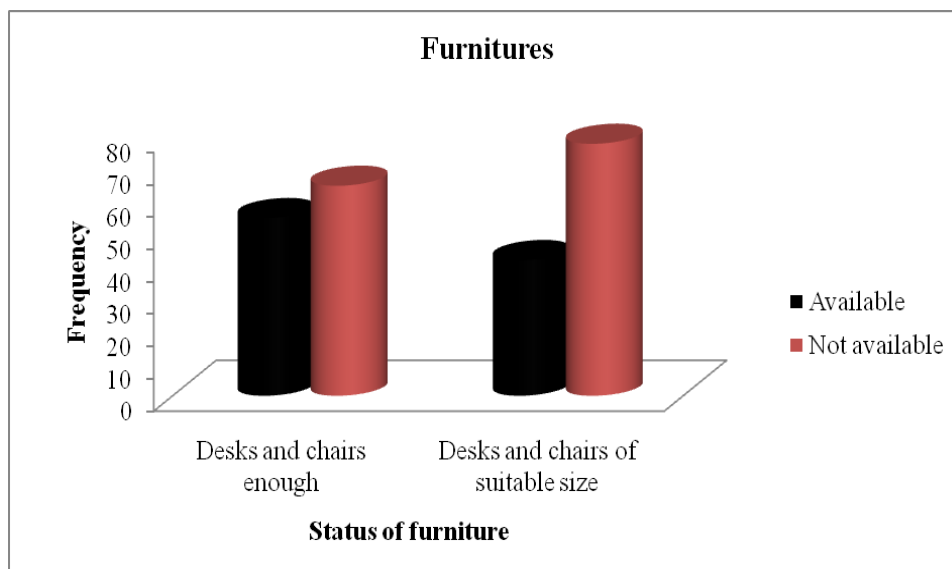


Figure 4.2 Status of Furniture in Public Pre-School

From the study the desks and chairs were not enough for all the pupils and the size of chairs and desks were not of recommended sizes. The teacher's chair, table and cupboard were not available in the ECD classroom. Leeper (1954) observed that the best learning environment is one which stimulates the individual to reach constantly for new understandings, and new experiences. Furthermore, Bruce (2006) stated that environment should provide a rich range of resources which is always available to children. This gives them scope to build on developing interests and to practice and apply what they have learned. Children then make their own learning. From the interview schedule the DICECE officer identified that the number of furniture was not enough in relation with enrolment in public pre-schools in Marigat Sub County Baringo County. The desks and chairs were not of recommended sizes.

4.5 The Provision of Water and Sanitation Facilities

To establish the provision of water and sanitation facilities in public pre-school within Marigat Sub County, Baringo County teachers and head teacher's views were sought and their responses were varied as summarized in table 4.9.

Table 4.9 Provision of Water and Sanitation Facilities in Pre-School

	Strongly agree		Agree		Not sure		Disagree		Strongly disagree	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
The school provides safe drinking water to be used in the kitchen.	26	21.7	16	13.3	6	5.0	28	23.3	44	36.7
The pre-school provides water for play activities.	14	11.7	33	27.5	10	8.3	42	35.0	21	17.5
There is enough water for drinking and washing hands.	31	25.8	17	14.2	3	2.5	19	15.8	50	41.7

Majority of the respondents 72 (60%) disagree that the school provides safe drinking water to be used in the kitchen and 42 (35%) agree that the school provides safe drinking water to be used in the kitchen and 6 (5%) were not sure. Majority of the respondents 63 (52.5%) disagree that the pre-school provides water for play activities and 47 (39.2%) agree that the pre-school provides water for play activities and 10 (8.3%) were not sure. Majority of the respondents 69 (57.5%) disagree that there is enough water for drinking

and washing hands and 48 (40%) agree that there is enough water for drinking and washing hands and 3(2.5%) were not sure.

From the observation schedule it was identified that 72 (60%) of the schools do not provides safe drinking water to be used in the kitchen and only 48 (40%) provides safe drinking water to be used in the kitchen as shown in Figure 4.3. From the study 63 (52.5%) of the pre-school do not provide water for play activities and 57 (47.5%) provides water for play activities. Also 69 (57.5%) of the pre-schools had no enough water for drinking and washing hands and 51 (40%) had enough water for drinking and washing hands.

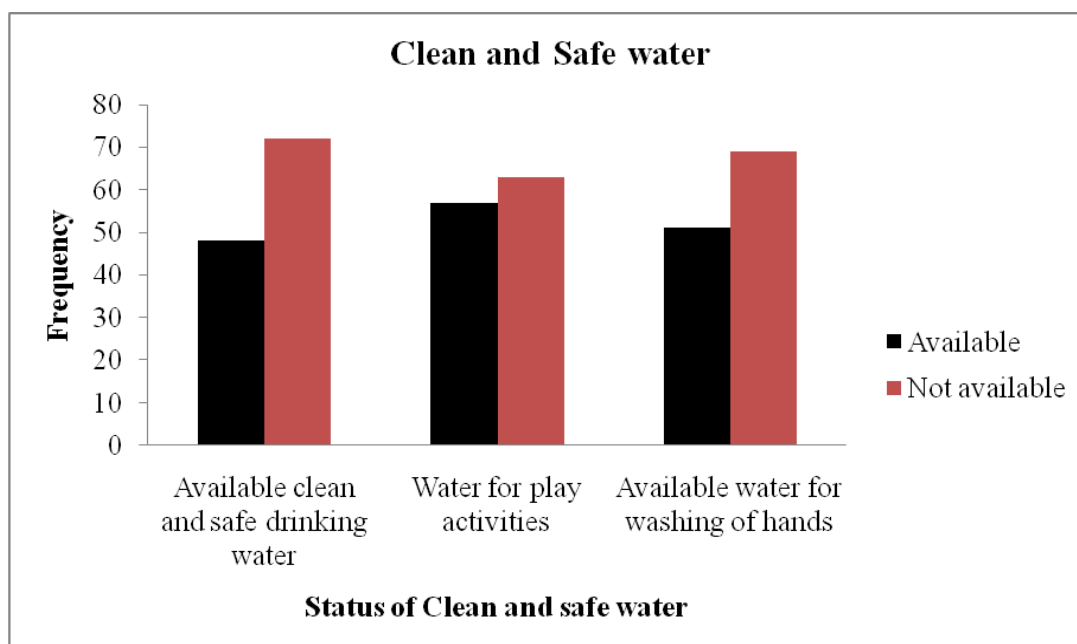


Figure 4.3 Status of Clean and Safe Water in Public Pre-School

From the interview schedule the DICECE officer identified that the ECDE centers did not have enough safe drinking water. This was identified to limit the availability of water to be used in the kitchen, drinking and washing of hands as well as for play activities among

the pupils. From the study it was identified that schools do not provide safe drinking water to be used in the kitchen. The pre-schools do not provide water for play activities and there was not enough water for drinking and washing hands.

4.6 Availability of Outdoor Play Space and Playing Equipment

To establish the availability of outdoor play space and playing equipment in public pre-school within Marigat Sub County, Baringo County, the teachers and head teacher's views were sought.

4.6.1 Availability of Outdoor Play Space and Playing Equipment in Pre-Schools

To establish the availability of outdoor play space in public pre-school within Marigat Sub County, Baringo County, the teachers and head teachers views were sought and their response were varied as summarized in table 4.10. Most of the respondents 82 (68.3%) agree that outdoor play area is large enough for the children to play and run around safely and 27 (22.5%) disagree that Outdoor play area is large enough for the children to play and run around safely and 11 (9.2%) were not sure.

Majority of the respondents 91 (75.8%) agree that surface of outdoor play area is free from sharp objects and harmful materials and 24 (20%) disagree that surface of outdoor play area is free from sharp objects and harmful materials and 5 (4.2%) were not sure.

Majority of the respondents 85 (70.9%) agree that the pre-school compound is regularly cleared, cleaned and maintained and 19 (15.8%) disagree that the pre-school compound is regularly cleared, cleaned and maintained and 16 (13.3%) were not sure.

Table 4.10 Availability of outdoor play space

Outdoor play space	Strongly agree		Agree		Not sure		Disagree		Strongly disagree	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Outdoor play area is large enough for the children to play and run around safely	22	18.3	60	50.0	11	9.2	22	18.3	5	4.2
Surface of outdoor play area is free from sharp objects and harmful materials.	24	20.0	67	55.8	5	4.2	17	14.2	7	5.8
The pre-school compound is regularly cleared, cleaned and maintained.	23	19.2	62	51.7	16	13.3	15	12.5	4	3.3
The playground and materials are adapted for children with special needs.	0	0.0	13	10.8	17	14.2	90	75.0	0	0.0
The pre-school compound is fenced off and have lockable gate for the security of the children.	18	15.0	20	16.7	8	6.7	35	29.1	39	32.5
A compost pit is located at furthest corner of the pre-school compound	15	12.5	83	69.2	3	2.5	7	5.8	12	10.0
The compost pit is enclosed for the safety of children.	30	25.0	16	13.3	12	10.0	13	10.9	49	40.8
Pre-school with water body in the compound i.e. bore holes are fenced off and have lockable gate for security of children.	10	8.3	34	28.4	16	13.3	34	28.3	26	21.7

Majority of the respondents 98 (81.7%) agree that a compost pit is located at furthest corner of the pre-school compound and 19 (15.8%) disagree that a compost pit is located at furthest corner of the pre-school compound and 3 (2.5%) were not sure. Majority of the

respondents 90 (75%) disagree that the playground and materials are adapted for children with special needs and 13 (10.8%) agree that the playground and materials are adapted for children with special needs and 17 (14.2%) were not sure.

Majority of the respondents 74 (61.7%) disagree that the pre-school compound is fenced off and have lockable gate for the security of the children and 38 (31.7%) agree that the pre-school compound is fenced off and have lockable gate for the security of the children and 8 (6.6%) were not sure. Majority of the respondents 62 (51.7%) disagree that the compost pit is enclosed for the safety of children and 46 (38.3%) agree that the compost pit is enclosed for the safety of children and 12 (10%) were not sure.

Majority of the respondents 60 (50%) disagree that the pre-school with water body in the compound i.e. bore holes are fenced off and have lockable gate for security of children and 44 (36.7%) agree that the pre-school with water body in the compound i.e. bore holes are fenced off and have lockable gate for security of children and 16 (13.3%) were not sure. From the interview schedule the DICECE officer identified that the outdoor play space/playground was large enough for the children to play and run around safely.

The play equipment's were not adequate for all the children. The outdoor play materials were not adapted for children with special needs. From the study findings it was found that the outdoor play area was large enough for the children to play and run around safely as the surface was free from sharp objects and harmful materials. The pre-school

compound was regularly cleared, cleaned and maintained and had a compost pit located at furthest corner of the pre-school compound.

The findings agree with Bruce (2006) that provision of an outside space should give scope for children to work and play on a larger scale. Children need space to move, make and do things and to develop these interests without disturbing others. Outdoor provision can easily lend itself to supporting young children's natural means of learning. Sensory experiences are readily available. Additionally, Leeper *et al.*, (1968) explained that selection of the outdoor area stimulate learning and interest of the child in the natural environment as well as encourage him to contact his physical world. Finch (1999) also believed that when given a choice, children often prefer to play outside in open space.

The child become more excited and energetic, hence the outdoor activities should be provided in a way that would be appropriate for physical development of the children. Bruce (2006) implied that children are offered more scope for challenge outside. The playground and materials were not adapted for children with special needs as the pre-school compound was fenced off and had a lockable gate for the security of the children. The compost pit was not enclosed for the safety of children. The pre-school had a water body in the compound that was not fenced off and with lockable gate for security of children.

From the observation schedule 82 (68.3%) of the pre-school had outdoor play area large enough and 38 (31.7%) outdoor play area was not large enough for the children to play

and run around safely as shown in Figure 4.4. From the study 91 (75.8%) of the schools had surface of outdoor play area is free from sharp objects and harmful materials and 29 (24.2%) had outdoor play area not free from sharp objects and harmful materials. From the study 74 (61.7%) of the pre-school had the compound not fenced and 46 (38.3%) had the compound is fenced off and have lockable gate for the security of the children. From the study 73 (60.8%) of the pre-school had play and learning equipment available and 47 (39.2%) had play and learning equipment not available within the pre-school. From the study 61 (50.8%) of the pre-schools had play equipments appropriate for all children in the pre-school and 59 (49.2%) had play equipments not appropriate for all children.

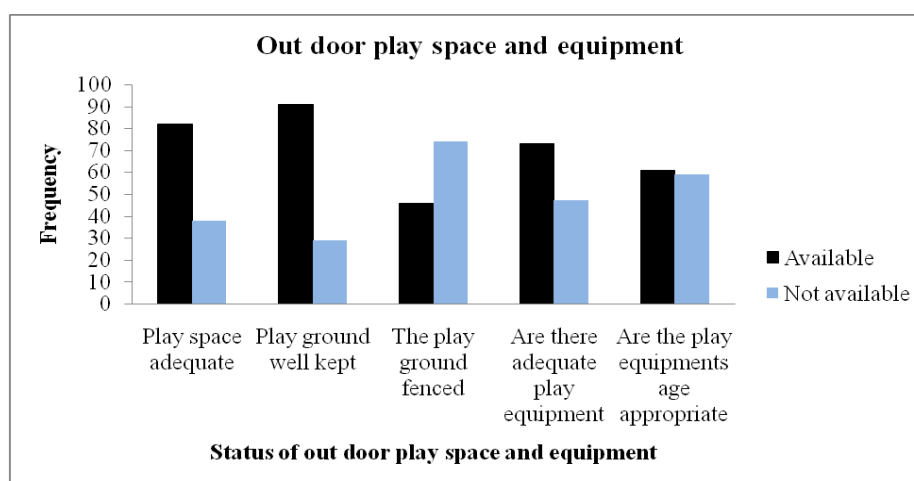


Figure 4.4. Outdoor Play Space and Equipment

4.6.2 Play and Learning Equipment in Pre-schools

To establish the availability of play and learning equipment in public pre-school within Marigat Sub County, Baringo County, the teachers and head teacher's views were sought and their responses were varied as summarized in table 4.11.

Table 4.11 Availability of Play and Learning Equipment

Play & Learning equipment	Strongly agree		Agree		Not sure		Disagree		Strongly disagree	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
The play and learning equipment are available within the pre-school	18	15.0	55	45.8	6	5.0	30	25.0	11	9.2
The play equipments are appropriate for all children in the pre-school	16	13.3	35	29.2	8	6.7	49	40.8	12	10.0
The play equipments are safe and securely fixed to protect children from injury	19	15.8	13	10.8	13	10.8	40	33.4	35	29.2
The play materials are regularly serviced and maintained	5	4.2	42	35.0	6	5.0	44	36.7	23	19.1
The play equipments are brightly colored	12	10.0	38	31.7	20	16.7	35	29.1	15	12.5

Most of the respondents 73 (60.8%) agree that the play and learning equipment are available within the pre-school and 41 (34.2%) disagree that the play and learning equipment are available within the pre-school and 6 (5%) were not sure. 50 (41.7%) agree that play equipments are brightly colored and 50 (41.7%) agree that play equipments are brightly colored and 20(16.6%) were not sure.

Majority of the respondents 61 (50.8%) disagree that the play equipments are appropriate for all children in the pre-school and 51 (42.5%) agree that the play equipments are appropriate for all children in the pre-school and 8 (6.7%) were not sure. Majority of the respondents 75 (62.5%) disagree that play equipments are safe and securely fixed to protect children from injury and 32 (26.7%) agree that the play equipments are safe and securely fixed to protect children from injury and 13 (10.8%) were not sure. Majority of the respondents 67 (55.8%) disagree that play materials are regularly serviced and maintained and 47 (39.2%) agree that the play materials are regularly serviced and maintained and 6(5.0%) were not sure.

From the findings of the study the play and learning equipment were available within the pre-school and brightly colored. The findings agree with Firlik (1993) who argued that that the eminent philosophers/researchers like Rousseau, Pastalozzi, and Froebel, emphasized the importance of the child interests as the starting point for learning. The learning can be enhanced, by providing pupils the proper physical facilities. When the needs of the pupils will be satisfied, they can perform in healthier and improved way.

Physical facilities help to enhance the learning of the pupils. As Shami (2005) believed that physical facilities are the essential element to facilitate teaching learning process. Researches have also showed that availability of the physical facilities including drinking water, electricity, boundary wall, toilets, furniture, playgrounds, libraries, and dispensaries have a significant positive influence on the performance of the pupils and their achievement (AEPAM, 2003). Furthermore, Shami and Hussain, (2005) also

mentioned that the availability of physical facilities in a school had a significance impact on pupil's performance.

Teachers observed the pupils during work-play and realized the need for additional equipments and materials. Teachers used different objects for different purposes in the classroom for building concepts and doing activities with pupils. Due to the lack of resources in the some schools the teachers were using different objects for teaching different concepts, however in few of the schools children work was displayed on the walls. The findings showed that schools were providing out door play areas for pupils. Most schools had doors, which require greater force to open or close. Pupils wanted to do work by themselves, so the doors should be at the appropriate child's level. Grassy play area, storage of outdoor play items, dig in dirt or sand area, blocks and wooden materials, shelves for the children at their level to keep things were available in quite a few schools. Various pre-schools were sharing their school buildings with primary schools and the out door play area was not available.

The findings agree with Leeper *et al.*, (1968) who argued that when outdoor space is adjacent to indoor play space, much of the equipment can be used in either indoor or outdoor activities. The play equipments were not appropriate for all children in the pre-school and were not safe and securely fixed to protect children from injury. Play materials were not regularly serviced and maintained in pre-school. The findings agree with Olson (1959) that health, comfort and safety are the primary concern in planning the environment for children and youth. The classroom building needs to be adaptable for use with suitable light, both artificial and natural, is required for program development.

4.7 Toilet Pupil Ratio

To establish the toilet pupil ratio in public pre-school within Marigat Sub County, Baringo County the teachers and head teacher's views were sought and their responses were varied as summarized in table 4.12.

Table 4.12 Toilet Pupil Ratio

Statements	Strongly agree		Agree		Not sure		Disagree		Strongly disagree	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Pre-school have toilets/latrines for boys, girls and teachers,	21	17.5	59	49.2	2	1.7	28	23.3	10	8.3
The toilet is specially designed for young children.	14	11.7	33	27.5	7	5.8	44	36.7	22	18.3
The toilet-child ratio is as recommended (1:25)	2	1.7	26	21.7	16	13.3	50	41.7	26	21.6
The toilet-teacher ratio is as recommended (1:12)	9	7.5	18	15.0	12	10.6	34	28.3	47	39.2
Pre-school have toilets for children with special needs.	3	2.5	7	5.8	13	10.8	53	44.2	44	36.7
The toilets are located far away from the borehole (15metres)	33	27.5	55	45.8	5	4.2	19	15.8	8	6.7

Most of the respondents 80 (66.7%) agree that the pre-school have toilets/latrines for boys, girls and teachers in the school and 38 (31.6%) disagree that the Pre-school have toilets/latrines for boys, girls and teachers and 2 (1.7%) were not sure. Most of the respondents 88 (73.3%) agree that the toilets are located far away from the borehole (15metres) and 27 (22.5%) disagree that the toilets are located far away from the borehole (15metres) and 5 (4.2%) were not sure. Majority of the respondents 66 (55.0%) disagree

that the toilet is specially designed for young children and 47 (39.2%) agree that the toilet is specially designed for young children and 7 (5.8%) were not sure.

Most of the respondents 76 (63.3%) disagree that the toilet-child ratio is as recommended (1:25) and 28 (23.3%) agree that the toilet-child ratio is as recommended (1:25) and 16 (13.4%) were not sure. Majority of the respondents 81 (67.5%) disagree that the toilet-teacher ratio is as recommended (1:12) and 27 (22.5%) agree that toilet-teacher ratio is as recommended (1:12) and 12 (10.0%) were not sure. Majority of the respondents 97 (80.9%) disagree that pre-school have toilets for children with special needs and 10 (8.3%) agree that pre-school have toilets for children with special needs and 13 (10.8%) were not sure.

From the observation schedule 80 (66.7%) of the pre-school had toilets/latrines for boys, girls and teachers in the school and 40 (33.3%) had inadequate toilets/latrines for boys, girls and teachers as shown in Figure 4.5. Also 66 (55.0%) of the schools had the toilet not specially designed for young children and 54 (45%) had toilet designed for young children. From the study 76 (63.3%) of the schools had no enough toilets for both boys and girls, with 44(46.7%) of the schools having enough toilets for both boys and girls. From the study majority 97 (80.9%) of the public pre-school had no toilets for children with special needs and only 23 (19.1%) have toilets for children with special needs.

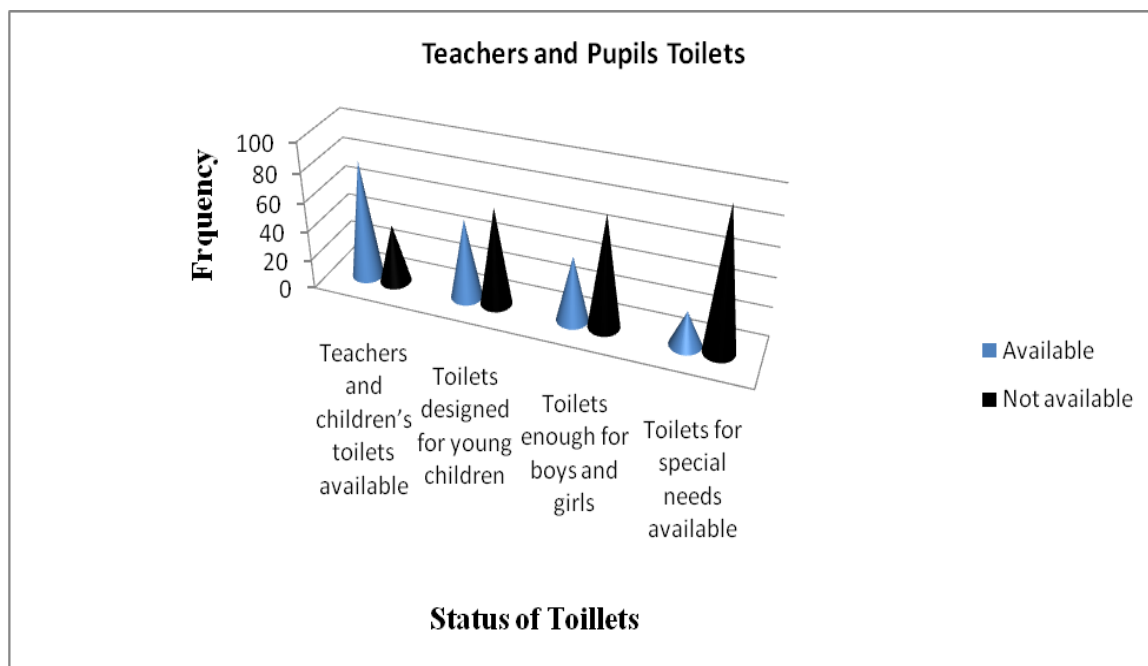


Figure 4.5 Status of Toilets in Public Pre-School

From the study the public pre-school within Marigat Sub County, Baringo County had toilets/latrines for boys, girls and teachers in the school and the toilets were located far away from the borehole (15metres). The pre-school had no toilets for children with special needs and were not specifically designed for young children. The toilet-child ratio was found to be 1:40 and toilet-teacher ratio was 1:15. This indicated that toilet-child ratio was not as recommended (1:25), with toilet-teacher ratio of (1:12). Leeper *et al.*, (1968) stressed that the classroom should be on the ground floor and has no hidden areas so that it can be easily supervised. It should also be adjacent to toilet facilities, approximately 40 to 60 square feet per child is recommended. Bruce (2006) stated both indoor and outdoor environments can tempt children to learn.

From the interview schedule the DICECE officer identified that the toilets were available but not of the recommended toilet-child ratio and not designed specifically for young children. Toilets for children with special needs were identified to be lacking in public pre-schools. Outdoor play area was free of hazards, access to nearby toilets and drinking water facilities were made available in almost all the schools. Schools had maintained the cleanliness standards in toilets as the schools' Heads and teachers were keen about the cleanliness in their schools.

4.8 Strategies towards Addressing the Provision of Physical Infrastructure in Public Pre-Schools

If a school does not have its own water supply, students and teachers may be forced to use the local water source, which may be polluted. This practice led to disputes with the local community. Hand washing facilities also have to be placed close to the latrines, since hand washing is most important after defecation. Hand washing facilities should allow for the placement of soap or other cleaning agents.

The good organization of cleaning and maintenance of the water and sanitation facilities is of the utmost importance. Badly maintained sanitation facilities often cause an even bigger health risk than scattered defecation. Stagnant water around tap stands and in blocked drainage channels attracts rodents and forms a breeding place for mosquitoes. It is not so important who cleans and maintains facilities, but that arrangements for it are made, and that this is done before construction starts. A good cleaning and maintenance system requires funds, spare parts, people and equipment, and a clear division of roles and responsibilities among the actors involved.

Pollution of the environment around places with a high concentration of people, like schools are very likely, therefore sanitary facilities are to be provided. For schools in areas where no or insufficient, water for flushing should be available close to the latrine. If sufficient amount of water is available close to the latrine a pour-flush latrine may be considered. Regular cleaning of pour-flush latrines is particularly important; if these facilities are not cleaned they pose health risk to pupils.

The number of latrines required is one latrine for twenty five pupils and is advisable to include separate facilities for teachers. Site selection of latrines is important and needs careful consideration. If facilities are located far away from the school this may encourage misuse; if they are too close, stench may penetrate the classrooms. Since school facilities are most often used during peak hours (breaks between classes) and facilities are mainly for urination, it may be helpful to design separate urinals. A urinal will reduce the smell from urine in the latrine. Urine can drain to the pit or soak away. If the urine is not flushed properly a very bad smell may result. Whether urinals are to be provided or not should be discussed with the technical department and with teachers and pupils.

Because we know that routine and unexpected maintenance demands are bound to arise, every education organization must proactively develop and implement a plan for dealing with these inevitabilities. Thus, an organization must plan to meet the challenges of effective facilities maintenance. It is simply too big of a job to be addressed in a haphazard fashion. After all, the consequences affect teaching and learning, student and

staff health, day-to-day building operations, and the long-range fiscal outlook of the organization.

A sound facilities maintenance plan serves as evidence that school facilities are, and will be, cared for appropriately. On the other hand, negligent facilities maintenance planning can cause real problems. Large capital investment can be squandered when buildings and equipment deteriorate or warranties become invalidated. Failing to maintain school facilities adequately also discourages future public investment in the education system. However, school facilities maintenance is concerned about more than just resource management. It is about providing clean and safe environments for children. It is also about creating a physical setting that is appropriate and adequate for learning.

A classroom with broken windows and cold drafts doesn't foster effective student learning. However, neither does an apparently state-of-the-art classroom that is plagued with uncontrollable swings in indoor temperature, which can negatively affect pupils and instructor alertness, attendance, and even health. School facilities maintenance affects the physical, educational, and financial foundation of the school organization and should, therefore, be a focus of both its day-to-day operations and long-range management priorities.

Educational institutions require an environment where teachers, learners and other personnel will enjoy their stay and perform their duties effectively. According to Akubue (1991), good school environment would foster desirable behavior, creativity, harmonious relationship and problem-solving skills among learners. In the educational institutions, facilities constitute essential inputs which could generate favorable learning environment,

facilitate interaction and enhance achievement of educational objectives. In fact, school curriculum would be meaningful and functional if required facilities are provided in adequate quantity at appropriate time.

From the interview schedule the DICECE officer identified they play a crucial role of supervision during the implementation of ECDE programmes in Marigat Sub County Baringo County. They also ensured that the physical infrastructure in pre-schools is adhered to according to the policy. The DICECE officer identified that relevant and adequate facilities must be supplied to schools at the right time to enhance the implementation of education objectives in public pre-schools. Also regular maintenance should be carried out in order to enhance quality performance and durability of physical infrastructure in public pre- schools.

4.9 Summary of Chapter

Educational facilities constitute an integral part of the education system. Availability of the facilities in adequate quality and quantity is capable of enhancing achievement of educational objectives. The facilities have to be properly managed in order to be able to contribute positively to achievement of educational objectives. A holistic approach to facility management should be adopted. This is to ensure that provision, utilization, maintenance and improvement efforts on the facilities are adequately given attention in the management process.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the conclusions of the study based on the findings summarized in chapter four and the recommendations that are derived herein conclusions. The procedure for treating the summary, conclusion and recommendations was based on relevant objectives

5.2 Summary of Findings

The summary of findings was done with respect to research objectives of the study.

5.2.1 The Adequacy of Classrooms and Furniture

The classroom is for the child, it needs to reflect children's interests in relation to learning activities. From the study, the classrooms were not enough for all the children in the school and the enrolment of pupils has overwhelmed the available classroom capacity. The classrooms were well ventilated, the roofs are well designed to prevent leakages and doors and windows were adequate. The classrooms were not of standard sizes according to the MOE guidelines and there was no adequate lighting system within the classrooms. The floors were not well designed and cemented for easy mobility of pupils and classrooms were not accessible for use by children with special needs, it lacked ramps, rails and lower door handles. The desks and chairs were not enough for all the pupils and the size of chairs and desks were not of recommended sizes. The teacher's chair, table and cupboard were insufficient in the ECD classrooms.

5.2.2 The Provision of Water and Sanitation Facilities

From the study it was identified that schools do not provide safe drinking water to be used in the kitchen, play activities and there was no enough water for drinking and washing hands. The toilets and hand washing facilities should be adjacent to or easily accessible from classrooms and playgrounds.

5.2.3 The Toilet Pupil Ratio in Public Pre-Schools

From the study, the public pre-school within Marigat Sub County, Baringo County had toilets/latrines for boys, girls and teachers in the school and the toilets were located far away from the borehole (15metres). The pre-school had no toilets for children with special needs and were not specifically designed for young children. The toilet-child ratio was found to be 1:40 and toilet-teacher ratio was 1:15. The recommended toilet-child ratio (1:25), and toilet-teacher ratio (1:12) were not met.

5.2.4 Availability of Outdoor Play Space and Playing Equipment

From the findings of the study the play and learning equipment were available within the pre-school and brightly colored. The play equipments were not appropriate for all children in the pre-school and were not safe and securely fixed to protect children from injury. Play materials were not regularly serviced and maintained in pre-schools. The classroom building needs to be adaptable for use with suitable light, both artificial and natural, is required for program development. It was found that the outdoor play area was large enough for the children to play and run around safely as the surface was free from sharp objects and harmful materials. The pre-school compound was regularly cleared, cleaned and maintained and had a compost pit located at furthest corner of the pre-school

compound. The playground and materials were not adapted for children with special needs. The compost pit was not enclosed for the safety of children. The pre-schools that had a water body in the compound were not fenced off with lockable gate for security of children. The provision of an outside space gives children to play on a larger scale. Children need space to move, make and do things so as to develop their interests without disturbing others.

5.3 Conclusion

The results indicated that the standard of the physical infrastructure for ECD in public schools were not satisfactory. The classrooms, desks and chairs, play facilities, swings, toilets/latrines, kitchen and water and sanitation were insufficient and playground were sufficient for the pupils to play. Most of the pre-schools lack the basic facilities for the ECD pupils including appropriate classrooms, water and other resource materials. The school buildings were not appropriate for the better learning of the young learners. The existing pre-primary classes were not organized as required for the Early Childhood classes in which children learn by their own experiences.

Classrooms of the pre-primary section were not adequately designed or furnished according to the needs of the children and were not providing homelike environment. The ECD classes were not provided with the appropriate child size furniture. The classrooms were not of standard sizes according to the MOE guidelines and there was no adequate lighting system within the classrooms.

The pre-schools do not provide safe drinking water to be used in the kitchen, play activities and there was no enough water for drinking and washing hands. The pre-schools had toilets/latrines for boys, girls and teachers and were located far away from the borehole (15metres). The toilets available were not specifically designed for young children and there were also no toilets for children with special needs. The toilet-child ratio, and toilet-teacher ratio were not as recommended.

The play equipments were not appropriate for all children in the pre-schools and were not safe and securely fixed to protect children from injury. Play materials were not regularly serviced and maintained in pre-schools. The outdoor areas stimulate learning and interest of the child in the natural environment as well as encourage him/her to manipulate his/her physical world. Physical facilities help to enhance the learning of the pupils since they are essential elements that facilitate the teaching learning process. Effective management of educational facilities is vital to the achievement of educational objectives at the ECDE level.

5.4 Recommendations

Based on the study findings, the following recommendations were made:-

1. The County government should look for ways of building more classrooms as recommended by the policy.
2. The County government should provide enough drinking water to all pre-schools in the Sub County.
3. There is need for County government to construct toilets designed for young children and also able to cater for children with special needs.

4. Relevant and adequate facilities must be supplied to schools at the right time. This would enhance the implementation of education objectives. The Government and other stakeholders should set aside substantial amount of money for provision of such facilities.

5.5 Suggestions for Further Research

1. Since the study was conducted in Marigat Sub County, Baringo County, there is need to carry out such studies in other parts of the country so as to make comparisons.
2. The study should be carried out on the relationship between adequacy of physical facilities and pupils academic performance in primary schools.
3. A study on the importance of play to pre-school children should be conducted.

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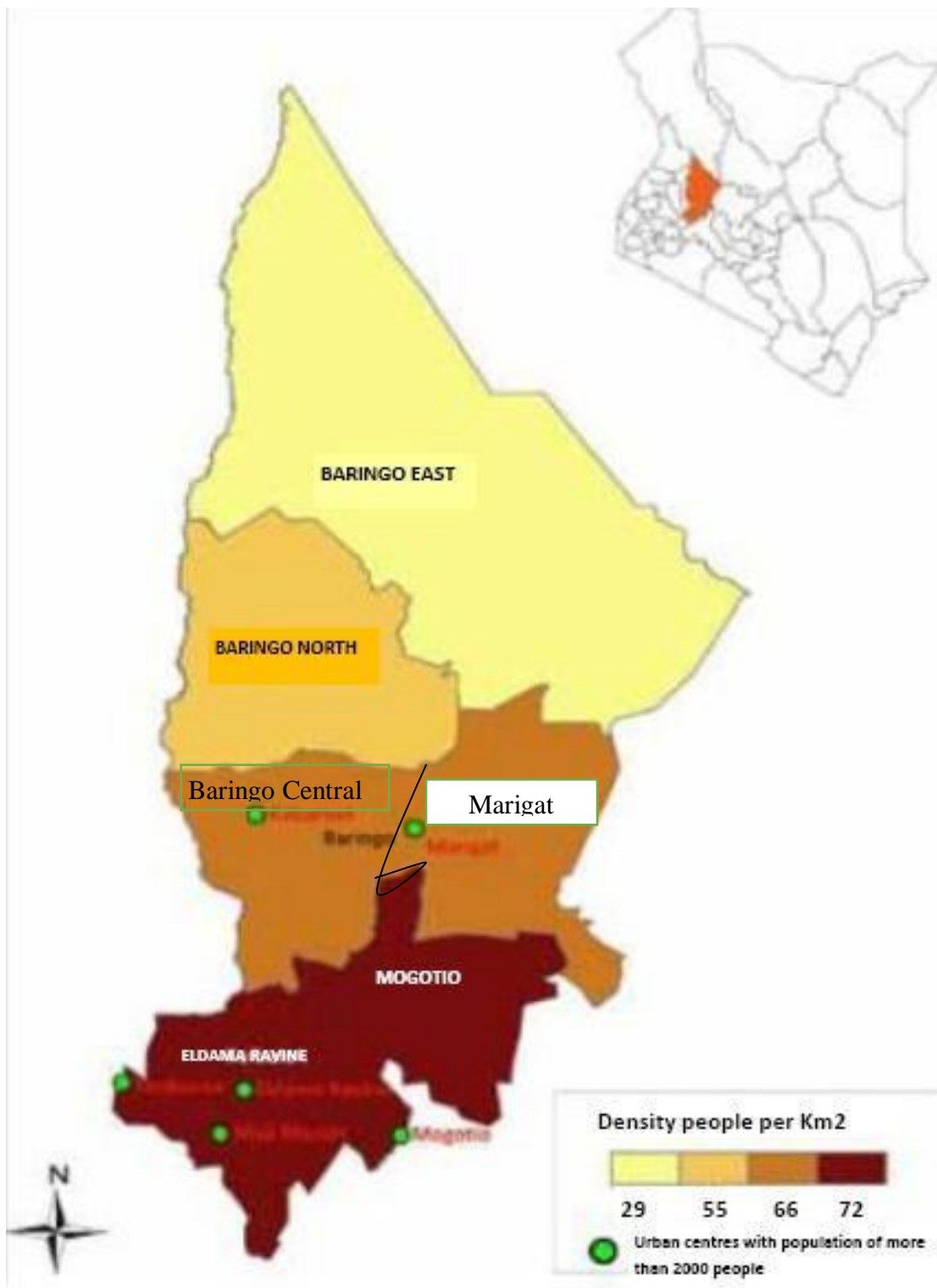
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APPENDICES

APPENDIX 1: MAP OF STUDY AREA



**APPENDIX II: SUB COUNTY CENTRE FOR EARLY CHILDHOOD AND
EDUCATION (DICECE) OFFICER**

The information you provide will be strictly held in confidence. Your response will be very useful for the success of this study.

1. How long have you served as DICECE officer?.....
.....
2. What role do you play in the implementation of ECDE in you Sub
County?.....
.....
.....
3. What is the classrooms size and number of furniture in relation with enrolment in
public pre-schools?
.....
.....
4. Do ECDE centres have safe drinking water to be used in the kitchen, for play
activities, drinking and washing hands?
.....
.....
5. How large is the outdoor play space/playground and play equipments compared to
the number of children in the centre?
.....
.....
6. Are toilets enough in relation to toilet-child ratio and designed specifically for
young children?
.....
.....
7. What measures can be put in place to improve provision of physical infrastructure
in public pre- school?.....
.....
.....

APPENDIX III:

HEAD TEACHERS QUESTIONNAIRE

I am an MPhil student in Moi University School of Education, I am undertaking thesis research on ‘ ‘ A situational analysis on implementation of ECDE Physical infrastructure policy in public pre-schools; A case of Marigat Sub County, Baringo County’ ’ You are kindly requested to respond to the questions below; the information provided will be held Confidential. Your response will be very useful for the success of this study.

SECTION A: Background information

Direction: please tick () where appropriate.

1. Sub County.....

Division.....

2. Enrolment: boys..... Girls..... Total.....

3. Age ranges: under 3 yrs old..... 4yrs old..... 5yrs old:.....

4. Average no. of children per class:

5. Number of care givers/teachers.....

6. Give the enrolment from 2007 to 2011

Enrolment	2007	2008	2009	2010	2011

Section B: Physical Facilities in Pre-school

1. The following statements describe the physical facilities in pre-school. Tick (√) against the description that best represents your opinion. Indicate whether you very sufficient (VS), sufficient(S, Fairly Sufficient) (FS), Not Sufficient(NS)

Physical facilities	Very sufficient	Sufficient	Fairly sufficient	Not sufficient
Classrooms				
Desks/chairs				
Games facilities Balls				
Swings				
Play ground.				
Toilets/latrines				
Kitchen				
Water and sanitation				

The adequacy of Classrooms and Furniture

2. The following statements describe the classrooms and furniture in pre-school. Tick (✓) against the description that best represents your opinion. Indicate whether you *Strongly Agree (SA)*, *Agree (A)*, *Undecided (U)*, *Disagree (D)*, *Strongly Disagree (SD)*

Classrooms	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
The classrooms are not enough for all the children in the school					
The enrolment of pupils has overwhelmed the available classroom capacity					
Classrooms are of standard sizes according to the MOE guidelines					
Classrooms are well ventilated					
There is adequate lighting system within the classrooms					
The roofs are well designed to prevent leakages					
The floors are well designed and cemented for easy mobility of pupils.					
Classrooms are accessible for use by children with special needs, and have ramps, rails and lower door handles.					
The classroom doors and windows are adequate according to the recommended sizes					
Furniture					
The desks and chairs are enough for all the pupils					
The size of chairs and desks are of recommended sizes					
Teacher's chair, table and cupboard are available in the ECD classroom.					

Section C: Provision of water and sanitation facilities

3. The following statements describe the provision of water and sanitation facilities in pre-school. Tick (✓) against the description that best represents your opinion. Indicate whether you *Strongly Agree (SA)*, *Agree (A)* *Undecided (U)*, *Disagree (D)*, *Strongly Disagree (SD)*

	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
The school provides safe drinking water to be used in the kitchen.					
The pre-school provides water for play activities.					
There is enough water for drinking and washing hands.					
There are adequate water in the sanitation facilities					

Section D: The toilet pupil ratio in public pre-school

4. The following statements describes the provision of water and sanitation facilities in pre-school. Tick (✓) against the description that best represents your opinion. Indicate whether you *Strongly Agree (SA)*, *Agree (A)* *Undecided (U)*, *Disagree (D)*, *Strongly Disagree (SD)*

	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Pre-school have toilets/latrines for boys, girls and teachers,					
The toilet is specially designed for young children.					
The toilet-child ratio is as recommended (1:25)					
The toilet-teacher ratio is as recommended (1:12)					
Pre-school have toilets for children with special needs.					
The toilets are located far away from the borehole (15metres)					

Section E: Availability of outdoor play space and playing equipment

5. The following statements describes the availability of outdoor play space and playing equipment in pre-school. Tick (✓) against the description that best represents your opinion. Indicate whether you *Strongly Agree (SA)*, *Agree (A)* *Undecided (U)*, *Disagree (D)*, *Strongly Disagree (SD)*

Play & Learning equipment	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
The play and learning equipment are available within the pre-school					
The play equipments are appropriate for all children in the pre-school					
The play equipments are safe and securely fixed to protect children from injury					
The play materials are regularly serviced and maintained					
The play equipments are brightly colored					
Outdoor play area is large enough for the children to play and run around safely					
Surface of outdoor play area is free from sharp objects and harmful materials.					
The pre-school compound is regularly cleared, cleaned and maintained.					
The playground and materials are adapted for children with special needs.					
The pre-school compound is fenced off and have lockable gate for the security of the children.					
A compost pit is located at furthest corner of the pre-school compound					
The compost pit is enclosed for the safety of children.					
Pre-school with water body in the compound i.e. bore holes are fenced off and have lockable gate for security of children.					

6. In your own opinion, does physical infrastructure affect learning at the pre-school level?

.....

.....

.....

.....

7. What do you think is the way forward in addressing the provision of physical infrastructure in public pre-schools?

.....

.....

APPENDIX IV:
PRE- SCHOOL TEACHER QUESTIONNAIRE

I am an MPhil student in Moi University School of Education, I am undertaking thesis research on “A situational analysis on implementation of ECDE Physical infrastructure policy in public pre-schools; A case of Marigat Sub County, Baringo County” You are kindly requested to respond to the questions below; the information provided will be held Confidential. Your response will be very useful for the success of this study.

SECTION A: Background information

Direction: please tick () where appropriate.

1. Sub County.....

Division.....

2. Enrolment: boys..... Girls..... Total.....

3. Age ranges: under 3 yrs old..... 4yrs old..... 5yrs old:.....

4. Average no. of children per class:

5. Number of care givers/teachers.....

6. Give the enrolment from 2007 to 2011

Enrolment	2007	2008	2009	2010	2011

Section B: Physical Facilities in Pre-school

1. The following statements describe the physical facilities in pre-school. Tick (✓) against the description that best represents your opinion. Indicate whether you very sufficient (VS), sufficient(S, Fairly Sufficient) (FS), Not Sufficient(NS)

Physical facilities	Very sufficient	Sufficient	Fairly sufficient	Not sufficient
Classrooms				
Desks/chairs				
Games facilities Balls				
Swings				
Play ground.				
Toilets/latrines				
Kitchen				
Water and sanitation				

The adequacy of Classrooms and Furniture

2. The following statements describe the classrooms and furniture in pre-school. Tick (✓) against the description that best represents your opinion. Indicate whether you *Strongly Agree (SA)*, *Agree (A)*, *Undecided (U)*, *Disagree (D)*, *Strongly Disagree (SD)*

Classrooms	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
The classrooms are not enough for all the children in the school					
The enrolment of pupils has overwhelmed the available classroom capacity					
Classrooms are of standard sizes according to the MOE guidelines					
Classrooms are well ventilated					
There is adequate lighting system within the classrooms					
The roofs are well designed to prevent leakages					
The floors are well designed and cemented for easy mobility of pupils.					
Classrooms are accessible for use by children with special needs, and have ramps, rails and lower door handles.					
The classroom doors and windows are adequate according to the recommended sizes					
Furniture					
The desks and chairs are enough for all the pupils					

The size of chairs and desks are of recommended sizes					
Teacher's chair, table and cupboard are available in the ECD classroom.					

Section C: Provision of water and sanitation facilities

3. The following statements describe the provision of water and sanitation facilities in pre-school. Tick (✓) against the description that best represents your opinion. Indicate whether you *Strongly Agree (SA)*, *Agree (A)*, *Undecided (U)*, *Disagree (D)*, *Strongly Disagree (SD)*

	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
The school provides safe drinking water to be used in the kitchen.					
The pre-school provides water for play activities.					
There is enough water for drinking and washing hands.					
There are adequate water in the sanitation facilities					

Section D: The toilet pupil ratio in public pre-school

4. The following statements describes the provision of water and sanitation facilities in pre-school. Tick (✓) against the description that best represents your opinion. Indicate whether you *Strongly Agree (SA)*, *Agree (A)* *Undecided (U)*, *Disagree (D)*, *Strongly Disagree (SD)*

	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Pre-school have toilets/latrine for boys, girls and teachers,					
The toilet is specially designed for young children.					
The toilet-child ratio is as recommended (1:25)					
The toilet-teacher ratio is as recommended (1:12)					
Pre-school have toilets for children with special needs.					
The toilets are located far away from the borehole (15metres)					

Section E: Availability of outdoor play space and playing equipment

5. The following statements describe the availability of outdoor play space and playing equipment in pre-school. Tick (✓) against the description that best represents your opinion. Indicate whether you *Strongly Agree (SA)*, *Agree (A)*, *Undecided (U)*, *Disagree (D)*, *Strongly Disagree (SD)*

Play & Learning equipment	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
The play and learning equipment are available within the pre-school					
The play equipments are appropriate for all children in the pre-school					
The play equipments are safe and securely fixed to protect children from injury					
The play materials are regularly serviced and maintained					
The play equipments are brightly colored					
Outdoor play area is large enough for the children to play					
Surface of outdoor play area is free from sharp objects					
The pre-school compound is regularly cleaned					
The playground and materials are adapted for children with special needs.					
The pre-school compound is fenced off and have lockable gate for the security of the children.					
A compost pit is located at furthest corner of the pre-school compound					
The compost pit is enclosed for the safety of children.					
Pre-school with water body in the compound with lockable gate for security of children.					

6. In your own opinion, does physical infrastructure affect learning at the pre-school level?

.....

.....

.....

.....

7. What do you think is the way forward in addressing the provision of physical infrastructure in public pre-schools?

.....

.....

APPENDIX V:
OBSERVATION CHECKLIST

Enrolment: Boys.....Girls.....Total.....

Age ranges: Under 3s's.....4 years old.....5yrs old.....Total.....

Average No. of Pupils per class.....

Number of care givers.....

Physical infrastructure availability	Yes	No	Remarks
Learning structures (Building)			
Permanent building available			
Building in good condition			
Adequate ventilation			
Class rooms of standard size 8m by 6m			
Indoor space adequate			
Cemented floor			
Iron roofed			
Thatched			
Tiled			
Mud walled			
Plastered wall			
Timber walled			
Iron sheets			
Earthen floor			
Cemented floor			
Care givers toilets available			
Children Toilets available			
Suitable toilet aperture			
Clean			
Enough for boys			
Enough for girls			
Furniture available			
Adequate furniture			
Furniture pupils suitable size			
Class furniture in good condition			
Play space adequate			
Play ground well kept(not bushy, No holes)			
The play ground fenced			
Are there adequate play equipment			
Are the play equipment's age appropriate			

APPENDIX VI:**MOEST ECD PHYSICAL INFRASTRUCTURE GUIDELINES**

Pursuant to the government of Kenya's Sessional paper No.1 of 2005 on a policy framework, a comprehensive ECD policy framework and service standard have been developed.

Pre-school aged children (4— 5 years)

1. Opportunities to develop fine motor skills.
2. Encouragement of language through talking, being read to, singing, Activities that will develop a sense of mastery.
3. Opportunities to learn co-operation, helping, sharing
4. Experimentation with pre-writing and pre-reading skills
5. Hands-on exploration for learning through action
6. Opportunities for taking responsibility and making choices
7. Encouragement to develop self-control, cooperation and persistence in completing projects.
8. Support for their sense of self worth.
9. Opportunities for self-expression.
10. Encouragement of creativity.

Physical infrastructure Guidelines

(A) Classroom

1. The standard size of an ECD class room shall be 8m by 6m to accommodate a maximum of 25 children. It shall be well ventilated and well lit. It should have proper roofing, windows, doors and flooring (provision of mats where necessary) to protect children from harsh weather.
1. Children size chairs and tables should be provided.
2. Classrooms shall be accessible for use by children with special needs, and shall have ramps, rails and lower door handles.
3. A teacher's chair, table and cupboard shall be available in the ECD classroom.

(B). Toilets/Latrines

1. An ECD centre shall have toilets/latrines for boys, girls and teachers, [Toilet-child ratio = 1: 25), specially designed for young children.
2. There shall be toilet for children with special needs.
3. One toilet shall be provided for 12 teachers.
4. Pit latrines shall not be less than 6 metres or 20 feet deep and shall be 15 metres
5. (50 feet) away from borehole.

(C). Water

ECD centre/institution shall provide safe drinking water to be used in the kitchen, for play activities, drinking and washing hands.

(D). Play & Learning equipment

The play and learning equipment shall be age and developmentally appropriate (child size, brightly coloured), adequate, safe and securely fixed to protect children from injury. The materials shall be serviced and maintained once in a term.

(E). Outdoor play space

1. Outdoor play area must be large enough for the number of children in the centre to play and run around safely
2. Surface of outdoor play area shall be free of sharp objects, harmful plants and discarded materials and equipments. The compound should be regularly cleared and maintained.
3. The playground and materials should be adapted for children with special needs.
4. The compound shall be fenced off and have lockable gate for the security of the children.
5. A compost pit shall be provided and located at furthest corner of the compound and shall be enclosed for the safety of children.
6. Where water body is in the compound i.e. swimming pools or bore holes they shall be fenced off and have lockable gate for security of children.

(F). Feeding programme

ECDE centres shall provide children with a snack, preferably enriched porridge at break time. Where the centre is full day, in addition to the snack, lunch comprising of balanced diet shall be provided. (Half day: 8.00 am- 12.00 Noon, Full day: 8.00 am- 3.00 Pm)