

**INFLUENCE OF SCHOOL PLAYGROUND SAFETY ON THE
PARTICIPATION OF PRE-SCHOOL CHILDREN IN OUTDOOR
ACTIVITIES IN CENTRAL DIVISION, NAIVASHA DISTRICT, KENYA.**

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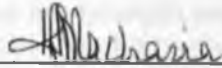
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**A Thesis Submitted in Partial Fulfillment for Requirements of the Award of the
Degree of Masters of Education in Early Childhood Education in the
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University of Nairobi.**

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DECLARATION

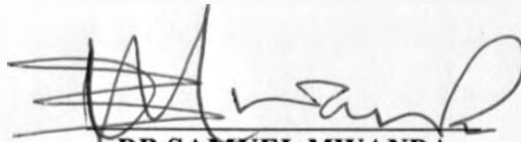
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DEDICATION

**In memory of my mother Hannah Njoki Macharia
The Teacher
Who always ensured school children were safe and protected**

**For my granddaughters Nicolene and Davine
Each of whom has brought something new and fresh
About young children's need for safety**

ACKNOWLEDGEMENT

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ABSTRACT

The purpose of this study was to examine the influence of school playground safety on the participation of preschool children in outdoor activities in Central Division, Naivasha District, Kenya. The study adopted a descriptive survey design to explore how playground space safety, developmentally-appropriate playground equipment, playground surfacing, playgrounds maintenance inspection and the supervision of children in the playground influence the participation of pre-school children in outdoor activities. It also sought to establish the constraints to school playground safety affecting the participation of pre-school children in outdoor activities.

To achieve the above objectives, the study used a sample of thirty four (34) preschools. Their stratified sample sizes comprised of thirteen (13) private, four (4) public, eleven (11) rural and six (6) urban pre- schools. The sampled preschools had an enrolment of 1444 children and 77 teachers. Self completion questionnaires were filled by 30 pre-school head teachers (HTs) and 29 teachers. A Likert-type rating scale observation checklist was used to observe playground variables in 29 preschools and 572 children participating in different outdoor activities. Qualitative and quantitative data was descriptively analyzed through descriptive statistics like frequencies, percentages, and correlation coefficients to support different themes.

The results of the study showed that despite the many constraints that make it impossible to ensure total playground safety, children continue to use the playgrounds for outdoor activities. The results also revealed that a combination of adequate, orderly and well organized playground spaces, developmentally-appropriate play equipment, proper playground surfacing, regular and adequate playgrounds maintenance inspection and properly organised supervision of children in the playground enables preschool children to effectively participate in outdoor activities. The study findings can be significant to early childhood development and education teachers, administrators, school managers, playground supervisors, concerned parents, child care organizations as well as policy makers of early childhood programmes. They can be used to develop school-based safety programmes to promote, protect and improve the safety status of pre-school children while in the playgrounds. The study makes both institutional and policy recommendations and further suggests its replication in a wider scale or on playground as a teaching and learning tool.

Table of Contents

Title Page.....	i
Declaration.....	ii
Dedication.....	iii
Acknowledgement.....	iv
Abstract.....	v
Table of Contents.....	vi
List of Tables.....	ix
List of Figures.....	x
Acronyms and Abbreviations.....	xi
CHAPTER ONE	1
Introduction.....	1
1.1 Background to the Study.....	1
1.2 Statement of the Problem.....	6
1.3 Purpose of the Study.....	7
1.4 Objectives of the Study.....	7
1.5 Research Questions.....	8
1.6 Significance of the Study.....	9
1.7 Limitation of the Study.....	9
1.8 Delimitation of the Study.....	9
1.9 Assumptions of the Study.....	10
1.11 Definitions of Terms.....	10
CHAPTER TWO	12
Literature Review.....	12
2.1 Introduction.....	12
2.2.1 School Playground Space Safety and Children's Participation in Outdoor.....	12
2.2.2 Developmentally Appropriate Play Equipment.....	15
2.2.3 Playground Surfacing.....	17
2.2.4 Playground Maintenance Inspection.....	18
2.2.5 Supervision of Children in Outdoor Activities.....	20
2.3 Theoretical Framework.....	22
2.4 Conceptual Framework.....	23
CHAPTER THREE	25
Research Methodology.....	25
3.1 Introduction.....	25
3.2 Research Design.....	25
3.2 Target Population.....	26
3.3 Sampling Procedure and Sample Size.....	26
3.4 Research Instruments.....	28
3.5 Validity and Reliability of Research Instruments.....	29
3.5.1 Validity.....	29
3.5.2 Reliability.....	29
3.6 Data Collection Procedures.....	30
3.7 Data Analysis Techniques.....	31
3.8 Ethical Considerations.....	32

CHAPTER FOUR.....	33
Data Analysis and Discussions of the Findings.....	33
4.1 Introduction.....	33
4.2 Questionnaire Return Rate.....	34
4.3 Observation Rate.....	34
4.4.1 Type and Location of Pre-School	35
4.4.2 Pre-School Enrolment.....	35
4.4.3 Preschoolers Observed in Outdoor Activities.....	36
4.4.4 Pre-School Teachers' Establishment	37
4.5 Findings of the Study.....	38
4.5.1 Playground Space Safety and Children's Participation.	38
4.5.1.1 Size of School Grounds	39
4.5.1.2 Preschool Playgrounds and Children's Enrolment	40
4.5.1.4 Organization of Play Areas.....	44
4.5.1.5 Playground Fencing	45
4.5.1.6 Safety Measures in the Playground Space.....	48
4.5.2.1 Types of Play Equipments and Materials in Preschool Playgrounds	50
4.5.2.2. Play Equipment and Number of Children.....	52
4.5.2.3 Safety Measures for Play Equipment and Materials for Children	54
4.5.2.4 Safety of Play Equipment and Material and Children's Participation.....	55
4.5.2.5 Arrangement of Play Equipment in the Play Space.....	56
4.5.2.7 Constraints (Challenges) in Playground Space Safety	58
4.5.2.5 Developmentally Appropriate Equipment and Children's Participation.....	60
4.6 Playground Surfacing and Children's Participation	62
4.6.1 Playground Surfacing Materials	62
4.6.2 Hazards or Unsafe Conditions Under and Around Play Equipment	63
4.6.3 Playground Surfacing and Children's Participation	65
4.7 Playground Maintenance Inspection.....	66
4.7.1 Playground Maintenance Inspection.....	66
4.7.2 Areas of Maintenance Inspection of Playground	68
4.7.3 Maintenance Inspection, Playground Safety	69
4.7.4 Constraints in Playground Maintenance Inspection	71
4.8 Supervision of Pre-School Children in Outdoor Activities	72
4.8.1 Supervision of Children in Outdoor Activities.....	72
4.8.2 Playground Safety Rules and Regulations.....	74
4.8.3 Playground Safety Rules, Regulations and Children's Participation	76
4.8.6 Supervision and Children's Participation in Outdoor Activities	77
4.5.3 Constraints in Supervision of Children During Outdoor Activities.....	79
4.9.4 Constraints in Supervision and Children's Participation in Outdoor.....	81
CHAPTER FIVE	83
Summary of Findings, Conclusions, Recommendations of the Study and Suggestions	83
5.1 Summary of Findings.....	83
5.2 Conclusions.....	87
5.3 Recommendations of the Study	87
5.3.1 Institutional Recommendations	88
5.3.2 Policy Recommendations	89
5.4 Suggestions for Further Research	90

REFERENCES..... 91

APPENDICES 94

Appendix I - Letter of Consent to Collect Data 94

Appendix II - Questionnaire for Pre-School Headteachers 95

Appendix III - Questionnaire for Pre-School Teachers 98

Appendix IV - Observation Schedule 100

Appendix V - Sample Correlation Coefficient 101

List of Tables

Table 3.1	Sample Size Frame	27
Table 4.1	Pre-School Enrolment (From HTs)	35
Table 4.2	Number of Pre-School Children in Class (From Teachers).....	36
Table 4.3	Preschoolers Observed in Outdoor Activities.....	37
Table 4.4	Pre-School Teachers' Establishment	37
Table 4.5	Teachers in Preschools Observed	38
Table 4.6	Size of School Grounds (in acres)	39
Table 4.7	Playgrounds and Children's Enrolment.....	41
Table 4.8	Playgrounds and Number of Children in Class	42
Table 4.9	Types of Children's Outdoor Activities.....	43
Table 4.10	Organization Of Play Areas.....	44
Table 4.11	Playground Fencing.....	46
Table 4.12	Play Equipment vis-a-vis Number of Children in Class.....	52
Table 4.13	Organization of Play Equipment in the Play Space.....	56
Table 4.14	Playgrounds and Equipment Maintenance Inspection.....	66
Table 4.15	Frequency of Playgrounds and Equipment Maintenance Inspection	67
Table 4.16	Supervision of Children in Outdoor Activities	73
Table 4.17	Responsibility of Supervising Children in Outdoor Activities.....	74
Table 4.18	Playground Safety Rules and Regulations.....	75

List of Figures

Fig.1 A Conceptual Framework of the Influence of School Playground23

Fig.2
 Fig.3
 Fig.4
 Fig.5
 Fig.6
 Fig.7
 Fig.8
 Fig.9
 Fig.10
 Fig.11
 Fig.12
 Fig.13
 Fig.14
 Fig.15
 Fig.16
 Fig.17
 Fig.18
 Fig.19
 Fig.20
 Fig.21
 Fig.22
 Fig.23
 Fig.24
 Fig.25
 Fig.26
 Fig.27
 Fig.28
 Fig.29
 Fig.30
 Fig.31
 Fig.32
 Fig.33
 Fig.34
 Fig.35
 Fig.36
 Fig.37
 Fig.38
 Fig.39
 Fig.40
 Fig.41
 Fig.42
 Fig.43
 Fig.44
 Fig.45
 Fig.46
 Fig.47
 Fig.48
 Fig.49
 Fig.50
 Fig.51
 Fig.52
 Fig.53
 Fig.54
 Fig.55
 Fig.56
 Fig.57
 Fig.58
 Fig.59
 Fig.60
 Fig.61
 Fig.62
 Fig.63
 Fig.64
 Fig.65
 Fig.66
 Fig.67
 Fig.68
 Fig.69
 Fig.70
 Fig.71
 Fig.72
 Fig.73
 Fig.74
 Fig.75
 Fig.76
 Fig.77
 Fig.78
 Fig.79
 Fig.80
 Fig.81
 Fig.82
 Fig.83
 Fig.84
 Fig.85
 Fig.86
 Fig.87
 Fig.88
 Fig.89
 Fig.90
 Fig.91
 Fig.92
 Fig.93
 Fig.94
 Fig.95
 Fig.96
 Fig.97
 Fig.98
 Fig.99
 Fig.100

ACRONYMS AND ABBREVIATIONS

ACRWC	African Charter on Rights and Welfare of Children
ASTM	American Society for Testing and Materials
CRC	Convention on the Rights of the Child
CWS	Christian World Service
ECD	Early Childhood Development
ECD SSGK	Early Childhood Development Service Standard Guidelines for Kenya
GoK	Government of Kenya
HTs	Head teachers
IIEP	International Institute of Educational Planning
KIE	Kenya Institute of Education
MDGs	Millennium Development Goals
MOE	Ministry of Education
MOEST	Ministry of Education, Science and Technology
MoPHS	Ministry of Public Health and Sanitation
NHSP	National School Health Policy
SSM,SK	Safety Standards Manual for Schools in Kenya
SSZ	School Safe Zones
UNDHRC	United Nations Declaration on Human Rights Commission
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nation Children's Education Fund
US CPSC	United State Consumer Product Safety Product
WCEFA	World Conference for Education For All
WEF	World Education Framework

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Young children all over the world have the innate desire to explore limits, venture into new experiences and develop their capacities from a very young age and from their earliest experiences. At the same time, they need to feel safe and secure physiologically and psychologically at all times especially while within and around the school playgrounds for optimum participation in outdoor activities. Children learn through play and playgrounds are among the most important natural environments that enhance participation in both the structured and unstructured outdoor activities. Children therefore use the playground as a learning environment with corresponding behavioral consequences that enable them to digest both pleasant and unpleasant experiences by freely using their senses of taste, smell, touch, sight and hearing. Consequently, they start to take control of their feelings related to the experiences (Sheridan, 2001; Wolfgan, 2004 in Olgan and Kahrman-Ozturk, 2011). School playgrounds are the designated outdoor areas located in the school where children play or participate in sports and games with or without stationary and manipulative equipment Johnson, Christie & Wardle(2005). Moore (1996) views the playground as conceptually a pedagogical space centered on outdoor play.

For young children, safety involves feelings of security (freedom from physical and emotional fear and all dangers), stability (regular healthcare and nutrition for physical and intellectual development) and, regularity and predictability within the environment they live and learn (Seifert& Hoffnung, 1987). School playground safety can be viewed as the measures undertaken by learners, staff, parents and other stakeholders to either minimize or eliminate risky conditions or threats in playgrounds that may cause accidents, body injuries,

emotional and psychological distress to the young children (United Nations Educational, Scientific and Cultural Organisation (UNESCO), 2010; Ministry of Education (MOE) & Church World Service (CWS), 2008). Indicators of a safe school playground are visible strategies in promoting the rights of children to play such as providing adequate and properly demarcated and fenced play spaces with properly organized security; developmentally-appropriate play equipments and materials that are in good state of repair and maintenance; adequate surfacing that is fall-absorbent; proper supervision of the pre-schoolers at play, and well planned outdoor activities. According to Prinsloo (2005) this is an environment where there is no physiological and psychological harm to encourage children to participate fully in physical activities. Participation in outdoor activities involves how children are engaged in or interacts with inputs in their outdoor environments to indicate acquisition of physical (motor), intellectual and social skills as the observable outcomes.

Playground safety for young children is a human as well as constitutional rights issue aimed at strengthening children's participation in outdoor learning activities. Safe playgrounds are an important component of child-friendly schools that are grounded on the Convention on the Rights of the Child (CRC, 1989) and other frameworks such as the World Conference on Education for All (WCEFA, 1990), the World Education Forum (WEF, 2000), the Millennium Development Goals (MDGs, 2000), International Conference on School Safety (ICSS, 2007) and for African states the African Charter on the Right and Welfare of the Children (ACRWC, 1999). These policy frameworks obligate the world governments to ensure young children play in caring or child friendly outdoor environments that are child-centered, inclusive, gender equitable and effective in enhancing excellence in acquisition of physical (or motor) and psychosocial skills. The CRC (1989) and the ACRWC (1999), for example, point out that children have a right to play in environments that offer physical and

emotional support in order to participate actively in and benefit from their learning and developmental activities. The WCEFA (1990) and the WEF (2000) recommend school environments that serve as protected sanctuaries and which focus on children's physical, mental and socio-emotional needs for safety, security and intellectual stimulation for lifelong learning.

Grounded on these frameworks, playground safety has in the recent years had serious international attention of early childhood professionals and officials especially in the United States of America (USA), Canada, Europe, Australasian Pacific Rim and Argentina. These countries have developed guidelines and standards for public playgrounds from which the integration of safety standards in design, installation and maintenance of preschool playground space, equipment and surfacing depths of materials beneath and around the play equipment can be inferred. The US, for instance, has developed the American Society for Testing and Materials (ASTM) and the US Consumer Product Safety Commission (CPSC) guidelines while in 1990 the Canadian Standards Association developed guidelines for public playgrounds. The Playground Safety Institute assisted by the South African Bureau of Standards also published the Playground Safety Standards for South Africa in 2010.

Kenya is a signatory to the various international frameworks that uphold the inalienable right of the child to safe and secure school environments. The legislation of the rights on young children's safety can be inferred from the country's Constitution (2010) Bill of Rights (Cap 4). The GoK has also translated and enacted the recommendations of the global frameworks into the Children's Act No. 8 of 2001 as a legal instrument to safeguard and promote the rights and welfare of children in Kenya. Article 23:2(a) and (b) of the Children's Act, for

instance, emphasizes the critical importance of safe and secure environments to enhance participation in learning activities that include outdoor play.

To operationalise the Children's Act, the MOE in collaboration with the United Nation's International Children's Education Fund (UNICEF) and through the Kenya Education Sector Support Programme (KESSP 2005-2010) developed the Early Childhood Development Service Standards Guidelines for Kenya (ECD SSGK, 2006). The guidelines recommend outdoor play spaces that are large enough for the number of children in the pre-school, including those with special needs (the vulnerable and disadvantaged), to play and run around safely. The play spaces should contain adequate age- and developmentally appropriate equipment and materials (also adapted for children with special needs), safe play area surfaces and servicing and maintenance of play materials once in a term.

The ECD SSGK also sets standards for ECD curriculum and pedagogy and recommends child centered and holistic approaches to teaching and learning where all learning is activity-based and participatory using play (especially free choice activities) as the main learning method. As a result, the Kenya Institute of Education (KIE) has designed an ECD syllabus that outlines children's structured activities. These include warm up exercises, body movement without apparatus (both loco motor and non-loco motor), body movements with apparatus, games, dances (to music, rhythm and instrumental) and swimming. Children are involved in these activities for thirty (30) minutes every day and are supplemented by the unstructured ones during recess. The policy also recommends that children's individual progress in the activities should be based on the Development and Readiness Progress Assessment tool to measure cognitive, physical, emotional, social and moral development.

The MOE in collaboration with CWS (2008) in the School Safe Zone (SSZ) initiative to make schools safe and attractive institutions has developed the Safety Standards Manual for Schools in Kenya (SSM,SK). This is a comprehensive policy whose objective is institutionalizing and mainstreaming school safety for all children (including pre-schoolers) to learn in safe, secure and stimulating environments that have adequate, age- or developmentally-appropriate and well maintained play equipment and outdoor play space. It emphasizes on physical and psychological safety of children as an integral component in the learning and performance of young children.

Despite the GoK's commitment to ensuring safe and secure play environments for the Kenyan child, many pre-school playgrounds, especially in the rural, urban, suburban and slum areas, experience stigmatic safety problems and constraints related to inadequate play spaces; sub-standard, inappropriate or inadequate, and poorly constructed or maintained playgrounds equipment and the most basic play materials(slides, see-saws, balls) (UNESCO,1995). The notion of pre-school as safe havens for children, as recommended by WCEFA (1990) and WEF (2000), is thus shattered by feelings of inadequacy and insecurity emanating from these constraints. These experiences result to alienated learners, low staff morale, reduced activity time, distraction from learning and, health problems for teachers and the pre-schoolers (Cash, 1993). Children then spend a lot of their time and energy dwelling on their fears rather than learning tasks (Dahlberg, Moss & Pence,1999; Pluckrose, 1993) and lack confidence to actively engage in play activities.

In Kenya pre-school playground safety has not been given much attention and much of the data on playground design and practices has to be sourced from researches done in developed countries like the USA and Britain, where issues about early childhood development, care

and education have been given a lot of importance in research. Except for the ECD SSGK (2006), the only comprehensive policy guideline on ECD safety standards, GoK policy documents make no direct mention of safety in the pre-school. The SSM,SK (2008), the MOE Circular No G9/1/169 (2001) on Health and Safety Standards in Educational Institutions, and the Child Friendly Schools Manual (CFSM) by UNICEF (2010), focus on primary and secondary schools and pre-school safety requirement have to be inferred from their recommendations.

In Central Division, Naivasha District, playgrounds are within the public and private pre-school. They are characterized by inadequate play spaces, inadequate or poorly designed and maintained equipments and surfaces that restrict children's spontaneous play. Although children continue to participate in outdoor activities, these challenges may affect their optimal participation and performance in outdoor activities. It is against such a background that this study examined factors of school playground safety to determine whether they had any influence on participation of pre-school children in outdoor activities in Central Division, Naivasha District, Kenya.

1.2 Statement of the Problem

Safety in the school playground forms an integral component of children's participation in outdoor activities. A study by the International Institution for Educational Planning (IIEP,2004) shows that a learner's success relies on the environment in which he or she is learning. Part of the explanation for this link is the mediating influence of school climate, pre-school playground safety policies and programmes, teacher professionalism, time spent on activities, the leadership and management of the school.

However, this ideal link is constrained by a few gaps existing in most preschool playgrounds in Kenya (whether public, private, urban or rural). Pre-school playground safety has not been given much attention in research and much of the data has to be sourced from researches done in developed countries like the USA and Britain where early childhood development, care and education have been given a lot of importance. Government policy documents on school safety make no direct mention of pre-school safety and such information has therefore to be inferred from these documents. The ECD institutions are also characterized by poor physical conditions showing deferred maintenance or unperformed planned maintenance, repairs, replacement and renewal. These stigmatic constraints can be linked to lack of resources, perceived low priority and negative attitude about children's play or deferral of the activity.

No studies have been documented on the influence of playground safety on children's participation in outdoor activities in Central Division, Naivasha District, Kenya. It is against such a background that this study set out to examine whether school playground safety has any influence on participation of pre-school children in outdoor activities.

1.3 Purpose of the Study

The purpose of the study was to examine the influence of school playground safety on participation of pre-school children in outdoor activities in Central Division, Naivasha District, Kenya.

1.4 Objectives of the Study

The study was guided by the following objectives:-

- i) Examine the influence of safe playground spaces on participation of pre-school children in outdoor activities.

- ii) Determine the contribution of developmentally-appropriate playground equipment on the participation of pre-school children in outdoor activities.
- iii) Examine the influence of school playground surfacing on the participation of pre-school children in outdoor activities.
- iv) Establish to what extent school playgrounds maintenance inspection influences the participation of pre-school children in outdoor activities.
- v) Find out to what extent supervision of children in the playground contributes towards the participation of pre-school children in outdoor activities.
- vi) Establish the constraints to school playground safety affecting the participation of pre-children in outdoor activities.

1.5 Research Questions

The study was guided by the following questions;-

- i) How do safe playground spaces influence the participation of pre-school children in outdoor activities?
- ii) What contributions do developmentally-appropriate playground equipments make towards participation of pre-school children in outdoor activities?
- iii) How does school playground surfacing influence the participation of pre-school children in outdoor activities?
- iv) How does school playgrounds maintenance inspection impact on the participation of pre-school children in outdoor activities?
- v) To what extent does supervision of children in the playground contribute to their participation in outdoor activities?
- vi) What are the constraints to school playground safety that affect the participation of pre-school children in outdoor activities?

1.6 Significance of the Study

The findings of this study can be of significant benefit to early childhood development and education (ECDE) teachers, administrators, school managers, playground supervisors, concerned parents and child care organizations to give them a better understanding of the playground safety needs of pre-school children. The findings can be a basis on which preschools can develop school-based playground safety programmes. Safety and participation in outdoor activities for children are human rights issues. The study findings will therefore be significant to the Ministry of Education (MOE), which is responsible for policy formulation, to plan programmes that integrate playground safety into early childhood programmes. The findings will also make a significant contribution to existing knowledge on playgrounds that can be used in development of comprehensive pre-school strategies and policies where the overall purpose will be to promote, protect and improve the safety status of pre-school children while in the playgrounds.

1.7 Limitation of the study

According to Mugenda and Mugenda (1999) limitations are an aspect of research that may negatively affect the results of a study but which the researcher has no control. A limitation to the study was distance from the researcher's work station to some of the sampled preschools for observation.

1.8 Delimitation of the Study

The study solicited data only from public and private pre-schools (rural and urban) in Central Division, Naivasha District and left out those in other divisions of the district. The study was narrowed to pre-school children, head teachers and teachers while parents, other care givers and education officers who could also have offered important information on children's

safety and participation in outdoor activities were left out. The study also narrowed its scope to the school playgrounds or outdoor environments and disregarded the indoors and the invisible school environment such as the relationship between the teacher and preschooler, policies and procedures and, the school climate.

1.9 Assumptions of the Study

The study's main assumption was that all the preschools in Central Division, Naivasha District, Kenya had playgrounds for pre-schoolers to use in outdoor activities. It also assumed that pre-school playgrounds met the necessary safety standards and requirement that foster children's participation in outdoor activities. The study also assumed that playground safety influences children's participation in outdoor activities.

1.11 Definitions of Terms

- Fall zone** The minimum distance from any part of the equipment to any hard surface, such as border, paths, tree trunks or adjusted equipment.
- Hazards** A hidden, unforeseen or unexpected danger to the unsuspecting children who are engaged in play or using equipment for learning, fun and enjoyment.
- Influence** The effect playground safety has on children to cause them to engage themselves in outdoor activities
- Outdoor Activities** Tasks a child is involved in outside the classroom to help acquire knowledge, motor and social skills, attitudes and values.
- Participation** Engagement, involvement or taking part in outdoor activities for acquisition of knowledge, skills and attitudes that will aid intellectual, physical and socio-emotional development

- Playground** Outdoor environments children use for play, fun and enjoyment and to gain experiences that will enhance their physical, intellectual, social and emotional development
- Pre-school** Formal institution for 3-5 years old children.
- Pre-schooler** The 3-5 years old child in the pre-school
- Private Pre-school** Institution of early learning owned and managed by individual and organizations and that receive no government funding.
- Public pre-school** Pre-school managed by parents in terms of the provision of finances, physical facilities, staff, and teaching and learning materials without any interventions from the government or any other organization
- School playground** State of stability in a school's playground in terms of being free of any danger such as accident and injuries. It also concerns having child-friendly environment that enhance children's physical, emotional, social and intellectual growth and development.
- Safety Surfacing** Shock absorbing or impact attenuating surface material that is spread on the surface under and around a piece of equipment onto which a child falling or exiting from a play equipment would be expected to land.

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CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter involves a review of literature related to the influence of school playground safety on the participation of pre-school children in outdoor activities in Central Division, Naivasha District, Kenya. With the safety of the pre-school child as the main focus, the study explored a number of preschool playground safety variables to establish their role in promoting or improving children's participation in outdoor activities. The study was anchored on Abraham Maslow's (1954) theory of human needs to explain preschool children's need for physical and psychological safety as they participate in outdoor activities in the playgrounds. A conceptual framework explains the relationship between the variables in school playground safety model.

2.2.1 School Playground Space Safety and Children's Participation in Outdoor Activities

Children have a basic need for outdoor play everyday. Johnson, Christie & Wandle(2005) contend that children need to explore limits, venture into new experiences and develop their capacities from a very early age and earliest play experience. According to Article 31 of the CRC (1989) children have a right to play in a healthy, safe or secure and nurturing environment, where they can acquire meaningful experiences through participating in outdoor activities regardless of their physical or social background. Consequently, outdoor play space must contain enough space for all children to explore, discover, experiment, manipulate, reconfigure, expand, influence, change, push their limits and create the basic information about the world while at the same time responding to their need for safety.

The ECD SSGK (2006), recommend that outdoor play areas must be large enough for the number of children in the pre-school to play and run around safely. It recommends less than 0.125 acres for pre-school grounds in urban slums, a minimum of 0.125 acres in urban areas; 0.25 acres in rural high population density areas and 0.5 acres in rural low density areas. On the other hand the Outdoor Play Area Standard Manual for Centre Based Child Care(2006) recommends that the ideal play space per child should be seven square meters (7m²), inclusive of fixed equipment and protective surfacing zones. This minimizes the dangers of accidents and risk associated with cramped spaces, and also gives children the opportunities to crawl, run, jump, climb and roll and, create the basic information about the world around them. It stimulates children positively and motivates them to seek more activities to involve themselves in (Curtis, 1998). However, if the space is too large or poorly designed it will lead to reduced attention span, more supervision and more non-developmental (or down time), noise, confusion, aimless wondering and under use of play spaces (Moore 1996).

One indicator of a safe school playground space is clearly demarcated grounds, proper fencing and secure boundaries. Demarcation involves separating or zoning play areas into activity- and equipment-based areas from other spaces that serve other purposes like car parks and school garden. According to Clayton and Forton (2001) if the play area is clearly defined with distinct boundaries and obvious pathways, children will use it more appropriately and successfully. Children feel secure in their knowledge of where things are, which part of the playground is safe and beneficial for them and where particular play activities are to take place, especially in the unstructured play activities. During structured activities defined activity areas reduce aimless wondering tendencies in children and enhance more discipline, concentration and participation in their activities. The play areas become more orderly (or stable), predictable and familiar and may foster children's skills of

competence and independence (Greenman, 1988; Caples, 1996; Kentucky State Dept of Education, 1991). Defined play spaces also give guidance for supervision and open sight lines for the teacher to see where children are during play. Fencing of the playground (and the entire school grounds) is important to keep out stranger in the play areas and to protect the play equipment from users other than the pre-schoolers.

A study by Berry (2002) on Healthy School Environment and Enhanced Educational Performance in Charles Young School, Washington DC, USA, reveals that school facility safety determines the environmental quality in school; quality then shapes the attitudes of the learners and teachers; attitude then affects teaching and learning behavior. Behaviour then determines the individual child's level of participation and performance in activities while in the outdoors. Playgrounds should comprise of high quality spaces that offer children concrete learning environments to compliment the formal curricular offered indoors (Francis, 1999) as well as provide children with experiences that will enhance their physical, emotional, social and intellectual development. They should be located in sites that have proper drainage to prevent wash-outs of the loose fill materials in the use zones (CPSC, 2010). They should also be well leveled and aesthetically marked to indicate different play zones that make them attractive to the children. They should be away from accessible hazards like roads, ponds, dump- sites and mining areas. Preschool playgrounds should also be free of clutter, sharp objects and harmful plants to minimize injuries, feelings of insecurity, anxiety and flight behavior (Redican,*et al*, 1986)

Low quality spaces signify less involved and interested children, insensitive teachers, overcrowding and hence high risks of accidents, increased restriction, more guidance and a lot of rules and reduced activities (Katz, 1983). These spaces are dreary and dull and may

tend to regulate the size of the group of children to use it and the amount of activity to be undertaken there. Such playgrounds leave children with increased feelings of being cramped in small spaces, lack physical, social and cognitive stimulation, children may react by being aggressive or withdrawn physically and socially (Greenman, 1988) or experience boredom because the space limit their free spontaneous play options. They feel insecure and less motivated, link their goals and efforts to such emotions and, spend a lot of time dwelling on their difficulties or negative cues in their environments rather than on learning tasks (Dahlberg *et al*, 1999).

2.2.2 Developmentally Appropriate Play Equipment

Young children at different ages and stages of development have different needs and abilities. Their development is a rather complex process that involves a mixture of progressive changes in physical (fine and gross motor skill), cognitive, emotional, social, moral, spiritual aspects (Berk 2003 in Olgan and Kahrman-Ozturk, 2001). According to Article 31 of CRC (1989) children have a right to engage in play and recreational activities appropriate to their ages. McCarthy (1980) states that scaling down the physical world makes it a little easier for the children to practice necessary skills, such as discoveries that are more practical than the statements made in the classroom during activities. In the same context, the Handbook on Public Playground Safety (HPPS, 2010.325) recommends that a playground should allow children to develop gradually and test their skills by providing a series of graduated challenges in an age appropriate manner. Failure to provide developmentally appropriate experience for children during the formative year can inhibit the acquisition of motor and perceptual skills.

The most important factor for playground safety is appropriate play equipment and materials that provide appropriate levels of challenges for preschoolers at various ages within acceptable limits of safety. The Consumer Product Safety Commission (CPSC, 2010) recommends young children's playground composed of age appropriate equipment scaled to their sizes, abilities and developmental level, for instance, handles should be smaller; bridges and platforms should be low and have guard rails and hand rails; slides should be short (under 4 feet), and stairs should have gradual (not steep) incline. A playground like this provides opportunities for children to engage in activities that satisfy their inquisitive nature and innate desire to discover and be creative (Malone and Tranter, 2003). Children always feel safe when the play equipment and materials are appropriate and able to challenge their physical and intellectual capacities to meet their individual needs. Play equipment include play structures like bars and domes for climbing, sliding boards, ladders and parallel boards, knotted ropes, climbing poles, bridges, platforms and swings, walking boards, balance boards and sand boxes. There are also consumables like the toys for play, (garden tools, large soft balls, bean bags, rocking horses, boats and board tubs); sand box materials (funnel, strainers and empty plastic containers) wheel toys (tricycles, child size vehicles and wagons) and water play materials (KIE syllabus, 2008; KIE Guideline for ECDE, 1999).

Play equipment and materials for pre-schoolers should be designed to stimulate children and also encourage them develop psychomotor skills. It should also be provided for children with special needs so that they participate in outdoor activities as a way of encouraging integration and inclusion of all children in the playground (Inan, 2009).

Layout of the equipment is crucial to enhancing children's safety in the playground. Structural integrity of the equipment should be a concern so that the equipment is not

hazardous or flimsy that it can break while children are on it. Well laid out play equipment provides easy navigation that builds confidence without sacrificing safety of the children. Different equipments should be used in different zones, for instance, moving equipment such as swings and merry-go-round should be located towards the corner, edge or outer side of the playground. Large muscles activities (those involving static balancing, gross body coordination and flexibility) should also be separated from the fine muscle activities (those requiring finger speed, arm steadiness, arm and hand precision and finger and hand dexterity). This also enables them to maintain their play areas, create positive emotional development and to explore new ideas through equipment they can handle (Braidekamp,1992).

2.2.3 Playground Surfacing

Adequate and proper surfacing of the playground strongly influence how children participate and benefit from the activities carried out on the playground. The US Consumer Product Safety Commission's Handbook (CPSC 2010:325) recommends the installation and maintenance of shock absorbing or fall impact attenuating surface materials under and around the fall or exist zone of play equipment. Falls from around play equipment are the most common playground hazards accounting for eighty percent (80%) of the injuries that are serious as well as health and life threatening (Peterson, 2002). Sixty eight percent (68%) are due to falls to the surface and over ten percent (10%) are from falls to the equipment. Falls cause injuries that can immobilize children thus reducing activity time and at times cause death. Safe conditions around equipment are essential for young children because they protect children from life threatening injuries (like head injuries) and minimize the risks of falling or landing on bare or hard surface but on something that will absorb the shock. They encourage children to crawl, climb and descend, jump, slide, swing, roll and to have fun

without fear of any danger or injury. Well surfaced play areas can enhance mastery of physical skills and personal development using different play equipment and materials. When safety is integrated into children's learning activities it stimulates more diverse and creative activities, children's confidence and self-esteem and hence more interest to engage in activities (Wortham & Frost, 1990).

Appropriate and safe surfacing loose fill materials, includes sand, shredded or recycled rubber, wood mulch, wood chips, rubber mats and tiles and synthetic turf concrete, grass and soil. Dark coloured materials are inappropriate for surfacing because when exposed to the intense sun they can cause blistering on bare foot. The CPSC (2010) guidelines suggest that loose-fill surfacing material should be at least 12 inches (30 cm) deep to ensure the child does not come into contact with the hard ground surface when a fall occurs. It should also extend at least six (6) feet in all direction to cover the fall zone around stationary equipment such as slides, see-saw swings, merry go round and rumps. The surfacing material should be well maintained and regularly replenished and raked to ensure safety and continuous use. The surface levels should never drop below the minimum depth. If materials drop below the minimum depth, children will refrain from using the equipment due to the fear of being hurt or injured. This puts children at risk of being alienated from the playground (Dahlberg, *et al*, 1999).

2.2.4 Playground Maintenance Inspection

The purpose of any playground is to ensure the safety of the children in the outdoor environment. According to the US CPSC (2010), playgrounds are potentially dangerous areas even when they are designed, installed and maintained in accordance with set safety guidelines and standards. Routine maintenance inspection involves checking play areas and

equipment for damage and repairs, modifications and replacements or removal of any items that can cause injuries or harm or do not belong to the playground (like broken equipment or glass, stones, potholes, sharp or protruding objects or edges, splitting wood, rusted or corroded metals). It is important to check the depth of the surface under and around the play equipment regularly to ensure it is in good condition or replaced when need arises. Surfaces need to be well drained to avoid pools of water in the play areas (USCPSC,2010).

Playground maintenance focuses primarily on providing children with quality outdoor environments with minimum risks of accidents and supporting optimum participation in the learning and development outdoor activities. Berry (2004) posits that quality shapes the attitudes of children and teachers (towards play environments), attitude affects the teaching and learning behaviour and behaviour affects the level of participation in the learning activities. A well maintained playground will send a message to the pre-school administration, teachers, parents and even the pre-schoolers, that participation in the outdoor activities is important. The results of safe grounds are active children, fewer injuries and increased capacity for handling more quality sensory input and hence cognitive and motor development. In contrast, a poorly maintained playground is an unsafe environment for children and allows unsafe conditions to occur, such as equipment that has deteriorated or lack repair, deferred maintenance, have worn out chains, protruding screws splintering wood, sharp edges or inadequate play equipment and other materials. These conditions may deny children the opportunity to engage in active play and hence inhibit the acquisition of motor and perceptual skills and abilities in later life (Wortham & Frost, 1990).

2.2.5 Supervision of Children in Outdoor Activities

Playgrounds encourage free, active, spontaneous play and hence opportunities for active play with fewer restriction on movement, and greater freedom with natural materials like water, sand, soil and snow (Sawyers in JOPERD, 1994) and large equipment (slides, ladders swings, merry-go-round). In regard to this fact, children sometimes use the play areas and equipment in unintended and unanticipated ways thus exposing themselves to risks of being injured or developing fear of playgrounds. Adult supervision of children while at both structured and unstructured play is very crucial for injury prevention, proper use of play equipment and materials and ensuring children's safety. Forty four percent (44%) of playground injuries are related to lack of or inadequate supervision and improper use of equipment (Peterson 2002), leading to tripping, entanglement or entrapment of children in the equipments. A watchful eye and gentle warning can therefore save children from collision and fighting, a scrapped knee or broken leg thus reducing playground injuries caused by the potential hazards in the play area like tripping over objects.

Adequate supervision ensures children are controlled in their activities, and they remain in the play area knowing some adult is nearby to intervene in case of emergency. Proper supervision of children during outdoor activities is enhanced by separation of play areas or zoning for different activities, equipment and materials based on the developmental levels of the children. Zones for three year olds are different from those of the older children in terms of the size, height, accessibility and aesthetics of the equipment and materials, and complexity of activities. This promotes children's confidence and self esteem as accidents are minimized through the control of children's behavior in their play zone. A playground without active supervision is an unsafe environment and allows unsafe acts to occur, such as

fighting, aimless wandering, venturing into unsafe areas and using equipment inappropriately.

The benefits of playground safety are maximized when developmentally appropriate play equipment and materials are combined with supervision to support both child-initiated and teacher directed learning. According to Hudson, Thompson, Cechota & Mack (2002), safe playgrounds have sight angles that allow visual access to all parts of the play area and structures from at least two directions at any point of observation. The sight angles make it easier for the supervisor or teacher to see all the children at play in the different zones and hence respond to emergencies using the routes implied by the sight lines. A positive emotional environment is created, where children and the teacher are always in contact during the activities. This also enhances children's discipline under the watchful eye of the teacher that surveys all corners and zones in the play area.

Pre-school playground becomes unsafe for children and accidents occur when supervision is inadequate due to an inconsiderable ratio of teachers to children. The NPPS (2000) recommends that pre-schools should provide the same ratio of supervisors or teachers on the playground as in the classrooms. Hudson, *et al.* (2002) posits that the ratio should consider the developmental level of the pre-schoolers to ensure adequate attention and emergency response is given to the young children. The ECD SSGK (2006) recommends a ratio of one teacher to fifteen (1:15) for three to four year old children, one to twenty five (1:25) for four to five year olds and one to thirty (1:30) for five to six year old pre-schoolers both indoors and in the playground. The guidelines further recommend a ratio of one teacher to one child (1:1) for ECD special needs pre-schoolers with autism, combination of deafness and blindness, cerebral palsy and multiple disabilities; one teacher to fifteen (1:15) for the

visually impaired and the physically handicapped pre-schoolers; one teacher to ten (1:10) for mild mental disability pre-schoolers and one teacher to twelve (1:12) for the deaf pre-schoolers. An assistant teacher is also recommended for each of these groups thus developing feelings of security and enhancing children's participation in outdoor activities.

Safety rules and regulations in the playgrounds provide the preschoolers and teachers with the opportunity to participate in enhancing playground safety. When the 'dos' and 'don'ts' of the playground equipment and activities are known and well internalized, children develop a positive attitude towards the activities involved. A helpful strategy to ensure children learn and understand the rules and regulations is to make them rehearse them indoors and outdoors. Rules and regulations ensure low incidence of indiscipline during the play activities processes and in the use of equipment and materials. They enhance learning and development of life skills such as cooperation, respect for the environment and others in the playground, communication and taking turns when using the equipment while climbing and landing from equipment to avoid falls.

2.3 Theoretical framework

The study was anchored on Abraham Maslow's (1954) theory of human needs. Young children need to explore limits, venture into new experiences and develop their capacities from a very early age and form their earliest play experience. Their need to play is driven by their unsatisfied innate desire to involve themselves in a variety of physical activities. They need to be protected from anything that can harm them physiologically and psychologically and make them feel safe and secure to actively participate in their learning and developmental activities. They need environments that are risk free and adequately provide play spaces with proper surfaces, well maintained play equipment and materials that are appropriate to their

developmental needs, abilities, age and interests. Safety enhances regularity and predictability in the environment and gives children freedom from fear and anxiety (Seifert, 1983). Safety strengthens participation, increases attention to the learning tasks, mental effort and benefits and to perseverance in the face of difficulty (Petty, 1998). Maslow's theory proposes that when children feel safe and protected within and around their play environments they are motivated to maximize their potential and move towards self-actualization. Failure to provide appropriate play environments for children result in lack of confidence, fear and anxiety and less than optimal participation in play activities.

2.4 Conceptual Framework

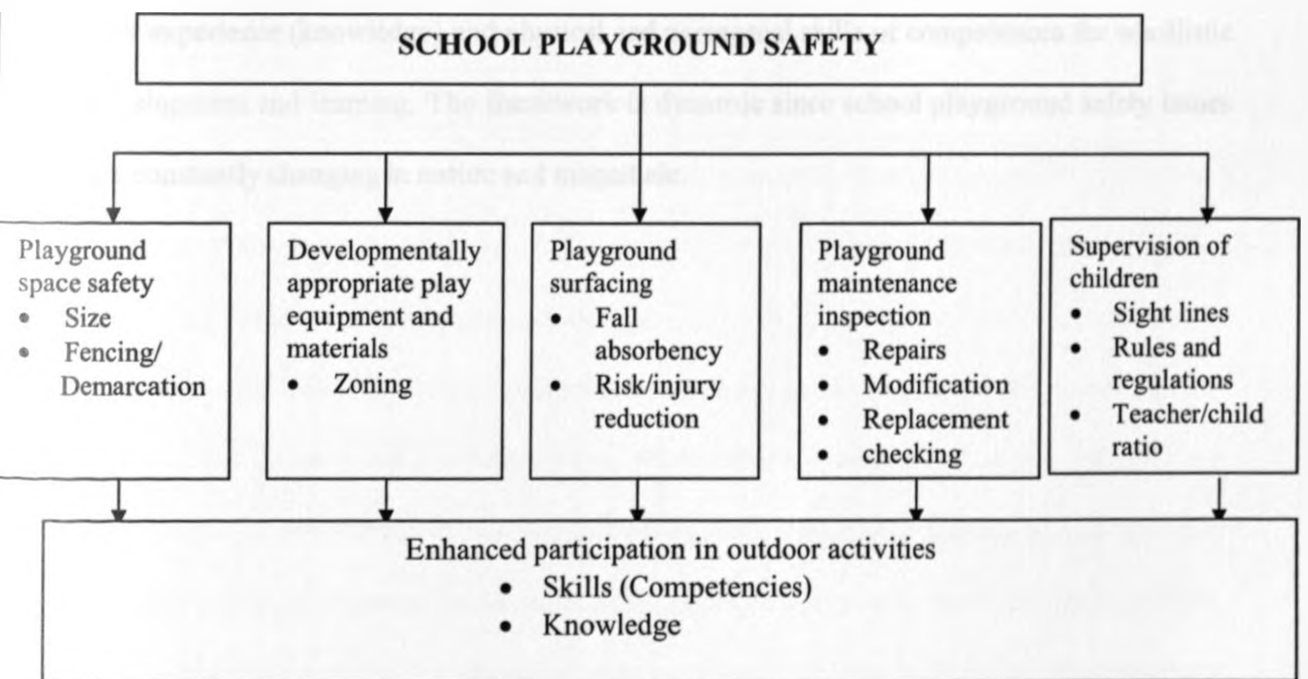


Fig.1 A conceptual framework of the influence of school playground safety on the participation of pre-school children in outdoor activities.

The conceptual framework for this study provides an insight into the influence of school playground safety on the participation of pre-school children in outdoor activities in Central

Division, Naivasha District. It diagrammatically presents the relationship between factors of school playground safety as the independent variables and children's participation in outdoor activities as dependent variables in the study. The size of play spaces determines the amount and arrangement (zoning) of play equipment to be placed there. The safety status of the two variables will depend on the amount of maintenance inspection and supervision carried out during children's outdoor activities. It shows that the benefits of safe play areas for children are maximised when adequacy, demarcation of play spaces are combined with provision of developmentally-appropriate play equipment and materials placed on fall attenuating playground surfaces that reduce risks and injuries; maintenance inspection of play equipment and materials and adult supervision of children at play. The ultimate result is acquisition of new experience (knowledge) and physical and perceptual skills or competences for whollistic development and learning. The framework is dynamic since school playground safety issues are constantly changing in nature and magnitude.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

In this chapter, the procedures used in conducting the study are presented. They include research design, target population, sample and sampling procedures, research instruments, validity and reliability of instruments, data collection and data analysis procedures.

3.2 Research design

The study employed descriptive survey design that provided qualitative and quantitative data that appropriately described the influence of pre-school playground safety on the participation of pre-school children in outdoor activities in Central Division, Naivasha District. The independent variables included the factors that enhance playground safety, that is, playground space, developmentally appropriate play equipment and materials, playground surfacing combined with maintenance inspection and supervision of children during outdoor activities. The dependent variable was defined as the participation of preschoolers in outdoor activities. The descriptive survey allowed the use of self-completion questionnaires for pre-school head teachers and teachers, and an observation checklist to study the variables and pre-schoolers participation in outdoor activities. The design was appropriate to the study because it helped obtain information of the playground safety as it was in its natural settings and allowed valid general conclusions from the facts discovered (Lokesh 1984) about its relation to children's participation in outdoor activities. Mugenda and Mugenda (2003) note that surveys can be used to explain or expose the existing status of two or more variables at given points in time.

3.2 Target Population

Kasomo (2006) describes the target population as the aggregate of all cases that conform to designated sets of specifications to which the study will generalize the results. In this study, the target population comprised of one hundred and sixty six (166) pre-schools in Central Division, Naivasha District. Thirty five (35) of the preschools were public while one hundred and thirty one (131) were privately-owned. One hundred and seven (107) were categorized as rural and fifty nine (59) as urban. The pre-schools had an enrolment of 7,283 pre-school children and a teachers' establishment of three hundred and thirty (330) teachers.

3.3 Sampling Procedure and Sample Size

Sampling is the process or technique of selecting a suitable sample or a representative part of a population, for the purpose of determining parameters or characteristics of the whole population (Webster- Merriam, 1993). The study employed stratified sampling method to achieve the desired sample sizes from various sub-sets in the population. The population was stratified into public, private, rural and urban preschools. From the target population of one hundred and sixty six (N=166) pre-schools in Central Division, Naivasha District, a random sample of seventeen (17 or 10%) pre-schools from each category was selected using the simple sampling procedure. Gay (1992) in Mugenda and Mugenda(2003) states that 10% is the smallest percentage to use in order to get the sample size for the study. Verma and Mallick (1999) and Kasomo, (2006) explain that a sample contains characteristics present in the target population and have independent chances of being selected. Gay (1992) further states that a researcher selects a sample due to the various limitations that allow studying the whole universe (population).

To distribute the random sample to all categories of preschools, a sample fraction (f) was calculated to give the probability of any categories of preschools being selected for the sample. The sample fraction (f) was defined by the equation $f = \text{random sample}/N$, that is, $17/166 = 0.102$. The number of preschools in each category was multiplied by the sample fraction ($f = 0.102$) to obtain the sample size for every strata. The study sampling frame is as shown in Table 3.1.

Table 3.1 Sample Size Frame

Preschool category	Target Pop.	Sample Size							
		Pre schools		No of HTs		No of Teachers		No. of preschoolers	
		N	%	N	%	N	%	N	%
Private	131	13	10	13	10	13	17	281	4
Public	35	4	11	4	11	4	5	104	2
Rural	107	11	10	11	10	11	14	199	3
Urban	59	6	10	6	10	6	8	190	3
Total		34		34		34		774	

Simple random sampling procedure using the lottery technique was used to get the sample size in every strata of the population as shown in Table 3.1. Preschools in each stratum were given a number on small pieces of paper which were then folded, put in a container, mixed thoroughly and randomly picked one by one until the sample for each stratum was covered (see table). This method had the benefit of yielding research data that was generalized to the larger population. One HT and one teacher from every preschool in the sample categories (a total of 34 each) were selected for the study. A total of 774 preschoolers (281(4%) in private, 104(2%) in public, 199(3%) in urban and 190(3%) in rural preschools) were involved in the study.

3.4 Research Instruments

The study employed two self completion questionnaires to solicit data from the head teachers and teachers on the playground space, developmentally appropriate equipment, surfacing and supervision of children. Both questionnaires consisted of structured closed- and open-ended questions that were developed from the objectives of the study (Mugenda and Mugenda, 2003). According to Denzin and Lincoln (2002) an In-depth structured questionnaire leads to generations of insignificant facts rather statistical information and also permits a better understanding of organizational complexity. The structured closed items were accompanied by appropriate but limited options from which the respondents would select the responses to describe different phenomenon of the study. The open-ended questions allowed the respondent to give details freely without any prompting. The questionnaire was selected based on its quality of ensuring anonymity and hence the respondent's willingness to freely provide responses. The questionnaires were self constructed based on the study objectives and the questions.

An observation checklist was also used for direct observation of the playground variables and of pre-schoolers as they engaged in outdoor activities to check whether conditions in preschool playground encouraged productive engagement or not. It consisted of a structured guideline using the Likert type rating scale with 4 responses - excellent, good, satisfactory and unsatisfactory – which helped observe and qualitatively and quantitatively describe playground factors that enhance the safety of preschoolers in outdoor activities. A remarks column was included for additional elaboration on data recorded and captured the responses of children while using the playground. Direct observation presents data in its natural form, makes the observer an active participant in the study (Kombo & Tromp, 2006) and permits time to think about what is occurring rather than on how to record it. It also enhances the

accuracy of the study, minimizes bias and supplements data from the questionnaires (Mugenda & Mugenda 2006; Kasomo 2006). The two instruments were appropriate to the study because, as Verma & Mallick (1999) posit, the results from one form of data helped to inform and refine the other data so that the conclusions drawn were meaningful, precise and representative.

3.5 Validity and Reliability of Research Instruments

3.5.1 Validity

Validity is the degree to which the research instruments will appropriately and accurately measure what they are supposed to measure (Verma & Mallick, 1999; Orodho, 2005). In this study, piloting of the instruments in four purposively sampled preschools that were not in the study was used to validate them and to determine their accuracy, clarity and suitability. Piloting of the instruments helped check how far the measuring instruments were a representative of the full content of the concept being studied. Based on the analysis of the piloting, modification and removal of ambiguous or unclear items such as questions, inaccurate responses or indicated weaknesses was done to attract appropriate responses from the respondents. Content validity was established through consultations and discussions with the research supervisors.

3.5.2 Reliability

Reliability is the degree of consistency to which a research instrument measures whatever it is that it measures or how it yields similar results over a number of repeated trials (Verma and Mallick, 1999; Orodho, 2005). The reliability of the HTs' and teachers' questionnaires and the researcher's observation checklist was established through the test-retest procedure. Each of the instruments was first tested in four (4) randomly selected pre-schools (two public and

two private) not in the study sample. A period of two weeks was allowed before the tools were administered again for a retest. Sampled responses from the test and the retest were analyzed using means, frequencies and percentages that produced scores which helped check whether the two processes gave similar results. The scores were then correlated using Pearson's Product Moment Correlation Coefficient as an estimate of reliability. A correlation coefficient of positive 0.64 was obtained from the HTs questionnaires, 0.67 and 0.72 from the observation checklist. This implied that the items in the instruments correlated highly among themselves hence consistently. A reliable measure is one with a small error. The procedure helped in modifying and removing a few ambiguous responses or weaknesses and hence produced revised instruments used in the actual study.

3.6 Data Collection Procedures

Data collection started by acquiring a research permit from the National Council for Science and Technology, introduction letters from the District Commissioner and District Education Officer, Naivasha to access the pre-schools for information. Letters were written to pre-school administrators informing them of the study and its purpose. Data was solicited from the pre-school head teachers and teachers in Central Division, Naivasha District using self-completion questionnaires. Respondents were expected to promptly respond to the items in the questionnaires by writing or ticking the appropriate responses. The questionnaires (Appendix II and III) were delivered to the respondents in the sampled pre-schools by the researcher who also briefed the respondents on how to use them. A period of two weeks was given for the respondents to complete the questionnaires which the researcher then collected from the pre-schools. The researcher personally visited the sampled pre-schools and, using a structured observation schedule (Appendix IV) directly observed the playground safety (independent variables) in the study and their influence on preschoolers while participating in

outdoor activities, and then responded appropriately to the schedule's requirements. Indicators of participation were based on various factors such as the number of children able to use a particular kind of equipment appropriately and successfully. Observations were scored against the rating scale and then totaled to give a qualitative conclusion. Additional remarks were made to respond to other necessary aspects of the variables not captured in the research tool.

3.7 Data Analysis Techniques

Data analysis is the process of bringing order, structure and meaning to the mass of information collected (Mugenda and Mugenda, 2003). The study generated both qualitative and quantitative data through the research instruments. Based on the study objectives and questions, the massive qualitative data collected from the research tools was grouped into meaningful patterns that revealed how the categories or themes were related (Verma and Mallick, 1999). Codes were assigned especially for the open ended questions in the questionnaires. Responses from the research tools, both open- and closed-ended and those from the observation checklist, were tallied and counted according to themes. They were then analyzed using descriptive statistics such as percentages and frequency tables to produce quantitative data that gave a summary of the study findings. Each pile of data revealed how the responses for each variable were distributed. From these piles random sample of the independent variables were correlated with those of the dependent variables using the correlation coefficients to show the relationship between the two variables. Data from the observation checklist was analysed by summing up the multiple items within the rating scale. Data was then tabulated and inductively analyzed, to give a summary of the influence of school playground safety on the participation of pre-school children outdoor activities.

Descriptive studies require meaningful description of a distribution of scores using a few indices or statistics.

3.8 Ethical Considerations

The ethical considerations taken into account in this study included ensuring that the study remained original in content and design. Other peoples' data was credited with care to avoid plagiarism. Permission to carry out the research was sought form the relevant authorities such as The National Council for Science and Technology and Naivasha District Commissioner and District officer. Informed consent to carry out the study in the preschools was sought from the preschool administrators. In data collection, the respondents were guided with an aim of seeking their volunteerism in the study. Emphasizes was made on confidentiality give by the respondents. The research tools did not require the names of the respondents or their preschools to be indicated.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSIONS OF THE FINDINGS

4.1 Introduction

Chapter four presents the analysed data, discussions and interpretations of the qualitative and quantitative data on influence of playground safety on participation of pre-school children in outdoor activities in Central Division, Naivasha District, Kenya. The study sought responses from pre-school HTs and teachers and through direct observation guided by the following research questions:-

- i. Examine the influence of safe playground spaces on participation of pre-school children in outdoor activities.
- ii. Determine the contribution of developmentally-appropriate playground equipment on the participation of pre-school children in outdoor activities.
- iii. Examine the influence of school playground surfacing on the participation of pre-school children in outdoor activities.
- iv. Establish to what extent school playgrounds maintenance inspection influences the participation of pre-school children in outdoor activities.
- v. Find out to what extent supervision of children in the playground contributes towards the participation of pre-school children in outdoor activities.
- vi. Establish the constraints to school playground safety affecting the participation of pre-school children in outdoor activities.

In this chapter the research findings are presented in three sections. The first section deals with questionnaire return and observation rate. The second section presents the demographic

background information of the respondents while the third presents the research findings, discussions and interpretations. In the presentation, each research objective and question is examined and discussed in relation to the result findings.

4.2 Questionnaire Return Rate.

The researcher used two questionnaires, one for the preschool headteachers (HTs) and the other for the teachers. The study had sampled out 34 out of 166 preschools categorized as private (13), public (4), urban (6) and rural (11) and therefore 34 HTs and 34 teachers from each category were targeted to use the questionnaires. The questionnaire return rate revealed that out of 34 HTs, 30 (88%) returned their questionnaires, that is, 11 (85%) private, 4(100%) public, 6(100%) urban and 9(82%) rural preschools. This reveals that a total of 4(12%) HTs- 2(18%) private and 2(22%) rural- did not return the questionnaires. Out of 34 preschool teachers in the study sample (same categories and numbers as for HTs), 29(85%) returned the questionnaires-10(71%) private, 4(100%) public, 6(100%) urban and 9(82%) rural preschools. Five (5 or 15%) -3(30%) private and 2(22%) rural- did not return the questionnaires because they served as both the HTs and teachers in their preschools and responded to the questionnaire for HTs only.

4.3 Observation Rate

The researcher had developed an observation checklist to enable observation of playground variables and children in outdoor activities in 34 preschools. Out of sampled 34 preschools, 29(85%) were visited, that is 10(92%) private, 4(100%) public, 6(100%) urban and 9(91%) rural, while 5(15%) -3(92%) private and 2(22%) rural were not. A possible reason for the unreturned questionnaires and failure to visit preschools may have been the timing of the study. Research was carried out at the end of the term when preschools were closing for holidays.

4.4 School Details

This section presents an analysis of the enrolment and the number of teachers involved in the study.

4.4.1 Type and Location of Pre-school

Pre-school HTs and teachers were asked to indicate the type of their pre-schools. The findings revealed that 13 (38%) were private while 4 (12%) were public pre-schools. The study findings also revealed that six (17%) pre-schools located in urban and seven (21%) in rural areas were involved in the study regardless of their type.

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4.4.2 Pre-school Enrolment

Preschool HTs in the study were asked to give the number of children enrolled in their schools per gender. Table 4.1 summarizes the distribution of the responses per category (strata).

Table 4.1 Pre-school Enrolment (from HTs)

Category	Boys	Girls	Total	%
Private	173	207	380	26.3
Public	98	79	177	12.3
Urban	289	364	653	45.2
Rural	130	104	234	16.2
	690	754	1444	100.0

Data from HTs revealed that a total of 1444 pre-schoolers were targeted in the preschools but the sample covered 774 preschoolers as shown by Table 4.2 on the number of children in the classes per stratum as revealed by the teachers.

Table 4.2– Number of pre-school children in class (from teachers)

Category	Boys	Girls	Total	%
Private	130	151	281	36
Public	61	143	104	13
Urban	103	96	199	26
Rural	102	88	190	25
	396	378	774	100

The data revealed that private pre-schools had the highest number (36%) of pre-schoolers using playgrounds for outdoor activities under class teachers' instructions, while 26% were in urban, 25% in rural and 13% in public pre-schools. From Tables 4.1 and 4.2, findings from HTs revealed that there were 1444 children in all the sampled preschools. On the other hand the teachers showed that out of the 1444 preschoolers who participated in outdoor activities, 774(54%) were in their classrooms under their instructions.

4.4.3 Preschoolers Observed in Outdoor Activities

Using the remarks column in the observation checklist, the researcher noted down the number of children who participated in different activities in the playground space, used different play equipment, used the surfaces and those who benefited from teachers supervision during the activities. Observation involved 29(85%) preschools with an enrolment of 527(67%) preschoolers. A total of 247(32%) preschoolers were left out in the 5(15%) preschools where observations were not carried out. The number of preschoolers observed in outdoor activities is as summarized in Table 4.3

Table 4.3 Preschoolers Observed in Outdoor Activities

Category	No.of Presch. observed	No. of preschoolers observed
Private	10	162
Public	4	114
Urban	6	166
Rural	9	130
Total	29	572

4.4.4 Pre-school Teachers' Establishment

Pre-school HTs were asked to indicate the number of teachers in their institutions. Table 4.3 summarizes their responses per gender and category under study.

Table 4.4 Pre-school Teachers' Establishment

Category	Male	Female	Total
Private	-	21	21
Public	1	9	10
Urban	3	30	33
Rural	-	13	13
Total	4	73	77

The data revealed that out of 77 teachers in the preschools under study, 4 (5%) were male while 73(95%) were female. This implies that more female than male teachers were involved in ensuring children are safe while in the outdoors as well as indoors. This is based on the fact that women are nurturers and the people who are best suited for raising young children (Berk, 2002)

Table 4.5 Teachers' Establishment in Preschools Observed

Category	No. of Presch observed	No. of Teachers
Private	10	15
Public	4	10
Urban	6	28
Rural	9	12
Total	29	64

Table 4.5 revealed that more urban preschools were observed than those in the other categories. This could be based on the fact that this category of preschools were more in number than in all the other categories and had more children (Table 4.2) than the other three categories

4.5 Findings of the Study.

The findings of the study involved a systematic descriptive analysis of the opinions, views and experiences elicited from the questionnaires filled by preschool HTs and teachers, and the researcher's observation checklist. The analysis helped answer the research questions, conveyed the meaning of the research findings and provided a link between this section and other sections of the report.

4.5.1 Playground Space Safety and Children's Participation in Outdoor Activities.

Using this theme, the study purposed to examine the influence of safe playground spaces on participation of the preschool children in outdoor activities. Preschool HT, teachers and the researcher provided the information elicited from the different strata (categories) of preschools under study.

4.5.1.1 Size of School Grounds

The findings in this theme revealed that pre-schools differed in the size of school grounds as reported by 30 HTs. This data is as summarized in table 4.6

Table 4.6 Size of School Grounds (in acres)

Category Of Presch. HTs	No. of HTs	Below 0.5		0.6-1.0		1.1-1.5		1.6-2.0		2.1-2.5		over 2.5	
		N	%	N	%	N	%	N	%	N	%	N	%
Private	11	9	83	1	9	-	-	1	9	-	-	-	-
Public	4	-	-	1	25	1	25	2	50	-	-	-	-
Urban	6	5	83	1	17	-	-	-	-	-	-	-	-
Rural	9	4	44	-	-	-	-	-	-	3	33	2	22
	30	18	60	3	10	1	3	3	10	3	10	2	7

Table 4.10 revealed that out of 30 preschools under study 18(60%) had school grounds between 0 and 0.5 acres, 3(10%) had 0.6 – 1.0 acre, 1(3%) had 1.1-1.5acres, another 3(10%) had 1.6-2.0 acres, another 2(7%) had 2.1-2.5 acres while 2(7%) had land over 2.5 acres. The ECD SSGK (2006), recommend a minimum of 0.125 acres in urban areas; 0.25 acres in rural high population density areas and 0.5 acres in rural low density areas. In urban slums, the acreage for pre-school grounds could be less than 0.125 acres. It is evident that out of 11 private preschool, 9(83%) had between 0 to 0.5 acres, 1(9%) had 0.6 -1.0 acres and another 1(9%) had1.6-2.0 acres. Of the 4 public preschools, 1(25%) fell between 0.6-1.0 acres, another 1(25%) was in the category of 1.1-1.5 acres while 2(50%) were between 1.6-2.0 acres. 5(83%) of the 6 urban preschools had between 0-0.5 acres, while 1(17%) fell between 0.6-1.0 acres. Out of 9 rural preschools, 4(44%) were on 0-0.5 acres category, 3(33%) in 2.1-2.5 category while 2(22%) were on 2.5 acres of land.

The assumption that preschools under study had met the standard requirements for safety in terms of the size of school grounds were confirmed from the study findings. According to the ECD SSGK (2006) guidelines outdoor play areas must be large enough for the number of children in the pre-school to play and run around safely. However, if the space is too large or poorly designed it will lead to reduced attention span, more supervision and more non-developmental or down time, noise, confusion, aimless wondering and under use of play spaces (Moore 1996).

4.5.1.2 Preschool Playgrounds and Children's Enrolment

Young children's desires to explore limits, venture into new experiences and develop their capacities emerge from a very early age thus enabling them to form their earliest experiences from play. Based on this fact, outdoor play areas must be large enough for the number of children in the preschool to explore, discover, experiment, manipulate and create basic information about the world while at the same time responding to their need for safety. The Outdoor Play Area Standards Manual for Centre Based Child Care (2006) recommends that the ideal play space per child should be seven square meters (7m²) inclusive of fixed equipment and protective surfacing zones. The study findings confirmed the assumption that all the preschools (100%) under study had playgrounds for outdoor activities. In response to the question on adequacy of the playgrounds in relation to the number of children, HTs and teachers were required to indicate whether the playgrounds were quite adequate, fairly adequate or inadequate. The responses from HTs and teachers are tabulated in Table 4.7 and 4.8 respectively.

Table 4.7 Size of Playgrounds and Children's Enrolment

Category	No of Respondents	Quite Adequate		Fairly Adequate		Inadequate	
		N	%	N	%	N	%
Private	11	3	27	6	55	2	18
Public	4	2	50	1	25	1	25
Urban	6	3	50	2	33	1	17
Rural	9	5	56	2	22	2	22
Total	30	13	43	11	37	6	20

From Table 4.7, playgrounds for 13 (43%) of the 30 pre-schools were quite adequate, 11 (37%) were fairly adequate while 6(20%) were inadequate. Out of 11 private pre-schools, 3 (27%) had quite adequate playgrounds while 6 (55%) and 2 (18%) reported fairly adequate and inadequate playgrounds respectively. This implies that most private schools have fairly adequate playgrounds and negate data in Table 4.6 that indicated that 9(83%) had school grounds below 0.5 acres. Two (50%) public pre-schools had quite adequate playgrounds while 1 (25%) reported they were fairly adequate and for another 1 (25%) they were inadequate. From 6 urban pre-schools, 3 (50%) had quite adequate play spaces while for 2 (33%) they were fairly adequate and inadequate in 1 (17%) pre-school. Among the 9 rural pre-schools, 5 (56%) reported quite adequate, and 2 (22%) as fairly adequate playgrounds. Generally more preschools (43%) were shown to have adequate playgrounds. Adequacy of playgrounds can be associated with the size of the school grounds vis-à-vis the school enrolment. Where the enrolment is high and the school grounds are small, playgrounds are bound to be inadequate because much of the grounds are occupied by other physical structures like classrooms.

Table 4.8 Size of Playgrounds and Number of Children in the Class

Category	No of respondents	Quite Adequate		Fairly Adequate		Inadequate	
		N	%	N	%	N	%
Private	10	4	40	4	40	2	20
Public	4	2	50	1	25	1	25
Urban	6	2	33	4	67	—	—
Rural	9	4	44	3	33	2	24
Total	29	12	41	12	41	5	17

Table 4.8 reveals that out of 29 respondents, 12 (41%) teachers reported that their preschools had adequate play areas, 12 (41%) indicated fairly adequate, while 5 (17%) reported that play areas were inadequate. The data further showed that out of 10 private pre-schools, 4 (40%) had quite adequate playgrounds, 4 (40%) had fairly adequate and 2(20%) indicated inadequate playgrounds for children's outdoor activities. The analysis revealed that among preschool teachers playground ranged from fairly adequate in terms of size viz-a-viz the number of children in their classes. Adequate playgrounds tend to give children feelings of freedom and opportunities for spontaneous play where children can explore their surroundings. However, inadequate play areas can be dull and dreary, accident prone; tends to regulate the number or the size of the group of children to use it and the amount of activity to be undertaken there.

4.5.1.3 Children's Outdoor Activities

In this theme, teachers were required to indicate the type of outdoor activities children participated in while in the preschool playgrounds. Teachers' responses are summarized in Table 4.9

4.9 Types of Children's Outdoor Activities

Category	No of respondents	Structured		Unstructured		Both	
		N	%	N	%	N	%
Private	10	2	20	2	20	6	60
Public	4	1	25	-	-	3	75
Urban	6	-	-	1	17	5	83
Rural	9	2	22	1	11	6	67
Total	29	5	17	4	14	20	69

Table 4.9 revealed that according to preschool teachers, children in 2(20%) of the 11 private pre-schools participated in structured play only, those in another 2 (20%) were involved in unstructured play only while in 6 (60%) children were involved in both types of play. It also showed that out of 4 public pre-schools, 1 (25%) pre-school teacher conducted structured (planned) activities only while 3 (75%) others conducted both the structured and unstructured play activities. For the 6 urban pre-schools, 1 (17%) involved children in unstructured play only while 5 (83%) conducted both the structured and unstructured play activities. In the same context, in 2(22%) out of 9 rural pre-schools, structure play activities were conducted, while 1(11%) conducted unstructured play. Another 6(67%) conducted both structured and unstructured play. The analysis revealed that 20 (69%) of the respondents involved children in both structured and unstructured play while 5 (17%) and 4(14%) only conducted structured

and unstructured activities respectively. Size of playground space could be the reason for concentration in structured play only in 2 (20%) private and 1 (25%) public pre-schools. Research observations on the other hand revealed that in, 10(100%) private schools children were satisfactorily involved in unstructured outdoor activities during recess while planned activities were outdone by indoor academic activities. In 3 (75%) out of 4 public and 1 (25%) urban pre-schools children satisfactorily participated in both structured and unstructured play because they had adequate play areas, while in 3 (75%) children were unsatisfactorily involved in both types of play. Much of the time was spent in class and play (mainly structured) was only during the forty minutes recess or break.

4.5.1.4 Organization of Play areas

The findings also show that the play areas for outdoor activities were organized differently in the sampled pre-schools. Table 4.10 summarizes this arrangement as follows

Table 4.10 Organization of Play Areas

Category	Respondents	By age/level of learning		By play activities		By play equipment	
		N	%	N	%	N	%
Private	10	2	18	5	50	3	27
Public	4	1	25	2	50	1	25
Urban	6	3	50	3	50	—	—
Rural	9	3	33	4	44	2	23
	29	9	31	14	48	6	21

Table 4.10 shows that teachers in 14 (48%) of all the categories of pre-schools organized their playgrounds according to play activities. This agrees with the ECD SSGK (2006) that states that learning in preschools shall be through play and hence activity based. In 9 (31%)

pre-schools activities are by age or level of learning, again agreeing with ECD SSGK that ECD children shall be grouped according to age, interest and ability for learning purposes. 6 (21%) of the pre-school teachers reported that playgrounds were organized according to equipment. However, the study failed to capture organization of play areas according to the three categories together.

Observations revealed that out of 29 pre-schools where observation of [playgrounds was done, only 1 (3%) of public and 1 (3%) of urban schools had organized their play areas according to equipment. This implies that in 27(94%) of the pre-schools, the whole or part of playground is used for all activities by all pre-schoolers regardless of their age or level of learning. It is important to organize or zone the playgrounds for children to use them for different activities. Clayton and Forton (2001) posit that if the play area is clearly defined with distinct boundaries, children will use it more appropriately and successfully and many foster children's skills of competence and independence (Kentucky State Dept of Education, 1991, Greenman 1988). Children feel secure when they know which part of the playground is safe and beneficial for them and where particular play activities are to take place, especially in the unstructured play activities. The play areas should therefore be more orderly, predictable and familiar for the children to use them confidently and successfully. Maslow (1943), states that children need a play environment that encourages and enables them to fulfill their own potential.

4.5.1.5 Playground Fencing

This theme sought to find out from the pre-school HTs whether the playgrounds were fenced and they were expected to respond either 'Yes' or 'No'. Those who responded 'No' were to give reasons for not fencing the pre-school while those who responded 'Yes' were to indicate

the influence of fencing the pre-school playgrounds in children's participation in outdoor activities. The results of the findings are as shown in Table 4.11.

Table 4.11 Playground Fencing

Category	No of Respondents	Yes		No	
		N	%	N	%
Private	11	9	82	2	18
Public	4	2	50	2	50
Urban	6	6	100	-	-
Rural	9	5	56	4	44
	30	22	73	8	27

Table 4.11 shows that from a total of 30 preschools from all categories under study 22(73%) were fenced while 8 (27%) were not. It is important to fence off the play area and even have lockable gates for the security of the children (ECD SSGK, 2006). This is based on the fact that fencing keeps out strangers in the play area and protects the play equipments from users other than the pre-schoolers. From the table 9(82%) private, 2(50%) public, 6(100%) urban and 5(56%) rural preschool playgrounds were fenced, while 2(18%) private and 2(50%) of public preschools had no fences. Observations revealed that 6(100%) urban pre-schools, and mostly privately owned ones, were fenced the reason being the size of school grounds they were built on and their locations. The study also revealed that 2(18%) private, 2(50%) public and 4(44%) rural preschools were not fenced.

Preschool HTs gave different reasons why their preschools were not fenced. From 2(18%) private preschools without a fence, HTs reported that the school grounds were rented and the HTs had no much influence over the issue of fencing. From the 2(50%) HT of public preschools cited lack of finances as a reason for lacking a fence while another 1(25%) noted

the school had plans to be relocated to another site in the near future hence no need for a fence. Of the 4(44%) rural preschools without a fence 1(11%) HT reported that the fence that existed was destroyed by strangers, another 1(11%) HT indicated that the owner of the land was ignorant on matters concerning the preschool, especially the safety of children within the preschool and did not fence the preschool grounds. Still in the same context, 1(11%) HT reported that the preschool was within the primary school grounds hence no playgrounds were specifically for the very young children. This implies that other external factors such as preschools being attached to primary schools also influence school playground safety. It is important to fence off the play area and even have lockable gates to keep out strangers, animals and other forms of interferences in the play area and to protect the play equipment from users other than preschoolers. However, the study revealed that 22(75%) of the schools fenced of the school grounds as a safety measure for children during their structured and unstructured play.

For the preschools with a fence, HTs were required to show how fencing influenced children's safety and participation in outdoor activities. The study findings revealed that in 2(18%) private, 3(50%) urban, 3(43%) rural preschools, a fence gave children feelings of security or protection from outside dangers, intruders or influence. This implies that children felt free to play or explore in any part of the playground without fear of any interference. 7(64%) private from HTs, 2(50%) public, 3(50%) urban and 1(11%) rural preschools reported that fencing of school grounds and play areas controlled children's movement so that they remained and played within the school grounds and designated play areas and activities. As a result, they cannot sneak out of the playground especially during unstructured free play when the teacher is not supervising them.

Another two (18%) HTs from private preschools further stated that fencing playgrounds protects children's play equipment especially from users other than the preschoolers who could damage or steal them. This implies the equipments remain safe and usable by the children all the time. It also controls children's movement when the equipment area is well defined by being fenced off.

4.5.1.6 Safety Measures in the Playground Space

This item required HTs and teachers to show the measures they took to either minimize or eliminate risky conditions or threats in the playground space that may cause accidents, bodily injuries, emotional and psychological distress to the young children (UNESCO, 2010; CWS, 2008). According to Maslow (1943) when children feel comfortable in a safe context of the world around them, they are able to reach their potential. They also reach a level of maximization when they are in harmony with themselves and the environment. From 9(82%) private, 2(58%) public, 3(50%) urban and 4(54%) rural preschool HTs indicated collecting or clearing harmful or sharp objects, (like broken glasses thorns, sticks and stones) and covering potholes that can harm children or create fear of using the playgrounds. In the same vein, 4(40%) private, 2(50%) public, 4(67%) urban and 5(56%) rural preschool teachers cited the same ways of ensuring safe playground spaces.

From 3(27%) private, 1(14%) rural and 1(25%) public preschool HTs cited cutting grass and bushes as well as maintaining cleanliness of the play areas as ways of ensuring playground space is safe for children to participate in outdoor activities. Another 1(9%) private and 3(33%) HTs from rural preschools teachers concurred with them. This implies that, in private and rural preschools HTs and teachers had similar playground space safety interventions. In the same context, 1(11%) of rural preschools showed that marking the space for outdoor

activities ensured playground spaces were safe for use by preschoolers. Marking the play spaces involves defining areas for different activities and separating or zoning them from other spaces that serve other purposes. This implies that playgrounds can be zoned or clearly defined with distinct boundaries based on activities and equipment for different ages of children in the preschool. Clayton and Forton (2001) state that children use such a playground more appropriately and successfully because it makes them feel secure when they know where to find the play equipment, which part of the playground is safe and beneficial to them and where particular activities can take place. It also makes them active and interested in their play activities.

Headteachers from 1(14%) public, 1(17%) urban and 1(11%) rural preschools mentioned inspecting or pre-visiting the play area on a daily basis before allowing children to go out for play so as to check and collect harmful or sharp objects, ensuring the equipment and materials are available and in good condition, that is, no sharp points, edges and corners. One(17%) urban preschool cited leveling of the playground surface as a way of ensuring playgrounds were safe while 2(11%) public and 2(18%) private indicated inspecting and cleaning them regularly was essential. In addition 1(25%) public preschools also indicated that teachers accompanied the pre-schoolers to the playground. This maximizes children's involvement in various child- initiated and teacher- directed activities. It gives children courage and a sense of security to venture into the different activities knowing that they are in contact with their teacher during the activities. From observations, all the 29(100%) preschools involved followed these different ways of ensuring play spaces were safe for children to participate in outdoor activities.

4.5.2 Developmentally- Appropriate Play Equipment and Children's Participation In Outdoor Activities

The aim of this question was to determine the influence of developmentally appropriate playground equipment on the participation of preschool children in outdoor activities. The most important factor for playground safety is good and appropriate play equipment and materials that children manipulate in their play, games and sports activities. According to ECD SSGK (2006) the play equipment in the preschool playgrounds should be age and developmentally appropriate (in terms of child size and brightly coloured), adequate, safe and securely fixed to protect children from injury. Scaling down the physical world makes it easier for children to practice necessary skills. Children always feel safe when their play equipments and materials are appropriate and able to challenge their physical and intellectual capabilities to meet their individual needs and develop high self esteem.

4.5.2.1 Types of Play Equipments and Materials in Preschool Playgrounds

In this theme, preschool HTs and teachers were required to indicate the type of play equipment and materials found in their preschool playgrounds. Availability of play equipment and materials provide opportunities for children to engage in activities that exercise their bodies, and satisfy their inquisitive nature and innate desire to discover and be creative (Malone and Tranter, 2003). According to the KIE ECDE Syllabus (2008), they also develop children's small and large muscles.

From the findings, 9(82%) private preschool indicated availability of portable (movable) materials while 2 (18%) of the same category had fixed equipments. 2(50%) public preschools had portable materials while another 2(50%) in the urban category had fixed equipment, 5(83%) showed availability of fixed equipment and 1(7%) had portable materials

only. While 4(57%) and 3(33%), rural preschools use reported or fixed equipment and portable materials respectively. This implies therefore revealed that preschoolers used both the fixed equipment and portable materials in the preschools of all categories.

Observations made from the 29 preschools visited, indicated that 1(17%) private, 2(50%) public, 3 (75%) urban and 1(11%) rural preschools had fixed equipment as well as portable materials used alongside each other. In the same context, 5(83%) private, 2 (50%) public, 1(11%) urban and 3(75%) rural preschool had portable materials only. This implies that schools with both types of equipment and materials provide opportunities for children to develop both the large and small muscles while doing their activities. Those with only the portable materials mainly gave opportunities for the manipulative materials hence more emphasis on small muscles development.

Unlike for HTs, teachers based their responses on specific types of play equipment found in their preschools. The findings revealed that 1(10%) private, 2 (50%) public and 2 (22%) rural pre-schools had slides while 4 (40%) private, 2 (50%) public, 2 (33%) urban and 4 (44%) had swings, 1 (14%) rural pre-schools had both see saws and climbers, 1 (17%) urban had both swings and see saws, 1 (10%) private had swings and climbers while another 1 (17%) slides, swings, climbers, ladders and platforms. The findings also revealed that 2 (20%) of private, 2 (50%) public 1 (17%) urban and 2 (22%) had none of these fixed play equipments in their playgrounds. This implies that these schools did not provide equipment for children to swing, slide, balance on beams and make necessary physical movements for large muscles development. The findings of the observation concurred with responses from the teachers and HTs. Out of the pre-schools observed, 1 (17%) private, 2 (50%) public, 1 (25%) urban and 4 (80%) rural pre-schools had only portable materials such as old tyres, handmade balls,

skipping ropes, bean bags and hops . However, pre-school with fixed equipment also provided the portable materials. Children in this case participated in a variety of play activities such as throwing, catching, kicking, rolling, swinging, sliding as they also manipulated a variety of equipment and materials.

4.5.2.2. Play Equipment and Number of Children

Pre-school teachers were required to state whether the play equipment in their school playgrounds were adequate for the number of children in their classes. Teachers were to respond 'Yes' if equipments were adequate and 'No' for inadequacies. Distribution of their responses is depicted in Table 4.12.

Table 4.12 Play Equipment vis-à-vis Number of Children in class

Category	Respondents	Yes		No	
		N	%	N	%
Private	10	2	20	8	80
Public	4	-	-	4	100
Urban	6	4	67	2	33
Rural	9	3	33	6	67
	29	9	31	20	69

Table 4.12 revealed that 20 (69%) of the 27 pre-schools under study did not have adequate play equipment for the 774 children in their classes while 8 (30%) provided them adequately. From the 9(31%) that responded 'Yes', 2 (22%) were private, 4 (44%) were urban and 3 (33%) were rural pre-schools). Out of the 20(69%) that reported inadequacies, 8 (40%) were private, 4 (20%) were public, 2 (10%) urban and 6 (30%) rural pre-schools. This showed that all the public pre-schools (4 or 100%) and majority of the private (80%) and rural (69%) did

not provide enough equipment for the pre-schoolers' outdoor activities. Failure to provide child-centered outdoor environments for children during their formative years can inhibit acquisition of physical (motor) and perceptual skills. A playground that provides adequately for the needs of children, including those with special needs, also provides opportunities for children to satisfy their inquisitive nature and innate desire to discover and be creative.

Observations on this theme revealed that only 4 (40%) of the private pre-schools satisfactorily provided play equipment adequate for the number of children who participated in outdoor activities while 6(60%) showed inadequacies. This agrees with the responses from teachers showing that the highest percentage of pre-schools do not have adequate play equipment and materials. Observations also revealed that 1 (25%) of the public pre-schools provided adequate equipment and materials while for the other 3 (75%) provision was unsatisfactory. Likewise, 4 (44%) of the urban and 3 (20%) of rural pre-schools observed revealed inadequacies while 2 (33%) out of 5 rural ones revealed satisfactory provision.

Pre-school teachers who responded 'No' were required to indicate how inadequacy of equipment affected children's participation in outdoor activities. Out of 10 private pre-schools, 3 (30%) teachers reported that it hindered physical growth and development thus inhibiting mastery of new skills. Teachers from another 3 (30%) indicated that children become aggressive, fight and scramble for the few equipment hence limited participation in play activities. Another 1 (10%) teacher (private) showed that inadequacies positively encourage children to share the few types of equipment available and hence acquire social skills and learn to take turns in their play. This implies that children learn cooperation, how to control emotions as well as how to make maximum use of whatever little there is in their environments. However, 1 (25%) from public pre-schools indicated that some children became selfish and did not want to share the limited equipment with others. This can be a

teacher's entry point in teaching the values of cooperation, sharing and perseverance to overcome aggression and selfishness.

Findings from 1 (25%) of public pre-school teachers also stated that children are less motivated to play while 2 (29%) from private category reported that children became dull and uninterested in play activities that require play equipment. 1(10 %) of the private category had a different opinion and indicated that inadequacy of equipment did not affect children's participation in outdoor activities since they had a variety of free choice play that may not necessarily require planned equipment. However findings from 1 (17%) public and 2 (33%) of urban pre-school teachers stated that children are diverted to other activities especially in structured play. According to the KIE ECDE syllabus (2008) children can be involved in both loco-motor and non-loco-motor activities (body movements) without apparatus. However, teachers should provide equipment and materials because failure to do this may inhibit the acquisition of skills that require the use of large muscles.

4.5.2.3 Safety Measures for Play Equipment and Materials for Children in Outdoor Activities.

This theme required the HTs to indicate the measure they took to ensure play equipment and materials were safe for use by pre-schoolers in their outdoor activities. Their responses revealed that 9 (82%) HTs in private category 2 (50%) public, 4 (67%) urban and 4 (44%) rural indicated regular checking, repairing of broken equipment and replacing worn out equipment and materials as ways of ensuring play equipment and materials are safe for use by pre-schoolers.

Another 2 (33%) urban and 1 (9%) private preschools also indicated checking or inspecting equipment and materials regularly before releasing them to the children, clearing them and ensuring they do not have sharp edges, bolts and chains are well fixed so that they do not crumble and cause injuries to children. Further still, 1(25%) preschool from the public category stated that repairs should be immediate. Findings from 2 (22%) of rural category reported it was important to make sure equipments and materials are well maintained while 3 (27%) private pre-school teachers indicated that providing the equipment and material according to the activity size and ability of the children was a way of ensuring safety. From 1 (25%) public, 2 (17%) urban and 1 (11%) rural teachers concurred with this while 2 (2%) more rural preschools further showed that ensuring materials were of good quality and size and were well made was a sure way of ensuring safety. One (17%) urban teachers showed that spacing of equipment ensures they are safe.

This implies that teachers endeavored to ensure children were safe from any harm while in the outdoor play areas by putting different safety measures in place in all types of preschools

4.5.2.4 Safety of Play Equipment and Material and Children's Participation in Outdoor Activities.

This question required the HTs to show how safety of play equipment and materials influence children's participation in outdoor activities. According to 5 (46%) HT from private pre-schools and 3 (75%) from public category, children play freely without fear of being harmed when play items are in good condition. They also reported that children find enjoyment and fun in the activities they participate in. In 2 (33%) of urban and 2 (18%) of private pre-schools children share and interact well while at play. Similarly, 4 (57%) HT from urban preschools stated that children are motivated to participate well in different activities and use suitable equipment and materials. In 1 (11%) rural pre-school children were found to develop

a positive attitude towards play while for children in 1 (17%) of urban category, play equipment and materials created more interest in different activities thus participated fully. Findings from 1 (9%) private pre-schools further showed that children grow physically, mentally and socially when they use equipment and materials during their play. From 2 (33%) urban pre-schools, responses indicated that equipment and material safety enhanced smooth and secure play where accidents were reduced. On the other hand, 1 (25%) public pre-school indicated enhanced team work. All these responses revealed that safe playground space safety influences children's participation in outdoor activities in various ways. A correlation coefficient of 0.75 was obtained which shows that the safety of play equipments and materials positively influenced children's participation in outdoor activities.

4.5.2.5 Arrangement of Play Equipment in the Play Space.

A further analysis was done to show how the play equipments were arranged or organized in the playground space. Layout of the equipment is crucial to enhancing children's safety in the playground. As earlier stated, well laid out play equipment provides easy navigation that builds confidence without sacrificing the safety of the children.

Table 4.13 Organization of Play Equipment in the Play Space

	Private		Public		Urban		Rural		Total
	N	%	N	%	N	%	N	%	
According to Age/ Level of learning	6	50	-	-	2	33	4	44	12
According to equipment	-	-	2	33	1	17	3	33	5
According to activities	4	44	-	-	3	33	2	22	9

According to Table 4.13, pre-schools arranged their play equipment differently from each other but the summary gives a general arrangement across the categories under study.

Teachers' responses showed that 12(48%) out of 29 pre-schools organized their equipment according to children's age or level of learning. This has the advantage of ensuring that all children of all ages can use the equipment because they are arranged according to the age and ability of the children. Further still 9 (31%) organized their equipment according to activities children undertake such as climbing, balancing, swinging and sliding. This arrangement separates these activities from those done using other materials and also enhances safety of children as they play. The findings also revealed that 6(21%) organized the equipment according to equipment thus separating loco-motor and non-loco-motor activities undertaken using equipment from those using other types of materials and those without. It means that large muscle activities (those involving static balancing, gross body coordination and flexibility) are separated from fine muscle activities.

Out of eleven 12(41%) pre-schools that had organized play equipment according to age or level of learning, 6 (56%) were private, 2 (17%) were located in urban area and 4 (33%) in the rural area. Of the 9 pre-schools that organized equipment according to activities, 4 (44%) were private pre-schools and 3(33%) urban. Analysis had earlier revealed that 2 (50%) public and 2 (29%) urban pre-schools did not have play equipment in their playgrounds and therefore had nothing to arrange in playgrounds.

Observations done on arrangement of equipment confirmed that pre-schools organized the play equipment in different ways. Out of 9 private pre-schools observed only 1 (10%) had satisfactorily provided play equipment like swings and slides. However, the equipments were not separated from the general playground though children accessed them safely and confidently. In 1 (25%) of the 4 public pre-schools, swings and slides were available and their location was fenced off from the playground for the other activities. From the 4 urban pre-schools observations revealed that zoning of equipment area was not done and children

undertook their play activities in an open playground. In 1 (11%) of the 9 rural pre-schools, zoning of the slides, climbers and swings was done and rated as good. Play equipment area was fenced off thus defining the area distinctly thus allowing children to use equipment that interested them or were appropriate to their ages. Inadequacy of play space was found to be a challenge to zoning of the equipment in 3 (75%) of the four (4) urban pre-schools observed to have provided play equipment (slides, swings, merry-go-round). However, these equipments were located at the edge of the playground to create room for other activities.

4.5.2.7 Constraints (Challenges) in Playground Space Safety

Preschool HTs were required to indicate the challenges they experienced in ensuring safety in the playground space. Inadequate space that hindered children from playing optimally was cited by 3(36%) of the HTs from private pre schools, 1(17%) from urban and 1(14%) from rural preschools. Inadequate play space signifies less engaged and less interested children, overcrowding or cramping children in small spaces and hence high risks of accidents, increased restrictions of children's movement and spontaneous play options and hence reduced physical activities. Such spaces also regulate the number of children to use the playground and the amount of activity to be undertaken there. As a result children feel insecure and less motivated and as Dahlberg, *et al* (1999) states they spend a lot of time dwelling in their difficulties or negative cues in their environment rather on learning tasks.

HTs 2(18%) of the private and 1(25%) public preschools indicated insecurity was a challenge because their school grounds lacked fences. From the 2(20%) private pre-schools, insecurity resulted in play materials and equipment being stolen or being used by users other than the pre-schoolers; domestic animals grazing in the school grounds and people transversing the preschool grounds. Two (18%) of private preschool HTs also cited the irresponsibility of the

community around the preschool who grazed their domestic animals in the school compound. In the same context 1(17%) of the urban preschools reported that litter from the neighbouring communities was being blown by wind into the playgrounds thus making it difficult to keep the playgrounds clean and litter- free as indicated by 2(18%) of private schools.

Out of 9 rural pre schools 3(33%) indicated safety was constrained by the difficult task of clearing long grass on the playground surface while another 3(43%) cited the presence of a lot of harmful objects (stones and sticks) lying all over the play areas. Grass in the rural areas under study grow long during the wet season but become rather coarse and scorchy during the dry season. Harmful objects on the play space surfaces cause accidents and injuries and can create fear among children thus inhibiting their full participation in play activities. From the 4 public preschool 2(50%) showed that the sloppy nature of their school grounds is a challenge. Steep or sloppy landscape creates fear in young children especially when going down slope and this may restrict their exploration of their environments. It is also a challenge for the teachers to plan and carry out activities with children because they cannot access and use the whole space. Harsh weather was a challenge in 2 (33%) of urban and 3(33%) rural and caused playgrounds to be dusty especially during the dry season. Dust may affect children eyes and chests and also make them dirty. Another 1(17%) urban preschool HT reported that over-enrolment in the preschool was a challenge considering the size of the playgrounds.

4.5.2.5 Developmentally Appropriate Equipment, Materials and Children's

Participation in Outdoor Activities

The aim of this item was to determine the influence of developmentally appropriate equipment and materials on children's participation in outdoor activities to children's needs, abilities and developmental levels. HPPS (2003) recommends that a playground should allow children to develop gradually and test their skills by providing a series of graduated challenges in an age appropriate manner. Findings from private preschools indicated that in 2(18%) teachers reported that as a result of this, preschoolers were able to acquire knowledge how to handle and use different objects in their environment. In 6(60%) teachers reported children were able to develop their small and large muscles and hence acquire fine and gross motor skills at the right time of their lives. Another 3(30%) teachers reported that all preschool children of all ages were included in the play activities. This implies that young children's playgrounds should have age appropriate equipment and materials scaled to the sizes, abilities and developmental level of the children thus ensuring all children are included in activities, for instance, handles are smaller for three year olds than for four year old children, and slides should be short (under 4 feet).

From 3(75%) public school 3(75%) teachers revealed that children develop holistically from using developmentally appropriate equipment and materials while 1(25%) indicate that children are able to play with materials appropriate for their age and ability. Teachers from 3(50%) urban preschools on the other hand revealed that developmentally appropriate materials boosted the morale of children and enabled them to participate in activities that were to their level in terms of age, size, needs and ability. The equipment and material should challenge the physical and intellectual capacities of the children to meet their individual needs. From 1(17%) of the urban preschools it was further stated that children were able to

think logically, implying that developmentally appropriate equipment enhance mental or intellectual development. From 1(17%) revealed developmentally appropriate equipment and materials motivated children's wholistic development. This involves physical, social (as they share and take turns in using them), and moral (as they follow rules set on play activities and use of equipment and materials). 4(51%) rural preschool teachers revealed that children feel comfortable as they engage in activities that satisfy their inquisitive nature and innate desire to discover and be creative (Malone and Tranter, 2003).

From 1(14%) urban preschool it was revealed that developmentally appropriate play equipment better learning activities because they suit the children while another 1(14%) stated that children appreciate and enjoy basic movements using the equipment and materials that suit them well. This implies that children remain active, interested and confident.

Observations on the visited preschools indicated that 6(100%) private, 2 (50%) public, 2(33%) urban and 4 (80%) rural preschools satisfactorily provided developmentally appropriate play equipment and materials. This implies that children would engage in different activities that require play equipment and material though not adequately. However, although 2(33%) of the public pre-schools, 5(55%) urban and 1 (20%) rural unsatisfactorily provided appropriate equipment for the children they provided the portable materials. This implies that children used other materials for play where large or fixed equipments were not provided for them. The responses indicated a close relationship between the provision of developmentally appropriate play equipment and children's participation in outdoor activities. A correlation coefficient of 0.712 was found to indicate that scaling down the physical world to the level of children's sizes, age, abilities, interests and needs highly influences the level of their participation in outdoor activities. Children always feel safe when the play equipment and materials are appropriate and can challenge their physical and

intellectual capabilities to meet their individual needs. It is also easier for children to practice necessary skills.

4.6 Playground Surfacing and Children's Participation in Outdoor activities.

This research question examined the influence of school playground surfacing on the participation of pre-school children in outdoor activities.

4.6.1 Playground Surfacing Materials.

Installation and maintenance of shock absorbing or fall impact attenuating surface materials under and around the fall or exist zones of play equipment is crucial to protecting children and minimizing the risks of falling and life-threatening injuries (HPPS, 2010). This question required the HTs to indicate the type of surfacing materials in their preschools. Responses from HTs showed that 4 (36%) of private schools had either sand or soil or both as the playground surfacing material while 2(18%) had grass. Further still, 5(45%) showed they had both sand and grass. Observations revealed that only 3(30%) of the observed private schools had satisfactory surfacing under and around the play equipment 7(70%) other pre-schools did not have fixed play equipment hence no shock absorbing surface materials. In public pre-schools, 1 (25%) had grass around the equipment and concrete on the landing area while 3(75%)had none of the play equipment indicated earlier but provided only portable materials such as balls, skipping ropes, beanbags and tyres to children during play.

In urban pre-schools, majority (7 or 67%) had soil surfaces, while 1 (17%) had both sand and soil. 1 (17%) HT from rural pre-schools indicated that 3 (43%) playgrounds had either soil or sand surfaces, 2 (18%) wood chips while another 3 (43%) had grass. Teachers from private pre-schools indicated that 1 (10%) had sand, 2 (20%) soil, 1 (10%) sawdust, 3 (30%) grass, 2

(20%) both soil and grass and 1(10%) grass and sand. Responses from public pre-schools were 2 (50%) with soil surfaces, 1 (25%) with soil and 1 (25%) with concrete around the landing area. However, observations confirmed that 1 (25%) public preschools had concrete and grass while 3 (75%) had soil surfaces. Teachers from urban pre-schools indicated that 1 (17%) had fine ballast, 3 (50%) soil and 1 (17%) grass. This was confirmed by the observation done in these schools. However, surfacing in 2 (50%) of public pre-schools observed was concrete at the landing areas and exposed children to injuries on landing or while exiting from the equipment.

From rural pre-schools, results showed that 2 (22%) pre-schools had sand surfaces, 3 (33%) grass, 1 (11%) wood chips while 3 (33%) both grass and soil. Observations showed that 1 (11%) out of the nine (9) observed pre-schools and the only pre-school with slides and swings had satisfactory surfacing under and around the equipment while 8 (99%) had unsatisfactory playground surfacing. This implies that most pre-school playgrounds had bare surfaces that could be a risk to the children's health, especially eyes, due to dust. They could also cause fear of being hurt in case of falls. From observations, 2 (33%) of urban schools met the recommended standards of using loose fill surfacing materials while 4(67%) did not ensure children do not come into contact with the hard ground surface when falls occur. The surfacing material in the 2(33%) was well maintained and children continuously used the playground with confidence.

4.6.2 Hazards or Unsafe Conditions Under and Around Play Equipment

Teachers were required to indicate the hazards or unsafe conditions under and around play equipment in their pre-schools. Preschool teachers' responses showed that in 4 (40%) private pre-schools hazards include bare surfaces that could cause injuries as children run and jump

while dust could affect their eyes. 2 (20%) cited flooding of water during rainy seasons that result in mud that could deter children from participating in play activities effectively for fear of getting wet, stuck or even falling. Another 1 (10%) indicated that play area was sloppy and reported that this affects children's running, jumping, crawling, rolling and other activities. Steep land sometimes creates fear in children to ascend and descend in the playground. Another 3 (30%) reported hazards such as thorny plants and pot holes in their playgrounds. Observations were undertaken during the dry season and revealed that most playgrounds were bare surfaces and dust was a major hazard in 5 (50%) private, 2 (50%) public, 3 (75%) urban and 2 (22%) rural pre-schools. Dry, scorched grass that can prick children's skin was a hazard in 1 (10%) private, 3 (33%) rural and 1 (25%) public pre-schools. Children are bound to keep off such playgrounds for fear of being pricked or getting eye problems. In public schools, 1 (25%) reported equipments as having sharp edges that could injure the young children. The same preschool indicated that slippery surfaces especially during rainy seasons resulted in falls while dust in dry season affected children's eyes and chest. Observations revealed that the metallic and plastic play equipment could also heat up during the hot periods thus keeping children away from using them.

From 6 urban pre-schools 3 (50%) teachers cited sharp objects and sharp edges of the equipment while 2 (33%) said dry or rough playground surfaces as hazards. Another 1 (17%) cited pieces of iron sheets used as fencing materials near the swings and slides that could harm children while at play near the fence. 3 (33%) rural cited stones and broken sticks, 1 (11%) dust 1 (11%) mud during rainy season that causes children to slide as they move from one point to the other or as they land from the equipment, another 1 (11%) rough dry grass during season that pierces and scratches children; 1 (11%) stagnant water during rainy season ; 1 (11%) ants that attack the wooden posts supporting swings thus making them loose and a

risk to children's play and 1 (14%) rusting of metal parts of the swings and slides leading to wear and tear.

Based on these findings, it is important that teachers enhance playground safety by ensuring harmful objects on the surface and around equipment are minimized or removed completely.

4.6.3 Playground Surfacing and Children's Participation in Outdoor Activities.

This question required HTs to indicate the effects of surfacing under and around the play equipment on participation of children in outdoor activities. 4 (36%) of HTs from private and 2 (33%) from urban preschools reported that proper surfacing under and around the play equipment enabled children play freely without fear of injuries or with minimal falls around swings, slides and merry-go-rounds. While another 1(25%) HT from public pre-schools, HTs cited the same negative effects as their counterparts in pre-schools. Another 5(46%) private and 1 (17%) from urban said proper surfacing provides soft and safe landing as children jump and roll from the equipment. However, 3 (50%) reported improper surfacing, like bare grounds, that had dust that affects children's eyes, makes their clothes dirty; or injuring them when they fall.

Results from 2 (18%) private 2(50%) public (that had play equipment) and 5 (56%) rural preschools reported that surfacing under and around play equipment brings about comfort to children as they climb and come down from them. Findings from 3(50%) urban and 2(29%) rural reported that children remain interested in activities (e.g. sliding, rolling, crawling, jumping, climbing) enjoyed themselves, and always wanted to play with and around the play equipments. It also fosters children's independence, skills or competence; they remain active and interested in the activities (such as sliding, rolling, crawling, jumping, and climbing), enjoy themselves and are left asking for more activities in the playgrounds (Curtis, 1998;

Greenman, 1988). At a correlation coefficient of 0.99, the results revealed a close influence of playground surfacing on preschoolers' participation in outdoor activities

4.7 Playground Maintenance Inspection

The question aimed at establishing to what extent school playground maintenance inspection influences the participation of pre-school children in outdoor activities. The purpose of any school playground is to ensure the safety of the young children in the outdoor environment. Maintenance inspection involves checking play areas, equipment and materials for damages and repairs, modifications and replacement or removal of any items that can cause injuries or harm or that do not belong to the playground.

4.7.1 Playground Maintenance Inspection

The question sought responses on whether HT carried out maintenance inspection of the playgrounds and equipment in their pre-schools. Expected responses were either 'Yes' for those who carried out this exercise or 'No' for those who did not. The responses are as summarized in Table 4.14

Table 4.14 Playgrounds and Equipment Maintenance Inspection.

Category	Respondents	Yes		No	
		N	%	N	%
Private	11	10	91	1	9
Public	4	2	50	2	50
Urban	6	6	100	-	-
Rural	9	7	78	2	22
	30	25	83	5	17

The data revealed that 25(83%) of the 30 preschools carried out maintenance inspection while 17% (5) did not. Out of the 30 that responded 'Yes' 10 (40%) were private, 2(8)% were

public, 6 (24%) and 7 (28%). This implied that more private schools carried out maintenance inspection than others while urban and rural carried out maintenance inspection 100%. This can be attributed to the fact that being private, these preschools maintain the highest safety possible. It also implied that most pre-schools in Central Division carried out playground maintenance inspection as a measure for children's safety in outdoor activities. Results also revealed that 5 (17%) of schools under study did not carry out maintenance inspection. Of the 5, 1 (20%) was private and 2 (67%) were public. These preschool HTS failed to inspect the playgrounds because, no equipments were available.

HTs who responded 'Yes' were also required to indicate how often they carried out the exercise. Out of 30 preschool HT, 2(50%) had earlier reported that their preschools did not have play equipment and hence they had nothing to inspect: a total of 28(87%) HTs therefore responded to this question shown in Table 4.15

Table 4.15 Frequency of Playgrounds and Equipment Maintenance Inspection

Category	Respondents	Daily		Monthly		Termly		Annually	
		N	%	N	%	N	%	N	%
Private	11	6	55	2	18	3	27	-	-
Public	4	1	25	-	-	1	25	-	-
Urban	6	4	67	1	17	1	17	-	-
Rural	9	5	55	1	11	2	22	1	11
	30	16	57	4	14	7	25	1	4

Data from the table revealed that out of 28 HT who responded to this question, their responses revealed that, 16 (57%) of the pre-schools carried out maintenance inspection on a daily basis, 4 (14%) monthly, 7(25%) termly and 1 (4%) annually. Of the 16(57%) involved

in maintenance inspection on a daily basis 6 (38%) were private, 1 (6%) public, 4 (27%) urban and 5(31%) rural each. Out of 4(14%) preschools that carried out maintenance inspection monthly, 2 (50%) were private while 1 (25%) was urban and another 1(17%) was rural. According to ECD SSGK 2006, play materials should be serviced and maintained once in a term. Seven (25%) pre-schools reported that they carried maintenance inspection on a termly basis, 3 (43%) of these being private while the public, 1(14%) urban and 1 (14%) rural pre-schools. Only 1 (11%) rural pre-school carried out maintenance inspection annually. This shows that only 16 (57%) preschools of all categories ensured children's safety in the playground on a daily basis implying that maintenance inspection was not viewed seriously in most pre-schools. Hazards in the playground and on the play equipment therefore go undetected thus making them a risk to children's well being while in the playground.

4.7.2 Areas of Maintenance Inspection of Playground and Equipment

HTs and teachers were required to indicate the areas that required maintenance inspection. In 7 (64%) of HTs from private pre-schools mentioned maintenance inspection of condition of materials and equipments, for example, oiling of joints; firmness of posts supporting fixed equipment such as swings; surfaces of the equipment, and the number of portable materials. Another 3 (27%) cited inspection of entire the playground surface, landing and racing areas to ensure there are no potholes and sharp objects there. One (9%) private preschools indicated maintenance inspection of the fence implying that it is important to define the playgrounds and to keep out interferences. Two (50%) of public preschools that carry out maintenance inspection cited checking the conditions of the movable materials (tyres, ropes, balls) and the fence and the seats and chains of the swings and slides.

Two (33%) of HT from urban pre-schools and 1(11%) from rural pre-schools indicated oiling parts of fixed equipment such as joints, bolts or nuts of swings, merry-go-rounds, ladders and climbers as area of concern and 3 (50%) urban and 4 (44%) HT and teachers from rural pre-schools inspected the portable (movable) materials available in their schools such as the balls, skipping ropes and even the jumping areas. While 1 (11%) rural preschool inspected the playground surface and another 1 (14%) of the rural preschools referred to as the free play or running areas to ensure there are no sharp objects, potholes. The responses indicate that many areas of the playground required maintenance to ensure they were safe for children to play freely.

4.7.3 Maintenance Inspection, Playground Safety and Children's Participation in

Outdoor Activities

The purpose of any playground is to ensure the safety of children in the outdoor environment. Playground maintenance inspection focuses on providing children with quality outdoor environments with minimum risks of accidents and supporting optimum participation of children in outdoor activities. This means that a well planned and maintained playground fosters an environment that makes the play activities to be enjoyable and less stressful experiences (Bower et al 2008). Respondents to this question (HTs and teachers) were required to show how maintenance inspection influences playground safety and children's participation in outdoor activities. Headteachers from 10(91%) private preschools had responded that they carry out maintenance inspection in their pre-schools. The HTs showed that maintenance inspection ensures every playground and equipment is in good condition for children to use. They further said it ensures repairs or replacement of dangerous parts of the equipment and materials so that children play confidently and use them without fear.

Similarly, 2 (50%) of HTs from public pre-schools that had responded 'Yes' to carrying out maintenance inspection gave the same responses while 3 (50%) HTs of urban pre-schools cited minimal injuries during play as an outcome of playground and equipment maintenance inspection. Five (45%) of HTs from rural pre-schools said that maintenance inspection motivates participation and there is no fear of playground equipment and materials causing harm to children. Further still 2 (20%) of HTs from private pre-schools revealed that maintenance inspection leads to development of feelings of security among children and outdoor activities are therefore carried out very easily without fear or anxiety. Two (33%) HTs from urban pre-schools revealed that maintenance inspection ensures playground materials and equipment are not defective but effective in children's play while another 1(17%) cited high safety of the children. This implies that maintenance inspection focuses on ensuring the playground equipments and materials help children achieve their objectives in play. 3(33%) of rural preschool HTs concur with this and note that maintenance inspection ensures well maintained playgrounds, equipments and materials thus making play enjoyable for the children. Responses from teachers of the same preschool agreed with those of the HTs.

Five (50%) teachers private, 3(50%) and 1(11%) public preschools showed that maintenance inspection ensures children are free from injuries as they play hence they participate in activities freely. This means children play in safe areas that are in good conditions. Further still 3(33%) rural preschool teachers revealed that maintenance inspection helps avoid or reduce accidents that occur in the playground and around the equipment. Responses from HTs helped obtain a correlation coefficient of 0.71 while those elicited from teachers gave 0.69. This revealed a positive relationship between playground and play equipment maintenance and children's participation in outdoor activities. The results imply that regular

playground maintenance inspection enhances safety which when integrated into children's activities stimulates more diverse and creative activities, children's confidence and self esteem and hence more interest to engage in more activities.

4.7.4 Constraints in Playground Maintenance Inspection

In this question HTs and teachers were required to indicate the challenges they encountered in playground maintenance inspection. Playground maintenance focuses primarily upon providing and supporting an optimum safety status conducive to the growth and development of the young children. Analysis of HTs' and teachers' responses revealed preschools had differing challenges in this area. Five (45%) HTs and 2(20%) teachers from private preschools cited frequent breakages and damage of some equipment as a challenge in maintenance inspection. The HTs indicated that high cost of maintenance and that the schools were not financially able. Broken or damaged equipment pose the risks of accidents and injuries and also creating fear of using the equipment among children. 2(50%) public preschools and 3(33%) teachers from rural preschools indicated lack of materials to facilitate the maintenances, such as repairs, and mentioned finances as a constraint while 2(33%) of urban preschool indicated lack of tools for repair and maintenance of fixed equipment.

On the other hand 9% (1) private 50% (2) public, 17%(1) urban preschools HTs and 2(20%) teachers from private preschool and 1(17%) from urban reported lack of time to carry out maintenance inspection and hence was rarely done. Three (36%) private preschools also mentioned intrusion of animals and trespassers into the playground and hence loss of damage of play materials and the playground were a challenge. This can be attributed to lack of a fence to keep out intruders from the school grounds. 2(20%) teachers from private 1(14%) from rural preschool also reported that as a result of lack of a fence, it was difficult to service

the playground and the equipment as they were exposed to outsiders. One (17%) HT and 2(33%) teachers from urban as well as 1(25%) from public preschools said lack of expertise in playground maintenance especially repairs was a challenge. This indicated that the teachers do not have skills to repair the damaged areas of the playground. Bare playground surfaces was a challenge to 1(10%) private preschool and this implied playgrounds could have pot holes and dust that were a health hazard to children's safety. 1(25%) public schools reported that sharing the playgrounds with primary school children who always wanted to play with preschoolers' materials was a constraint to playground safety for the pre-schoolers. It was thus difficult to ensure the safety of play materials for pre scholars.

4.8 Supervision of Pre-school Children in Outdoor Activities

This research question sought to find out to what extent supervision of children in the playground influenced the participation of pre-school children in outdoor activities. Johnson *et al* (2005) state that children need to explore limits, venture into new experiences from a very early age and form their earliest play experience. Play is something children can do very well while on their own. However, they sometimes use the play areas, equipment and materials in unintended and unanticipated ways thus exposing themselves to injuries or developing fear of playgrounds. Consequently adult supervision of children while at play is the most important way of ensuring their safety.

4.8.1 Supervision of Children in Outdoor Activities.

Preschool HTs and teachers were required to state who supervises children during outdoor activities. Responses from teachers are as indicted in Table 4.16

Table 4.16 Supervision of Children in Outdoor Activities

Category	Respondents	Preschool teacher		Play supervisor		School caretaker	
		N	%	N	%	N	%
Private	10	10	100	-	-	-	-
Public	4	4	100	-	-	-	-
Urban	6	5	83	1	17	-	-
Rural	9	9	100	-	-	-	-
	29	28	97	1	3	-	-

Although maintaining the safety of children in the playground is not the responsibility of one person, it is advisable to have one person to take care of children in their outdoor activities.

Results from Table 4.16 revealed that in 28(97%) pre-schools of all categories, the teachers were responsible for supervising children during outdoor activities while 1(3%) urban preschools had a play supervisor. Teachers plan, teach (or instruct) and assess children in all the learning activities both indoor and outdoor and have more contact with the children than anybody else in the preschool. The responsibility of the teacher is to keep on the alert for hazards and safety violations as well as look out for situations that have the potential of becoming dangerous to the well being of the children (Redican *et al*, 1986).

Table 4.17 gives responses from the Head teachers on who supervises children in outdoor activities.

Table 4.17 Responsibility of Supervising Children in Outdoor Activities

Category	Respondents	Head teacher		Teachers		Caretaker		Supervisor	
		N	%	N	%	N	%	N	%
Private	11	2	18	3	72	-	-	-	-
Public	4	-	-	3	75	1	25	-	-
Urban	6	-	-	5	83	-	-	1	17
Rural	9	2	22	6	66	1	14	-	-
	30	4	13	23	77	2	7	1	3

Data from table 4.17 indicates that in 23 (77%) out of 30 of the pre-schools, supervision of children at play was the responsibility of the class teacher, though in 4(13%) of the preschool HTs were found to be responsible of the children in the playgrounds. From observations these three pre-schools had one teacher serving as both the HT and the classroom teacher who also supervised children especially in the unstructured play during recess. While 1(25%) public and preschool caretaker and another 1(17%) urban preschool had a play supervisor who supervised the children during recess. Out of 30 preschools 2(7%) had caretakers while 1 (3%) had a play supervisor for preschoolers while in outdoor activities. From the data, it can be concluded that class teachers bore the responsibility of ensuring the safety of children in most of the pre schools playgrounds.

4.8.2 Playground Safety Rules and Regulations

Playground safety rules and regulations guide pre-schoolers on the expected behavior so that they remain safe while on the playground. When they are known and well internalized, children develop a positive attitude towards the activities involved. This question sought to find out from preschool teachers whether there were playground rules and regulations in their

schools. The respondents were to respond 'Yes' where rules and regulation existed and 'No' where they did not. Table 4.18 summarizes this and shows the distribution in percentages.

Table 4.18 Playground Safety Rules and Regulations

Category	No of presch.	Yes		No	
		N	%	N	%
Private	10	6	60	4	40
Public	4	1	25	3	75
Urban	6	6	100	-	-
Rural	9	6	67	3	33
	29	19	66	10	34

Data from Table 4.18 revealed that 19(66%) pre-school under study had playground rules and regulations while 10(34%) did not have any. The analysis further showed that urban preschools indicated 100% availability of the rules and regulations. The distribution in the other categories revealed that 6(60%) out of 10 private school, 6 (67%) out of 9 rural preschools and 1(25%) of 4 public pre schools had rules and regulations while 4(40%) , 3(75%) public and 3(33%) rural preschools did not. This implies that in 71% of the preschools playground rules and regulations guided the behavior of preschooler in their outdoor activities. Teachers always communicate the expected behavior in the playgrounds to children when supervising them in then outdoor play activities.

Results from the observations showed that the rules and regulations were communicated to the children before play on how children should behave while in the outdoors. These guided the children on what to do, areas to play in, materials and equipment to play with, and how to take care of themselves. No written rules and regulations were observed in any preschool

concerning the safety of children in the playground. Children also set their own rules for their games in which each one of them was expected to follow and obey. This forms the foundation of moral development in children enabling them to live in a society with rules that must be obeyed (KIE ECDE Syllabus, 2008).

4.8.3 Playground Safety Rules, Regulations and Children's Participation in Outdoor

Activities

This part of the study aimed at finding out from the teacher's how playground safety rules and regulations influences children's participation in outdoor activities. The analysis of their responses revealed that 3(30%) out of 10 private pre-schools teachers stated that playground safety rules and regulations prevent self injuries since children know areas they should play in and where not to. 1(25%) teacher from 4 of the public pre-schools agreed with this and further added that the rules and regulations helped children play within the instructed areas. In the same vein 3(50) of the 6 urban pre-school teachers said the rules and regulations help children avoid or reduce accidents in the playground. 4(44%) of the rural pre-school teachers also stated that as safety is guaranteed, rules and regulations make children more careful while playing thus minimizing dangers and promoting children's participation in outdoor activities.

Responses from 2(20%) of private pre-schools also indicated that playground rules and regulations help ensure all activities are carried out correctly and safely within the specified areas and 1(25%) of public pre-schools indicated that as a result of rules and regulation children have more organized activities. Three (50%) of urban pre schools showed that rules and regulations provide guidelines for operations in the playground thus having organized activities that they enabled the children to always remain in contact with their teachers and

with each other. This implies that the rules bind the children and the teacher and the children with each other. 2(20%) private preschool teachers stated that discipline is enhanced while 2(29%) from rural category stated that as children respect the rules, they played without conflict. 2(50% public preschool teachers stated that children play confidently without fear. When children know what to do and what not to do in the playgrounds they develop a positive attitude towards the activities and equipment involved. 2(22%) rural preschool teachers also reported that playground safety rules and regulations help children develop in different domains – mental physical, social, emotional and moral.

4.8.6 Supervision and Children's Participation in Outdoor Activities.

The study aimed at finding out from the HTs whether supervision of children at play influenced their participation in outdoor activities. Out of 11 private preschools 5(46%) HTs reported that supervision helped children to participate in a variety of activities and play freely with the security of the teacher. From 2(50%) of the 4 public pre-schools also pointed out that children do a lot of activities and also play better and in an organized manner. During supervision the teacher directs and guides the activities ensuring they all participate based on their needs and abilities. This implies that supervision supports both child- initiated and teacher-directed activities. Earlier findings had indicated that teachers bore the responsibility of supervising children while in outdoor activities. Children, even the less active ones, gain courage and confidence to participate in outdoor activities and handle equipment and materials when they know the teacher is nearby to intercede in case of any problem. HT from 1(9%) of the private preschools cited that supervision by the teacher guided and controlled children's behavior so that they learned to follow instructions. While another 1(9%) reported that through supervision, the teacher identifies children with different talents.

Supervision not only involves control of behavior but also a watchful eye to ensure children create physical movements, games, dances and songs which teachers can use to identify unique talents in individual children (KIE ECDE Syllabus 2008). Another 3(36%) HTS from private preschools reported that supervision enhanced discipline amongst the children, for example children remain in their play areas for the stipulated time and activity. Children also take turns in activities, especially where equipment and materials are involved. 1(18%) private and 2(50%) public HTs indicated that supervision helps reduce accidents and injuries such that children cannot harm themselves or others because their play is controlled and play areas and equipment are used as intended. This implies that a watchful eye and gentle guidance or warning can save children from accidents and injuries. Play provisions should therefore respond with exciting and stimulating environment that balance risks appropriately. Peterson (2002) posits that thirty four percent of playground injuries are related to lack of or inadequate supervision.

Out of 6 respondents from urban preschools, 2(33%) revealed that supervision of children at play helped them enjoy play and participate in the activities without fear. Another 2(33%) said that it enhances coordination and effectiveness of activities in the play grounds. 1(17%) indicated that it ensures equitable distribution of play activities by all children. 1(17%) reported that supervision checked the security of the children. This implies that children are able to seek out opportunities for risk taking knowing that the teachers are nearby to intercede incase of a problem.

From 3(33%) of the 9 rural preschools, the HTs revealed that supervision enabled children to follow playground safety rules and regulations easily. Rules and regulations guide behavior and ensure low incidence of indiscipline during the play activities and use of equipments and

materials. Another 2(22%) HTs stated that supervision enhanced development of positive attitudes towards play because of the reinforcement offered by the teachers during the activities. This implied that children remained active and interested in play and always sought for more because they were sure of support from the teacher. Children also developed feelings of security as reported by 2(22%) of the HTs while 2(22%) noted that dangers that could harm children were reduced to minimal level. It was therefore evident that supervision of children by the teachers or any other adult while at play brought about significant levels of participation in outdoor activities.

4.5.3 Constraints in Supervision of Children during Outdoor Activities.

An analysis of this question revealed the responses given by HTs and teachers on the challenges they encounter in supervision of children during outdoor activities. Findings from 2(18%) HTs and 3(30%) teachers from private preschools revealed that inadequacy of play space constrained supervision of children because it restricted children to participate in activities that require large space such as running. Children need large outdoor play areas to enable them to play and run around safely.

Inadequate play equipment and materials was a challenge as revealed by 2(50%) HTs from public 4 (57%) from rural and 3(33%) from urban preschools while 1(25%) teacher from public and 5(55%) from rural preschool cited the same. The five (55%) teachers from rural plus 1(11%) other of the same category reported that inadequacies caused conflict fighting, overcrowding, little fun and at times idleness among children. 1(17%) teacher from urban preschools also reported lack of interesting play equipments. 1(9%) HT from private and 1(17%) from urban reported that some children did not want to share the few equipment and materials available with the others. 2(50%) public preschools teachers reported they were

challenged by children overcrowding around the few equipment and materials available and they as a result become unruly and uncontrollable at times.

One (9%) HT and 2(20%) teachers from private cited lack of self confidence and low self esteem in some children as a challenge hindering children to play freely under the supervision of the teacher. The teachers further said that these children became on-lookers instead of participants in the play activities. In the same context 1(25%) HT and 1(25%) teacher from public preschools reported that some children do not want to participate in activities in the presence of the teacher. While 1(10%) teacher from private and 2(33%) teachers from urban preschools reported children bullying and hurting each other, 4(36%) HTs from private and 1(25%) from public pre schools reported they were challenged by the indiscipline of children that caused injuries.

One (17%) HT from urban indicated that time for outdoor activities coupled with the number of children and play equipment allocated for outdoor activities constrained participation in outdoor activities, implying that time was inadequate for children's play. While 1(25) teacher from public preschools reported that children wanted to play beyond scheduled time. 1(14) HT and 2(29) teachers from rural preschools indicated that some children had special needs and therefore required more attention than other children. One (9%) HT from private, 2(20%) from rural and 2(20%) teachers from private and 2(33%) from urban preschools expressed their inability to control or bring the hyperactive or playful children together during activities. Three (30%) teachers from private pre schools stated that children's aggressions and curiosity to explore and their age made it difficult to control them. 1(25%) HT from public preschool cited lack of planning of play activities as a challenge and children therefore did whatever they liked.

4.9.4 Constraints in Supervision and Children's Participation in Outdoor

Activities

The HTs were required to indicate how the challenges faced in supervision of children affected the participation of preschoolers in outdoor activities. Analysis of their responses revealed that the challenges differed from one preschool to the other and across the categories under study. From the findings 1(9%) HT from private preschools indicated that due to inadequate provision of play space, children's talents were not well developed or exploited because the teacher over-controlled the children in an attempt to ensure their safety in the play areas. Two (20%) teachers in this category and 2(50%) HTs from public preschools indicated that this led to low participation in outdoor activities. One (17%) from urban preschool indicated their children did not achieve the objectives set for them by teachers.

Two (18%) HTs from private, 3(33%) from rural; 1(25) teacher from public and another 4 (44%) teachers from rural preschools reported that due to inadequate play equipment, children tended to overcrowd in certain areas, some were idle, some fought or scrambled while striving to have a chance to play with the limited equipment and materials. 2(22%) HTs and 3(33%) teacher from rural preschools also mentioned that children took a lot of time in the activities due to inadequate play equipment and materials while 2(50%) HTs from public pre schools indicated that children wandered away from the activities areas due to their desire for spontaneous free play. 2(33%) HTs from urban preschool indicated that children lost interest due to low motivation and hurt each other while fighting for the equipment while 2(22%) HT from rural category indicated that children ended up not participating in all activities. Six (55%) HTs from private preschools indicated that supervision limits children's playing ability because they feel limited by supervision. 3(30%) teachers from the same category indicated that supervision allowed no free play and restricted exploration because

children played within margins and under strict directions (instructions). 1(9%) of HTs from this category further showed that supervision led to wastage of time as the teacher had to keep controlling children.

One (25%) teacher from public and 3(30%) from private pre schools indicated that these challenges brought indiscipline to the children as some of them played in unrestricted areas thus affecting their safety and lowering their participation in their activities. Another 1(25%) teacher from public and 1(10%) from private pre schools reported that accidents and other risks increased among pre-schoolers. 1(17%) HT from urban preschool and 3(50%) teachers from urban preschool indicated that the challenges made children fearful and did not want to play without supervision. 1(25%) teacher from public and 3(50%) from urban preschool indicated their children fear and might fail to participate fully in play activities. 1(9%) HT from private preschools indicated that the teachers tended to concentrate in the safety of some children, like those with special needs, and giving lesser attention to the others. 4(44%) teacher from rural pre schools mentioned that children with special needs were likely to be hurt by the others and this hindered their participation in play activities.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS, RECOMMENDATIONS OF THE STUDY AND SUGGESTIONS FOR FURTHER RESEARCH

This chapter presents the summary of the study findings, conclusions, recommendations and suggestions for further research. They are based on the research objectives and questions.

5.1 Summary of Findings

The aim of this study was to explore the influence of playground safety on the participation of the pre-school children in outdoor activities in Central Division, Naivasha District, Kenya. The first objective examined the influence of safe playground spaces on participation of pre-school children in outdoor activities. The findings of this study revealed that all pre-schools had playgrounds spaces where 20 (69%) of the pre-schools allowed children to participate in a variety of structured and unstructured activities. The findings showed that playgrounds differed in size based on the size of the school grounds, the number of children enrolled in the pre-school and the location as well as the category of the pre-school. Consequently 43% of the pre-schools had adequate, 37% fairly adequate while 20% had inadequate play spaces. The findings revealed that playground safety was enhanced through organizing play areas according to play activities (48%) age or level of learning (31%) and according to play equipment (21%); fencing the school ground and play areas; collecting or clearing harmful or sharp objects; leveling the playground surfaces, cutting grass and bushes, marking and zoning the play spaces, pre-visiting the play areas before children used them and, accompanying the pre-schoolers to the playground. These included organizing the play spaces according to play activities, age or level of learning and according to play equipment used, fencing the school grounds and play areas, collecting or clearing harmful or sharp objects, leveling the playground surfaces, cutting grass and bushes, cleaning, marking and zoning the play spaces,

inspecting or pre-visiting the play areas before children use them and, accompanying the pre-schoolers to the playgrounds. Constraints in the playground space that affect playground safety include, inadequate space hence cramped spaces, restricted movement and activities and high risks of accidents. Spaces also experience insecurity due to lack of fences. Some were said to be covered with harmful objects and long grass or bushes which cause accidents and also create fear in children to use the spaces. However preschool administration and teachers put the many cited intervention measures in place to enhance safety in the playgrounds and to ensure children remained active in the playgrounds and enjoyed their activities with minimal accidents and injuries.

The second objective explored developmentally appropriate playground equipment to determine how they influenced participation of preschool children in outdoor activities. The study revealed that pre-schoolers felt safe when they played with equipment or materials appropriate to their age and ability. It was found that this boosted their moral to participate in activities that were to their age, size, needs and ability as well as enhanced their physical, mentor, social and moral development. It was evident from the study that despite the many hazards under and around the play equipment children continue to manipulate developmentally-appropriate equipment and materials in their play, games and sports as an important factor for playground safety. However the many constraints experienced in this area do not hinder children in participating in outdoor activities because teachers put measures in place to ensure playgrounds were safe for children while in the outdoors.

The third objective examined the influence of school playground surfacing on the participation of pre-school children in outdoor activities. Pre-schools use different playground surfacing materials on the play areas and under and around play equipment such

as soils, sand grass, wood chips, concrete and fine ballast. Teachers differed in the responses about the influence of playground surfacing on children participation in outdoor activities based on the type and location of their pre-schools. Many factors, such as bare and dusty ground surfaces, constrain proper playground surfacing and put children at risk of accidents and injuries. Installation of shock absorbing or fall impact attenuating surface materials under and around the fall or exit zone of play equipment minimizes the risks of children falling and injuring themselves. It is evident from the study that proper surfacing enables children climb, jump, roll, slide, swing and crawl freely with minimal fear of injuries and falls around the slides, swings, landing and racing areas. It provides comfort to children so that they enjoy themselves, remain active and interested and have fun. Playgrounds with proper surfacing therefore integrates safety into activities children involve themselves in while in the outdoor environment even the most challenging ones.

The fourth objective helped establish that maintenance inspection influences participation of pre-school children in outdoor activities. The study findings showed that maintenance inspection as an intervention measure of playground safety involves regularly checking the playground equipment, materials and surfaces for purposes of repairs, modifications and replacement of defective or broken items that can harm or injure the pre-schoolers while at play. It is evident that 83% of pre-schools carry out maintenance inspection on playgrounds and equipments however the frequency and types of inspections differed from school to school and category to category with 57% of the pre-school carrying them out on a daily basis, 25% termly, 14% monthly and 4% on an annual basis. It is also evident that where regular and proper playground maintenance inspection is carried out hazards and risks are minimized thus making the playgrounds safe for children to use them. Constrains in maintenance inspection such as lack of time and expertise, frequent breakage and damage of

equipment, bare grounds and dusty surfaces could hamper safety in preschool playgrounds but teachers have put measures in place to reduce the risks and hazards. Safe playgrounds send a message that using them is important. Children therefore develop feelings of safety and security and freely use the playgrounds without fear, anxiety or stress of any harm from the surfaces and equipment.

The fifth objective found that supervision of children in the playground to a great extent influences the participation of pre-school children in outdoor activities. The study shows that adult supervision, if well done, is important for increasing participation and controlling children in their activities to ensure they use the play equipment and materials with minimal injuries. It is also evident that developing visual angles, zoning of play areas for different activities, ensuring adequate teacher to children ratio and having clear rules and regulations enhance playground safety. These are factors for controlling children's free movement, enhancing discipline among children, and ensuring adequate attention and emergency response to the young children. This gives children feelings of security and positive attitude towards outdoor activities knowing some adult is nearby to intervene in case of emergency or as accidents are minimized.

The sixth objective sought to find out the constraints to playground safety affecting the participation on pre-school children in outdoor activities. The results of the study revealed that pre-school experienced constraints in playground space such as lack of fences, inadequate play areas (50%), inadequate play equipment and materials (69%) especially in the public (100%), private (80%) and rural (71%) pre-schools. Inadequacy of play equipment and materials was indicated to have led to less involvement of children in activities, less physical activities, overcrowding and hence over controlling the children through strict

supervision. Maintenance inspection was found to be constrained by high maintenance cost especially in repairs and replacements of broken play equipment. Such constraints increased risks of accidents, fear of environment and hence reduced children's participation in physical activities.

5.2 Conclusions

From the study it can be concluded that the safety of pre-school children in their outdoor activities is equated with adequate play space, developmentally-appropriate play equipment and materials, proper surfacing of playgrounds, regular maintenance inspection of play areas and equipment and, activated supervision of children while at play. Enhancing play ground safety and integrating it in children's outdoor activities increases participation as it decreases levels of instability and insecurity in the outdoor play areas. Safe playgrounds enable the pre-schoolers to reach their perceived potential to acquire knowledge, physical and perceptual skills or competences that ensure their wholistic learning and development. Based on the results of this study, it can be concluded that despite the many challenges that constrain playground safety, children continue to use the playgrounds because preschool HTs and teachers have put up diverse safety intervention measure to ensure the benefits of playground safety are maximized. A close relationship exists between playground safety and children participation in outdoor activities.

5.3 Recommendations of the study

Playground safety is a right issue aimed at strengthening children's participation in outdoor activities. As a result, preschools should have visible strategies that promote the rights of the young children as provided in the CRC (1989) and Children's Act (2001). These strategies should be followed to either minimize or eliminate risky conditions or threats in playgrounds

that may cause accidents, bodily injuries and emotional and psychological distress to young children. To this end the researcher makes policy as well as institutional recommendation.

5.3.1. Institutional recommendations

A safe school playground should have a strong focus on outdoor activities that enhance the physical and psychological growth and development of the pre schools, while at the same time ensuring children's safety in the outdoor environments. Preschool proprietors, managers, administrators, teachers, parents and other ECDE stakeholders should be tasked to:

- a. Provide adequate, safe and secure play ground spaces where children can effectively participate in outdoor activities and thus acquire physical and psychosocial skills.
- b. Clearly demarcate and properly fence playgrounds to have distinct boundaries from other activity areas like the classrooms and parking areas. For preschools located within public primary schools, for instance, the play areas for the young children should be fenced off from the larger school compound.
- c. Focus on providing adequate and age appropriate play equipment and materials for all children, including those with special needs, within acceptable limits of safety. Age appropriate equipments and materials should be provided for different activities, in different zones within the playgrounds to enhance children's safety.
- d. Ensure the playground surfaces are protective of the children and minimize injuries as much as possible. Installation of shock absorbing or fall impact attenuating surface materials, especially under and around the play equipment, is crucial to protecting children and minimizing the risks of falling and life threatening injuries (like head injuries).

- e. Ensure maintenance inspection and servicing of the playgrounds, play equipment and materials are intensified as a way of monitoring and appraising the safety status of the playgrounds. Teachers and administrators should ensure equipments are securely fixed and along with the portable materials they are in good condition to meet children's need for safety. ECD SSGK (2006) recommends that they should be serviced and maintained once in a term. There is need for teachers, school management and administrators to identify the preventable factors that may contribute to hazardous situations in a bid to minimize the risks of accidents.
- f. Intensify the supervision of children at play to ensure safe and inclusive participation in outdoor activities. This should not only be done by the class teachers but by the administrators and managers of the pre schools. A watchful eye and gentle warning can save children from injuries caused by the potential hazards in the playgrounds. Preschools should also engage the services of assistant teachers or play supervisors especially where the school enrolment is high.
- g. Introduce preschool safety programmes in every preschool with play ground safety as a major component to enable the teachers monitor and evaluate the safety status of the preschool playground on a daily basis.

5.3.2 Policy recommendations

A safety Standards Manual for Schools in Kenya (CWS, 2008) exists as a general guideline on comprehensive school safety from where preschool playground safety has to be inferred.

The GOK through MOE needs to formulate playground safety regulations specifically for preschools as requirements or specifications on detailed provisions, installations, inspection and maintenance of the outdoor playgrounds.

5.4 Suggestions for further research

The researcher makes the following suggestions for further research.

- a. There is need for the same study to be replicated on a larger sample either in the same division, district or other parts of the country. The study can cover teacher characteristics, school climate or playground aesthetics and their influence on participation on preschool children in outdoor activities.
- b. A research study can be done on the preschool playground as a teaching and learning tool for preschool children.
- c. A similar research study on playground safety can be carried on other levels of education such as primary and secondary schools.
- d. A research study can also be carried out on other factors that affect or influence children's play.

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APPENDICES

APPENDIX I - LETTER OF CONSENT TO COLLECT DATA FROM PRE-SCHOOLS

Hellen K. MACHARIA,
University of Nairobi,
P.O. BOX 30197,
NAIROBI.

31st January, 2012

Dear Sir/Madam,

RE: REQUEST TO FILL QUESTIONNAIRE FOR RESEARCH

I am a post-graduate student in the Faculty of Education, Department of Educational Communication and Technology, University of Nairobi. I am currently carrying out a research on the influence of school playground safety on the participation of preschool children in outdoor activities in Naivasha Central Division.

You have been selected to participate in this study because your pre-school falls in the category under study. I am hereby requesting you to fill the attached questionnaire to assist the researcher gather data from your preschool for purposes of research. Please respond to the questions as honestly and accurately as possible. Your responses will be used for the purpose of research only and your identity will be kept confidential.

Thanking you in advance,

HELLEN K. MACHARIA

APPENDIX II – QUESTIONNAIRE FOR PRE-SCHOOL HEADTEACHERS

INSTRUCTIONS

This questionnaire is designed to help gather information on the influence of school playground safety on participation of pre-school children in outdoor activities in Central Division, Naivasha District. Please read and respond to each question as honestly as possible by indicating with a tick for appropriate opinion or filling in spaces provided and give your opinion where explanation is required. The answers you give will be treated confidentially.

DO NOT WRITE YOUR NAME ANYWHERE ON THE QUESTIONNAIRE

Part A. SCHOOL DETAILS

- 1) Type of school (tick appropriate) Public () Private ()
2) Location of the preschool Urban () Rural ()
3) Pre-school Enrolment Boys _____ Girls _____ Total _____
4) Number of Preschool teachers Male _____ Female _____ Total _____

Part B: Playground Safety and outdoor activities

i) What is the approximate total land acreage of the school grounds? _____ acres

(ii) How adequate are the playgrounds in relation to the number of children enrolled in the pre-school? (Tick appropriately) Quite adequate () Fairly adequate () Inadequate ()

iii) How is the play area organized?

(a) According to age or level of learning ()

(b) According to play activities ()

(c) According to play equipment ()

iv) Is the playground area fenced? Yes () No ()

If no, give reasons _____

If yes, indicate how fencing influences children's safety and participation in outdoor activities. _____

v) How do you ensure the playground space is safe for children's outdoor activities? (Tick appropriately)

(a) Pre-visiting the play areas before the children use them ()

(b) Collecting harmful objects ()

(c) Accompanying children during the outdoor activities ()

(d) Fencing the school grounds ()

(e) Zoning the play areas according to age, equipment and
Play activities ()

(f) Repairing broken equipment and replacing worn out
Equipment and materials ()

vi) What challenges do you experience in ensuring safety in the playground space?

vii) What types of play equipment and materials are available in your pre-school playground?

viii) How do you ensure the play equipment and materials are safe for children's outdoor activities?

ix) How does this influence children's participation in outdoor activities?

x) What surfacing materials are available under and around the play equipment

Sand () Soil () Concrete () Dirt () wood chips () saw dust ()

Rubber mats () Others () Specify _____

xi) How does surfacing under and around the play equipment affect children participation in outdoor activities? _____

xii) Do you carry out maintenance inspection of the playground and equipment?

Yes () No ()

If yes, how often? Daily () Monthly () Termly () Annually ()

xiii) Which areas of playground and equipment are involved in this inspection?

(a) Entire playground, land and racing areas ()

(b) School fence ()

(c) Movable play materials ()

(d) Seats and chains of swings ()

(e) Equipment joints (swings, slides, climbers) ()

xiv) In your opinion, how does maintenance inspection influence playground safety and children's participation in outdoor activities? _____

xv) Which challenges do you encounter in playground maintenance inspection?

xvi) Does the pre-school have a playground safety Programme? Yes () No ()

If Yes, what are the playground safety issues addressed by the programme?

xvii) Who is responsible for supervising children while in the playground?

Head teacher () Class teacher () Pre-school care taker () play supervisor ()

xviii) How does supervision of children at play influence their participation in outdoor activities? _____

xix) What challenges do you experience in supervision of pre-school children while in the outdoor activities ? _____

xx) How do these challenges affect the participation of children in outdoor activities in your pre-school? _____

xxi) What recommendation would you make about playground safety and children's outdoor activities in your pre-school? _____

Thank you for responding to this questionnaire

APPENDIX III - QUESTIONNAIRE FOR PRE-SCHOOL TEACHERS

INSTRUCTIONS

This questionnaire is designed to help gather information on the influence of school playground safety on participation of pre-school children in outdoor activities in Central Division, Naivasha District. Please read and respond to each question as honestly as possible by indicating with a tick for appropriate opinion or filling in spaces provided and give your opinion where explanation is required. The answers you give will be treated confidentially.

DO NOT WRITE YOUR NAME ANYWHERE ON THE QUESTIONNAIRE

Part A School Background

- 1) Type of preschool (tick appropriately) Public () Private ()
- 2) Location of the preschool Rural () Urban ()
- 3) Number of children in your class Boys _____ Girls _____ Total _____

Part B Play ground Safety and Outdoor Activities

- 1) Does the pre-school have a playground for outdoor activities? Yes () No ()
- 2) How adequate is the playground for the number of children in your class?
Quite adequate () fairly adequate () Inadequate ()
- 3) What outdoor activities do children participate in while in the playground?
Structured (planned) activities () Unstructured activities ()
Both structured and unstructured activities ()
- 4) How do you ensure the playgrounds are safe for children to participate in outdoor activities?

- 5) Which of the following play equipment(s) are found in the pre-school playground?
(Tick appropriately)
Slides () Swings () See-saw () Ladders and platforms () Climbers ()
Climbing domes () Bar beams ()
- 6) Are the equipment adequate for the number of children in your class? Yes () No ()
If No, how does this affect children's participation in outdoor activities?

- 7) How are the play equipment arranged in the play space?
 - (a) According to age or level of learning ()
 - (b) According to play activities ()
 - (c) According to play equipment ()

- 8) In your opinion, how do developmentally appropriate play equipment and materials influence the participation of children in outdoor activities? _____
-
- 9) Which of the following playground surfacing materials are used under and around the outdoor play equipment in the pre-school? (Tick appropriately)
 Sand () carpet () Soil () woodchips () Grass () sawdust ()
 Concrete () rubber () Dirt () rubber mats ()
- 10) What are some hazards or unsafe conditions around the play equipment in your preschool? _____
-
- 11) What areas require maintenance inspection in the playground and play equipment? (Tick appropriately)
- (a) Entire playground, land and racing areas ()
 - (b) School fence ()
 - (c) Movable play materials ()
 - (d) Seats and chains of swings ()
 - (e) Equipment joints (swings, slides, climbers) ()
- 12) What challenges do you experience during maintenance inspection of the playground? _____
-
- 13) How does playground maintenance inspection influence children's participation in outdoor activities? _____
- 14) Who is responsible for supervision of children during outdoor activities?
 Pre-school teacher () play supervisor () school care taker ()
- 15) Does the school have playground safety rules and regulations? Yes () No ()
- 16) In your opinion, how do playground safety rules and regulations influence children's participation in outdoor activities? _____
- 17) What challenges do you experience while supervising children during their outdoor activities? _____
- 18) How do these challenges affect the safety and participation of children in outdoor activities? _____
- 19) What recommendation would you make about playground safety for your preschool? _____
-

Thank you for responding to this questionnaire

APPENDIX IV - OBSERVATION SCHEDULE

Observation schedule for the influence of school playground safety on participation of pre-school children in outdoor activities in Central Division, Naivasha district, Kenya.

PART A: SCHOOL DETAILS

1. Type of pre-school Public () Private () Urban () Rural ()
2. Enrolment Boys () Girls ()
3. Teachers establishment Males () Females ()

PART B: School Playground safety

Enter data by ticking according to the scale provided with 3 being excellent, 2 being good, 1 being satisfactory or adequate and 0 being unsatisfactory. Make

any necessary remarks.

1. Adequacy of the school playground space?
2. Condition of the play space
3. Zoning of the playground
4. General condition of the playground surfaces
5. Appropriateness of the play equipment and materials
6. Adequacy of the play equipment and materials
for the number of children
7. Safety of the play equipment and materials
8. Surfacing of play areas around and beneath the play
equipment
9. Availability of play equipment for children with special needs
10. Maintenance of play areas and equipment
11. Supervision of children in the play areas
12. Children's participation in outdoor activities

	3	2	1	0	RMKS
Total score					
Mean score					

APPENDIX V - SAMPLE CORRELATION COEFFICIENT

Sample correlation coefficient of play ground surfacing and children's participation in outdoor activities.

Playground surfacing (x)	No. of children Participating (y)	xy	x- \bar{x}	y- \bar{y}	(x- \bar{x}) ²	(y- \bar{y}) ²	(x- \bar{x})(y- \bar{y})	x ²	y ²
1	2	2	-1.2	-3.6	1.44	12.96	4.32	1	4
1	3	3	-1.2	-2.6	1.44	6.76	3.12	1	9
2	5	10	-0.2	-0.6	0.04	0.36	0.12	4	25
3	8	24	0.8	2.4	0.64	5.76	1.92	9	64
4	10	40	1.8	4.4	3.34	19.36	7.92	4	100
11	28	79			6.8	45.8	17.4	31	202

$$N=5$$

$$\bar{x} = 11/5 = 2.2$$

$$\bar{y} = 28/5 = 5.6$$

$$\begin{aligned}
 R &= \frac{N\sum xy - (\sum x)(\sum y)}{\sqrt{[N\sum x^2 - (\sum x)^2][N\sum y^2 - (\sum y)^2]}} \\
 &= \frac{5(79) - (11)(28)}{\sqrt{[5(31) - (11)^2][5(202) - (28)^2]}} \\
 &= \frac{395 - 308}{\sqrt{[155 - 121][1010 - 784]}} \\
 &= \frac{87}{\sqrt{(34)[226]}} \\
 &= \frac{87}{\sqrt{7684}} \\
 &= \frac{87}{87.658} \\
 &= 0.9925
 \end{aligned}$$

CONDITIONS

1. You must report to the District Commissioner and the District Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit
2. Government Officers will not be interviewed with-out prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2) four(4) bound copies of your final report for Kenyans and non-Kenyans respectively.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice



REPUBLIC OF KENYA

RESEARCH CLEARANCE PERMIT

GPK6055c3nt10/2011

(CONDITIONS—see back page)

PAGE 2

PAGE 3

THIS IS TO CERTIFY THAT:

**Prof./Dr./Mr./Mrs./Miss/Institution
Hellen Kabura Macharia
of (Address) University of Nairobi
P.O. Box 30197, Nairobi
has been permitted to conduct research in**

**Research Permit No. NCST/RCD/14/012/90
Date of issue 21st February 2012
Fee received KSH.1000**

Naivasha	Location
Rift Valley	District
	Province



on the topic: *Influence of school playground safety on the participation of pre-school children in outdoor activities in Central Division, Naivasha District, Kenya*

H. Macharia
Applicant's
Signature

[Signature]
Secretary
National Council for
Science & Technology

for a period ending: 31st December 2012.

REPUBLIC OF KENYA



NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

Telephone: 254-020-2213471, 2241349
254-020-310571, 2213123, 2219420
Fax: 254-020-318245, 318249
When replying please quote
secretary@ncst.go.ke

P.O. Box 30623-00100
NAIROBI-KENYA
Website: www.ncst.go.ke

Our Ref

NCST/RCD/14/012/90/4

21st February, 2012
Date

Hellen Kabura Macharia
University of Nairobi
P.O. Box 30197 – 00100
NAIROBI

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *"Influence of school playground safety on the participation of pre-school children in outdoor activities in Central division, Naivasha district, Kenya"* I am pleased to inform you that you have been authorized to undertake research in Naivasha district for a period ending *31st December 2012*.

You are advised to report to the District Commissioner & the District Education Officer, Naivasha District before embarking on the research project.

On completion of the research, you are expected to submit two hard copies and one soft copy in pdf form of the research report/thesis to our office.

A handwritten signature in black ink, appearing to read 'M. K. Rugutt'.

DR. M. K. RUGUTT, PhD, HSC
DEPUTY COUNCIL SECRETARY

Copy to:
The District Commissioner
Naivasha District

The District Education Officer
Naivasha District

"The National Council for Science and Technology is Committed to the Promotion of Science and Technology for National Development"

MINISTRY OF EDUCATION
ISO 9001:2008 Certified

Telephone: 0202352776

Fax No: 254 0202352776



DISTRICT EDUCATION OFFICE,
NAIVASHA DISTRICT,
P. O. BOX 2053 – 20117.
NAIVASHA
2nd March, 2012

Ref. MOE/NVS/GEN/112/54

Hellen Kabura Macharia
University of Nairobi
P.o Box 30197- 00100.
NAIROBI.

UNIVERSITY OF NAIROBI
LIBRARY

RE: RESEARCH AUTHORIZATION.

Following your request to conduct a research on “**Influence of school playground safety on the participation of pre- school children in outdoor activities in Central division, Naivasha district, Kenya**”, authority is hereby granted to visit schools and interact with the school communities.

You will however be required to give a copy of your findings to this office on completion of your studies.

M. Kabaki

Leonard M. Kabaki
District Quality Assurance and Standards Officer
Naivasha.

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OFFICER
NAIVASHA DISTRICT

**OFFICE OF THE PRESIDENT
PROVINCIAL ADMINISTRATION**

Telegrams: DISTRICTER" Naivasha
Telephone: Naivasha 050-2020014
When replying please quote



THE DISTRICT COMMISSIONER
NAIVASHA DISTRICT
P.O. BOX 11
NAIVASHA

Ref. No. CORR.3/4 VOL I/98

2nd March 2012

Hellen Kabura Macharia
University of Nairobi
P O Box 30197
NAIROBI

RE: RESEARCH AUTHORISATION

This is to inform you that you have been authorized to carry out research on "Influence of school playground safety on the participation of pre-school children in outdoor activities in Central division, Naivasha District Kenya".

This authority is up to 31st December 2012.

A handwritten signature in black ink, consisting of a vertical stroke on the left, a horizontal line extending to the right, and a decorative flourish at the end.

M.K. KIONI
FOR: DISTRICT COMMISSIONER
NAIVASHA DISTRICT

DISTRICT COMMISSIONER
NAIVASHA DISTRICT

CC:

District Officer
Naivasha Central

District Education Officer
Naivasha District