

# Implications of Outdoor Environment on Children's Learning Experiences in Public Preschools in Borabu Sub-County, Kenya

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## Abstract

This paper presents results from a study conducted in Borabu Sub-county in Kenya to determine the implications of outdoor environment on children's learning experiences in public preschools. The major findings suggest that the general state of outdoor environment component was unsatisfactory. It found a positive relationship between the outdoor environment and pre-schoolers learning experiences and ability to perform loco-motor activities and rhythmic movement activities and general academic achievement. The results further indicated that all the four states of outdoor environments (the site, availability, adequacy and effectiveness) combined to explain 35.2% of the variance in the preschool overall learning experiences. The results indicated that a rich outdoor environment has a positive influence on preschool children's development of various social, emotional and cognitive skills. The study recommends that teachers and pupils should participate in outdoor play, and governments should enact policy guidelines to increase the availability, adequacy and effectiveness of outdoor activities.

**Keywords:** Competency-Based Curriculum; Outdoor environment; Learning experiences

## Introduction

The government of Kenya recognizes early childhood development and education as an important pillar for accelerating the attainment of *Education for All* (EFA, UNESCO, 2010) and the *Sustainable Development Goals* (Republic of Kenya, 2006). To ensure quality education and learning environment during a child's formative years, EFA's first goal stipulates that it is the responsibility of every government to expand and enhance comprehensive early childhood education where young boys and girls fully develop their competencies which facilitate smooth learning in other advanced levels. According to a 2002 report by The World Fit for Children Conference, it is important for every child to have a good start to life whereby a child receives quality nurturing, care and safe environment (Githinji & Kanga, 2011).

In this regard, many developing and developed nations have been developing and implementing policies that are perceived to improve the state of early childhood education in various countries (Kang'ethe,

Wakahu & Karanja, 2015), this has galvanized many countries, especially in sub-Saharan Africa (SSA), into confronting their historically low access to quality early childhood education (Murunga, 2015). This has brought a remarkable success in attracting many children into schools (UNESCO, 2010). However, filling the classrooms is not enough in the process of ensuring access to basic education and Education for all. The goal is geared towards having positive social and economic returns in which improving the quality of Education is the key emphasis. Unfortunately, the 2010 UNESCO report indicate that the quality in terms of pre-schoolers' acquisition of early year competencies is not satisfactory in many countries and many preschool learning centres have poorly established learning environment in most sub-Saharan Africa countries Kenya inclusive.

Ideas of Early Childhood Development and Education (ECDE) can be traced back to 400BC in Plato's book, "The Republic". Plato advocated that early childhood education should be made interesting, and attractive through music, plays, number work and geometrical exercises which are implemented better in a rich

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a rich outdoor environment (Njoroge, 2011). Similarly, Githinji, & Kanga (2011) notes that philosophers like Jean Jacques, Rousseau and Jean Heinrich Pestalozzi emphasizes on the significance rich outdoor environment to help children acquire the necessary skills, knowledge and attitudes necessary for holistic development.

In particular, a child's psycho-social development is a long process that requires a critical mass of organized individuals involved in a variety of participatory educational processes and actions to produce cumulative results (Lyabwene, 2010). Therefore, the children's interactions with a rich outdoor environment is necessary for the children's holistic development and acquisition of early year's competencies. It has consistently been observed by many scholars that for effective learning to take place, children need mental stimulation and plenty of opportunities to exercise and develop their talents through the use of both fixed and movable equipment (Lyabwene, 2010). Thus, for preschool centres to foster social competencies, prepare children for future interactions and acquiring of early literacy and numeracy skills, the use of adequate, safe and effective outdoor environment is usually regarded.

In the last three decades, the use of rich outdoor environments has held a prominent place in the field of early childhood education since its beginning with German educator Friedrich Froebel's kindergarten and nursery school movement in the early 1800s (Gray & MacBlain, 2015). The founders of early childhood education emphasized the importance of learning within a well-established outdoor environment. This was in stark contrast to the predominant theory of the day which held that learning was done within classroom (Gray & MacBlain, 2015). These early educators were viewed as radicals as they promoted the theory that children learn through their interaction with the environment.

In the USA, children's playtime has steadily decreased due to limited access to play spaces, changes in the way children are expected to spend their time, parent concerns for safety, and digital media use among young children (Bishop, 2013). Social changes and new technologies in the country have also impacted negatively on the way children play and the amount of free time they are given because children between the ages 3-11 use most of their free time at school completing homework and shopping with parents (Ginsburg, Lee, & Boyd, 2008). In addition, Lovell (2009) observes that children's playtime continues to decrease in the USA as

a result of an emphasis on academic preparation at an early age, 30% of American kindergarteners no longer have recess, 71% of children and teenagers have a TV in their bedroom, and parental perceived risk of play environments and limited access to outdoor play spaces.

A study done by Nairn and Mori (2011), evaluating the lives of children in United Kingdom, Spain and Sweden, pointed out that children in the United Kingdom had less chances for pleasurable outdoor activities compared with Spain and Sweden and that this was a contributor towards reduced well-being and learning in United Kingdom. The study further found that the decisions to reduce funding for outdoor play and spaces was disadvantageous for children, particularly those from poor groups of children whose families struggle to find reasonable play provisions.

In Singapore, early childhood education remains a self-regulated programme as preschools in the country vary in terms of their programme content and overall teaching and learning approaches, catering to different social strata and cultural groups (WenTzuo, 2010). Despite of the fact that play should be an integral part of the preschool teaching in the country, it remains unclear whether preschool centres incorporate play-based methods of teaching into their practice as recommended under the Kindergarten Curriculum Framework (Peng, 2011). In some instances, preschool supervisors in Singapore are not advocating or adopting play-based teaching into their curriculum because of parental expectations and the demands of a meritocratic and economically-driven society that perceives education as a commodity to be obtained for financial success and social mobility (WenTzuo, 2010).

Despite the relevance of early childhood education, Tanzania is among African countries that has given Early Childhood Development (ECD) program minimal attention in the past three decades (Tarimo, 2013). However, in 2001, the government of Tanzania adopted an inter-sectoral ECD service delivery initiative resulting in the inclusion of ECD in the National Strategy for Growth and Reduction of Poverty (NSGRP). Since then, emphasis has been put on use of Child-Centered Teaching Methods (CCTMs) like the use of play as a teaching approach in both indoor and outdoor teaching (United Republic of Tanzania, 2008). Despite the government's effort, a report by UNICEF (2007) indicates that more than 95% of young children in the country lack access to early childhood stimulation characterized by rich outdoor environment.



Despite the challenges facing Early Childhood Education in many parts of the world, the early years of a child's life are globally accepted as the most critical years for the lifelong development of a child (Kang'ethe, Wakahiu & Michael, 2015). In this regard, there is evidence of a positive correlation between the child's quality of early childhood nurturing, health, environment, learning and future holistic development and academic achievement in subsequent grades in primary, secondary schools and colleges (Bradbury, 2007). This fact has been emphasized by most founders of Early Childhood Development and Education (ECDE), especially Johann Froebel, Heinrich Pestalozzi and John Dewey, among others who consistently indicated that early childhood is a crucial stage of life in terms of a child's physical, intellectual, emotional and social development. Growth of mental and physical abilities progress at an astounding rate and a very high proportion of learning take place from birth to age six (Murunga, 2015).

To address the problems inherent in early childhood education in Kenya, the Constitution of Kenya (Republic of Kenya, 2010) establishes government at two levels, national and county governments. Therefore, Kenya transitioned from a centralized government to a devolved system of government. With the advent of the implementation of the Constitution of Kenya (ROK, 2010), the devolution process heralded the devolution of pre-school among other devolved functions of the county governments. In this regard, Article 43 of the Constitution says that every person has a right to education including preschool children. Further, the education sector is governed by the Basic Education Act, 2013 and the Sessional Paper No.14 of 2012 on Reforming Education and Training Sectors in Kenya. The Basic Education Act, 2013, aims at giving effect to Article 53 of the Constitution, and to promote and regulate free and compulsory basic education. However, this has not been the case because there is no county government in Kenya which provides free preschool education.

A major landmark in education in early years learning has been a shift from 8-4-4 system of education to Competency Based Curriculum. The 8-4-4 system of education was introduced in 1985 following the recommendations of the 1981 *Presidential Working Party on the Establishment of the Second University in Kenya* (Republic of Kenya, 1981). The guiding philosophy of the system was education for self-reliance. Several Task Force reports as well as summative and formative evaluation reports led to curriculum reviews in 1992, 1995 and 2002. However, these reviews only addressed

issues of curriculum content, unnecessary overlaps and emerging issues. The reviews have not adequately addressed fundamental issues that would transform society by enhancing the productivity of every Kenyan citizen and accelerate economic growth.

The summative evaluation of the curriculum (ROK, 2006) indicated that the curriculum content and its implementation was academic and examination-oriented. In addition to curriculum overload, most schools were not adequately provided with equipped workshops to facilitate the learning of practical skills and teachers were not sufficiently trained. Furthermore the 8-4-4 system of education did not provide flexible education pathways for identifying and nurturing the talents and interests of learners early enough to prepare them for the world of work, career progression and sustainable development.

In the same vein, the *2010 Report of the Task Force on the Re-alignment of the Education Sector to the Kenya Vision 2030 and Constitution of Kenya 2010* was formed which led to the sessional paper No. 2 of 2015 on "Reforming Education and Training in Kenya" (ROK, 2015). The Sessional Paper states that the education sector is guided by the national philosophy, which places education at the centre stage of the country's human and economic development. The Sessional Paper recommends reforming the education and training sector to provide for the development of the individual learner's potential in a holistic and integrated manner, while producing intellectually, emotionally and physically balanced citizens. It recommended a competency-based curriculum; establishment of a national learning assessment system; early identification and nurturing of talents; the introduction of national values and national cohesion and their integration into the curriculum; and the introduction of three learning pathways at senior secondary school level among others. The Competency Based Curriculum Framework vision and mission (ROK, 2006) are supported by three important pillars: values, theoretical approaches and guiding principles.

Currently, in many counties, early childhood education programs operate on the basis of partnership, collaboration and networking. However, in 2003, free primary education was introduced in Kenyan primary schools. ECDE was not included in this setup despite the fact that most components that make a rich outdoor environment are expensive. With the current poverty index in most rural Kenyan setting, most preschool centres operate under poor conditions which are perceived to hinder their full participation and full development



(Ngaruiya, 2006). Worse still, parents do not understand why primary education should be free and not Early Childhood Education [ECE]; they have therefore begun resisting paying ECE fees, choking off a vital source of funding.

Many county governments have devolved Early Childhood Education to bring efficiency in the management of these units of education. There is, however, a small but convincing body of research knowledge which indicates that there are still many challenges in implementation of Early Years Education in most counties (Mahindu, 2011). Currently there are disparities in the 47 counties on their priorities in the implementation of early childhood education where some counties have set some reasonable funds to support preschool education, while to other counties, ECDE is not a priority in their budgetary allocations. This has resulted in diversity of practices by various county government and stakeholders, compromising the quality of service offered at preschool centres.

In Kenya, Mahindu (2011) conducted a study in Nairobi and found that many pre-schools had many children learning indoors without outdoor play experiences because some of the pre-schools were located in residential plots with rooms turned into classrooms. Hence children stay indoors most hours of school day. Mahindu (2011) also found that many pre-schools did not have play items for their pupils and in most cases where pupils were found playing or learning outside, they were left to play and learn on their own without teachers' supervision and guidance.

The researchers are of the opinion that if the issue of outdoor environment and play is not addressed well with the seriousness it deserves, the quality of pre-school education will be hampered leading to negative implications in schooling. There was therefore a necessity to undertake a study to assess the implication of outdoor environment on pre-schoolers' learning experience.

### **Statement of the Problem**

The government of Kenya initiated Competency-Based Curriculum in the view to enhance skills of learners. A competency-based approach focuses on the skills and talents needed to be able to perform a particular task to a certain standard. Early childhood care and education offers a holistic development of a child's social, emotional, cognitive and physical needs in order to build a solid and broad foundation for lifelong learning and well-being. This eventually shapes young learners'

minds, attitudes and often behaviours. If it is not well managed it is likely to compromise holistic development of these pre-schoolers, leading to maladjustment. This calls for proper structuring of pre-school learning environment to foster creativity of learners through play. It is however becoming clear from emerging research that children spend limited time doing outdoor activities. This is against the findings of current literature and theories of child development that advocate for providing appropriate outdoor learning environment that offers a sense of freedom for children to play freely with peers, expand their imagination beyond the restraints of indoor activities, release energy, and explore their senses of touch, smell, taste and motion.

An attempt has been made by the government of Kenya, to cater to the well-being of young children, by developing service standard guidelines to ensure that quality services are delivered efficiently and effectively at all times in ECDE centres. This was envisaged to ensure the provision of adequate, safe and effective outdoor learning environments. Despite the Kenyan government's effort to ensure quality and rich outdoor environments, the strategies and efforts have not been effective due to the current condition of the outdoor environment and equipment in most pre-school learning centres, characterized by inadequacy and unsafe fixed and movable equipment. It is against this setting that the proposed study sought to investigate into the influence of outdoor environment on pre-schoolers' learning experience.

### **Research Questions**

The following specific questions guided the study:

- i. *What is the state of outdoor environment in ECDE centres in Borabu Sub-County?*
- ii. *How does the outdoor environment affect children's learning experiences and physical development in Borabu Sub-County?*





## Theoretical Framework

This study was guided by socio-cultural theory. The theory arises from the works of Vygotsky (1978) who emphasizes on the role socio-cultural factors on children's development and learning. Vygotsky (1978) believed that planned learning should be learner-centred and oriented towards activities through which they can construct their knowledge as a result of recognition of one's experience. Vygotsky's theory supports that learning must not just be based on classroom theories of teaching, but with learning to learn, developing skills and utilization of indoor and outdoor learning strategies which make learning experiences relevant and meaningful for the benefit of holistic development. Vygotsky argues that enhanced environment, social interactions, and shared outdoor activities assist children attain skills and master various activities, moreover to reason in a meaningful manner. Vygotsky proposes that the nature of development and learning in young children takes place in a social environment. Vygotsky (1978) believed that young children don't develop in isolation, but in a social matrix.

Vygotsky's socio-cultural theory (1978) has an imperative contribution for studying the environments essential for physical activity and learning. Vygotsky's advancement advocates for modification of varied children's contexts. In this case, the outdoor environment should offer children with opportunities to experience phenomena that contribute to their meaning making and skill development. The child's experiences in the outdoor environment give rise to describing things that cannot be experienced indoors (Norling & Sandberg, 2015). During outdoor activities children use their experiences to perform meaning making in social relationships with peers, grown-ups and their immediate environment. Constantly changing outdoor environment expands children's range of experiences and stimulates their activity level and learning.

Proponents of the constructivist theory have pointed out that human beings construct all knowledge while participating in different mental and physical experiences. In constructivism, the learner builds a personal interpretation of the world based on experiences and interactions (Pierucci, O'Brien, McInnis, Gilpin, & Barber, 2014). On the other hand, social constructivism suggests that the curriculum should ultimately produce learners who would be able to deal effectively with the modern world. Therefore, curricula should not be presented as finished abstractions, but should include the child's preconceptions and should incorporate how the

child views his or her own world (Pellis & Pellis, 2007).

The other learning theory that has shaped and influenced the provision of Competency Based Curriculum (CBC) is the visible learning theory as advanced by John Hattie (2012). This theory postulates that fundamental changes in education systems have important implications for curriculum reform. Learners need to be able to think about and solve problems, work in teams, communicate through discussions, take initiatives and bring diverse perspectives to their learning. Learners also need to demonstrate the impact of the achievement of national goals of education. Visible learning means an enhanced role for teachers as they become evaluators of their own teaching. Hattie asserts that visible learning and teaching occurs when teachers see learning through the eyes of students and help them become their own teachers (Wilson & Myers, 2000).

## Literature Review

### Historical Dimensions of Child Play

There is a considerable body of research which is indicative, relating children's play and aspects of their learning and development. This evidence includes work in evolutionary and developmental psychology, anthropology, neuroscience and educational studies. However, while researchers in these fields have hypothesized about how play might enhance child outcomes, much of this evidence merely establishes associations rather than firm, causal relationships. In fact, there is little or no conclusive evidence regarding possible explanatory mechanisms. From evolutionary psychology, Bruner (1978) argued that as more and more complex animals evolved, the length of immaturity increased facilitating an increased level in learning. (Whitebread, 2017). In the same vein, Pellegrini & Bohn, (2005) in a review of evolutionary play concluded that play contexts allow human beings to engage in exploratory activities.

Much of research on play in developmental psychology has been advanced by Vygotsky (1978). He states that during spontaneous play, learners exercise control over their own activity and set for themselves challenges which lead to their holistic development. A close follower of Vygotsky, Karpov (2005) carried out an analysis of Neo-Vygotskian practices and concluded that play allows children to regulate their own behaviour making it a significant factor in their self-regulation.



### Importance of play to children

Much of a child's early years are spent playing, exploring and testing their environment and own personal boundaries. All of this play has significant and proven benefits for a child's early development (Whitebread, 2017). Research has shown that children who regularly engage in play-based learning have better cognitive flexibility, working memory and self-regulation ability (Karpov, 2005). School administrators need to build playgrounds, train teachers in how to guide play-based learning and make their own play materials using natural materials. He recommends the involvement parents in the production of play materials

There is a steadily growing body of research knowledge on the importance of play (Karpov, 2005; Pelligrini & Bohn, 2005; Whitebread, 2017). Children behave better in the classroom when they have had the chance to blow off steam and release energy on the playground during the day. Playing is a known method of stress release that can help with a child's emotional welfare. Play can help young children become more aware of other people's feelings and develop empathy. During play, whether it is inside or outside, children must interact and cooperate with each other, as well as share play equipment which requires good communication skills. Children can build relationships, learn to resolve conflicts, negotiate and regulate their emotions. Play can nurture qualities like self-discipline and attention control, which can be just as vital for school readiness as content knowledge. Children with longer attention spans and self-control can focus more on tasks in the classroom (Wilson & Myers, 2000). This is because when children engage in make-believe play that involves role playing, there are generally rules that they must follow which involves regulating their natural self and behavior (Vygotsky, 1978). By practicing this in a safe, fun environment, their self-control is enhanced, which can then be transferred to a classroom setting.

There is a growing body of research that shows a link between play and the development of cognitive and social skills that are prerequisites for learning more complex concepts as children get older (Oren, 2008). For example, play is linked to growth in memory, self-regulation, oral language, and recognizing symbols (Wilson & Myers, 2000). It has been linked to higher levels of school adjustment and increased social development. Play has also been linked to increased literacy skills and other areas of academic learning (a view held by Piagetian and Vygotskian theories of child development). Children create a pretend scenario by

negotiating and talking to peers and using props in a symbolic way. Children create specific roles and rules for pretend behaviour and adopt multiple themes and multiple roles. When children engage in this kind of play for most of their early years, they learn to delay gratification and to prioritize their goals and actions. They also learn to consider the perspectives and needs of other people. They learn to represent things symbolically and to regulate their behaviours and act in a deliberate, intentional way.

Today, many children do not have enough play opportunities at home because of TV, videos, and the computer (Bodrova & Leong, 2015). They interact with toys that are not conducive to building imagination and interesting dramatic play themes. In many instances, pretend play with siblings and neighbourhood children is not available. There are more adult-organized and directed activities than in the past. They tend to be in groups of children of the same age rather than in mixed-age groups, which would include older children who could act as "play mentors."

Early childhood classrooms provide a unique setting to foster the kind of dramatic play that will lead to cognitive and social maturity. There are other children to play with, a setting that can be organized to accommodate imaginative play, and adults who can encourage the play, guiding children to play effectively with each other.

### Location of the Study

The study was carried out in Borabu Sub-County of Nyamira County. Borabu Sub-County is the largest Sub-County in Nyamira with an area of 248.3 kilometres square. The Population Density of Borabu Sub-County is 296 people per square kilometre. According to Monda (2012), Borabu Sub-County has a poverty index of 48.6. This is an indication that many people are poor. In fact, Borabu region is a former white settlement region and even though it is said to be economically stable, pockets of poverty are evident especially among the casual labourers providing labour in the tea plantations and well-to-do homes. Although Early Years of Education is devolved, financing is still low, therefore most financing of ECDE has been left in the hands of communities or parents. Studies also indicate that dropout and repetition rates, especially in lower primary, are high in Nyamira County which influenced the selection of the location. Since the majority of young children spend a significant part of their day at early childhood development and education



centres, it is therefore imperative to find out whether outdoor experiences provided are positive and supportive enough to enhance physical activity and learning.

### Methods

The study employed a mixed method approach (Creswell, 2009). This involved the collection, analysis and integration of both quantitative and qualitative research methods within a single research study in order to answer research questions (Creswell & Plano, 2011). The combination of qualitative and quantitative methods occurred at different phases of the research process, such as formulation of research hypothesis and questions, data collection and analysis (Bryman, 2006). Mixed methods approach was suitable because it allowed the researcher to validate or corroborate the results obtained from various sources (questionnaires, interview schedules and document analysis) (Creswell, 2009). This allowed for a wider understanding of a research problem from different angles, therefore clarifying and comparing quantitative and qualitative data so as to uncover and understand the unexpected findings and potential contradictions from various sources. The approach further fostered scholarly interaction and provided methodological flexibility that were adaptable to a variety of data collection, analysis, and interpretation strategies and procedures that elucidated more information than was not possible to obtain through quantitative or quantitative approach alone, therefore offsetting the weaknesses of quantitative and qualitative approaches when used alone (Creswell, 2009).

Within the mixed method approach, the embedded research design was employed. The purpose of the design was to collect both quantitative and qualitative data concurrently, but to have one form of data play a supportive role to the other form of data. The reason for collecting the second form of data was to support the primary form of data. In regard to this study, the qualitative data were collected to support the quantitative data (Creswell, 2009). This approach was appropriate because it enabled the study to gather adequate data that provides a better understanding of the research problem and adequately answers the entire research questions (Creswell & Plano, 2011). This increases the overall strength of a study by enhancing the validity and trustworthiness of data collected (Denscombe, 2010).

The design also had the capacity of collecting data concerning the existing position of the problem in which the researcher had no direct control of the

independent variables because the manifestation had already taken place during the time of data collection (Denscombe, 2008). The design was also more appropriate because it allowed the researcher to gather information from a large number of cases through questionnaires, interviews and document analyses.

The study was carried out in Borabu Sub-County of Nyamira County. Borabu. The study targeted 50 public pre-schools, 50 primary head teachers, and 50 pre-school lead teachers and 1603 final pre-school class pupils. To obtain the required sample the study employed cluster, purposive and simple random sampling design were used to recruit participants. The final sample for the study included 44 primary head teachers, and 44 preschool lead teachers and 309 final pre-school class pupils. The research instruments that were used to collect data consisted of questionnaire, interview schedules and document analysis.

Validity for various research instruments was also determined. Validity is the extent to which the research instrument measures what it purports or intends to measure (Cohen, Manion & Morrison, 2007). The main purpose of ensuring the validity of various research instruments in the current study was to enhance the accuracy and usefulness of the findings by controlling the confounding or intervening variables (Creswell & Miller, 2000). To ensure validity of research instruments in the present study, face, construct and content validities of the questionnaires, interview schedules and document analysis was determined by presenting and discussing the various items in research instruments with two experts in the area of early childhood education. The experts' suggestions, together with the findings from the pilot study were used to modify the items in the research instruments. This ensured that the test items were clear, relevant and well organized. The study further adopted the triangulation approach so as to ensure the validity of the research instruments. In other words, the study used multiple methods of data collection: interviews, questionnaires as well as document analysis. By so doing, an area that was overlooked by one method was strengthened and checked by the other method of data collection.

The study gathered both quantitative and qualitative data. Quantitative data were gathered through questionnaires and document analysis while qualitative data were obtained through the use of interview schedule and document analysis. Both descriptive and inferential statistics were used in analysing quantitative data. Descriptive statistics such as measures of central



tendency and percentages were used to describe data. The descriptive statistics allowed the researcher to meaningfully explain the distribution of scores or measurements using a few indices (Mugenda & Mugenda, 2003). This involved the researcher transforming large groups of data into a more manageable form that was easy to understand and interpret (Mbwesa, 2006). Inferential statistics, including the Pearson's product moment correlation coefficient, simple and multiple regression analysis were used to test hypotheses. All hypothesis testing was done at  $\alpha=.05$ . All these analyses were done with qualitative data, the principles of thematic analysis as proposed by Braun & Clarke (2006).

### Results and Discussion

The results were obtained from 42 primary head teacher, 42 preschool lead teachers and 381 final pre-school class pupils.

#### Availability of Components of Outdoor Environment

The results on the availability of various outdoor components in ECDE centres are represented in Table 1. The results show that several outdoor environmental components were of interest to the current study. The study establishes in general that in almost half (46.44%) of the ECDE centres, the components of a rich outdoor environment were not available at all while less than a quarter (22.61%) of the ECDE centres had few elements in existence. With a lot of concern, the

results further indicated that only 4.19% of the ECDE centres in which all the elements required for a rich outdoor environment were available. Although the children's outdoor environment should be equipped with standardized structured such as swings, slides, and climbing structures often installed over asphalt.

Outdoor environments should be equipped with standardized structured such as swings, slides, and climbing structures often installed over asphalt (Frost, Wortham, & Reifel, 2001). The current findings indicated that the school outdoor environment was typically a part of schools' playground which had few structures. Contemporary playgrounds lacked structures that provided various means for children to explore and develop various skills. This seems not to be in line with the recommendations of the Competency Based Curriculum which aims at nurturing every learner's potential so that they are fully engaged and empowered in order to develop as ethical citizens. This calls for a paradigm shift in schools to provide play materials that would lead to holistic development of learners.

During the interview with the primary school head teachers and pre-school lead teachers on the availability of various outdoor components, majority (76%) of preschool lead teachers in general expressed their concern about the acute shortage of various outdoor components that makes an ideal outdoor environment that facilitate the children's physical development and

**Table 1.** Availability of various outdoor environment components in ECDE centres.

Outdoor Components	Availability of the Components of Outdoor Environment					
	A	B	C	D	E	F
Water play area	76.2	14.3	7.1	0	2.4	0
Outdoor environment has benches & table	19.0	28.6	7.1	23.8	16.7	4.8
Physical development equipment (climbers, slides, balancing devices & swings)	42.9	38.1	7.1	4.8	7.1	0
Availability of loose materials (tyres, bean bags, ropes, balls )	4.8	38.1	0	16.7	23.8	16.7
Presence of garden	42.9	19.0	2.4	21.4	9.5	4.8
Availability of sand pit	50.0	19.0	4.8	14.3	7.1	4.8
Availability of construction area	64.3	7.1	11.9	9.5	4.8	2.4
Presence of play house	71.4	16.7	4.8	0	7.1	0
Average	46.4	22.6	6.5	11.3	9.8	4.2

A- Not available at all; B- Very few; C- A few; D- Half available; E- Mostly available; F- All exist





physical skills. For example, one teacher stated, *"In my school, there are no equipment needed for preschool children's physical development like climbers, slides and swings. This makes it difficult for me to conduct outdoor activities, however there is a large playground with space where kids can run and develop their own ideas (T-12)."*

### Effectiveness of Outdoor Components

The study established that on average, 64.97% of preschool centres had effective components that made the outdoor environment. This implies that the remaining 35.03% of centres did not provide effective enabling outdoor environment for preschool children to participate in various outdoor activities. On the other hand, 69.1% of centres had effective physically developed equipment that were adaptable to users' needs and catered for children's interests, 66.7% of centres had school gardens that provided an enabling environment for a wide range of stimulating activities, 61.9% had construction areas that were large enough and allowed for a wide variety of activities, and 69.0% had sand pits that enabled children to engage in a variety of stimulating and imaginative activities. This positive finding needs to be emphasized in our Kenyan schools because psychomotor and creative activities at pre-primary level enable learners to develop both fine and gross motor skills which are necessary for the control and co-ordination of different parts of the body. These activities also allow children to explore and develop social skills and personal talents and skills as well as appreciate their cultural heritage.

The results further revealed that 61.9% of the centres did have loose materials (tyres, bean bags, ropes, balls) that were appropriate for the different age level learners, but 73.8% of the centres did not have water play areas that accommodated a variety of learning styles among learners, and 86.2% did not have a play house that provided opportunities for social interactions among children. This finding is not consistent with the literature reviewed that called upon schools to develop play areas to lead to holistic development of learners (Pelligrini & Bohn, 2005; Whitebread, 2017). This calls for transformative education whereby schools should take initiative and involve all the stakeholders in education to provide basic materials to be used by learners in early years. Teachers need to transform their approaches in engagement with parents and community members so that they are actively involved in sourcing materials for learners in pre-school centres.

### Assessing the State of Outdoor Environment

The results affect the state of outdoor environment in terms of the condition, adequacy, utilisation, adaptability, design and appropriateness of various outdoor components in various ECDE centres. In this regard, the study established that the conditions of the outdoor components that make a rich outdoor environment were unsatisfactory in 40.48% of the ECDE centres. The data establish that the condition, adequacy, utilisation, adaptability, design and appropriateness of various outdoor components in various ECDE centres is below average. On considering whether the outdoor facilities in various ECDE centres were in good condition, it was found that in majority (47.8%) of the ECDE centres the condition of the outdoor facilities were unsatisfactory. It was further established that in 40.1% of the centre the storage facilities for outdoor equipment were insufficient, 47.8 % of the ECDE centres the equipment in the outdoor environment were not logically well-designed in a manner that accommodated for integrated activity based systems of learning. In more than half (52.5%) of the schools, the appropriate equipment for various age level activities were inadequate. In almost half (48.2%) of the preschool centres the science activities were not provided with sufficient space and equipment with science materials, and in almost half (47.9%) of the preschool centres the overall design of the outdoor environment was not aesthetically pleasing and appropriate for the different age level pupils. In about two thirds (67.0%) of the ECDE centres the outdoor working environment was not sheltered from sun and inclement weather. 54.9% of the ECDE centres the outdoor equipment did not provide an attractive colour and texture, 43.1% of the ECDE centre the location of outdoor facilities did not enhance the learning climate of the pre-school and in 55.2% of the ECDE centre the exterior noise and surrounding environment frequently disrupt outdoor learning. It will be important for teachers and other community members to change their approaches in order to transform the outdoor environment.

This may require paradigm shift in contextualising the value of outdoor environment as a precursor to classroom learning. The findings of the study indicates positive correlation ( $p=0.00$ ) between the overall outdoor environment (availability, adequacy, effectiveness and state outdoor components) and all the three aspects of pre-schoolers' learning experience (children's ability to performing various rhythmic movement activities, children's ability to perform various locomotor



activities, children's general performance in various learned activity areas) and the overall learning experience. Table 2 further indicates that although a positive correlation was established, the magnitude of the correlation was different between various aspects of pre-schoolers' learning experiences and the outdoor environment. For example, preschool children's general performance in various learned activity areas had the highest correlation ( $r=.687$ ), while children's ability to performing various loco-motor activities had the least correlations ( $r=.357$ ) to the outdoor environment. It is also evident that there was a strong positive correlation between pre-schoolers' general performance in various learned activity areas and general outdoor environment. The correlation was moderate between children's ability to perform various rhythmic movement activities and general outdoor environment while there was a weak relationship between preschool children's ability to perform various loco-motor activities and the general outdoor environment in which the children learned.

### Regression of Overall Outdoor Environment and Pre-schoolers' Learning

In order to estimate the level of influence of the overall outdoor environment (availability, adequacy, effectiveness and outdoor components) and pre-

schoolers' learning experience, a coefficient of determination was computed using a regression analysis whose results were as shown in Table 3.

The model shows that pre-schoolers' outdoor environment accounted for 35.2% of the variation in the overall pre-schoolers' positive learning experience, as signified by coefficient  $R^2$  of .352. In addition, a linear regression was generated to estimate the actual influence of the overall outdoor environment and pre-schooler's learning experiences, as shown in Table 4.

It is evident from Table 4 that if the overall outdoor environment (availability, adequacy, effectiveness and state outdoor components) was improved by one standard deviation, then perceived scores in the level of preschoolers' overall learning experience (preschool children's ability to performing various rhythmic movement activities, preschool children's ability to performing various loco-motor activities, pre-school children's general performance in various learned activity areas is likely to improve standard deviation units. On the same note, if the overall children's ability to performing various rhythmic movement activities, preschool children's ability to performing various loco-motor activities, pre-school children's general performance in various learned activity areas is likely to improve standard deviation units. On the same note, if the overall outdoor

**Table 2.** Correlations between the overall outdoor environment and pre-schoolers' learning experiences

Overall outdoor environment		Ability to Perform Rhythmic Movement Activities	Ability to Perform Locomotor Activities	General Performance in Activity Areas	Overall Learning Experiences
	Pearson Correlation	.419**	.357**	.687**	.484**
	p-value (2-tailed)	.000	.000	.000	.000
	N	381	381	381	381

**Table 3.** Regression of the overall outdoor environment and pre-schoolers' learning experiences.

#### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.593 <sup>a</sup>	.352	.350	29.459

a. Predictors: (Constant), Preschoolers' overall learning experience



**Table 4.** Coefficient of overall outdoor environment and pre-schoolers' learning experiences.**Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	T	p value
	B	Std. Error	Beta		
1 (Constant)	61.844	6.575		9.406	.000
Overall outdoor environment	3.034	.252	.593	12.025	.000

a. Dependent Variable: Preschoolers' overall learning experience

Regression equation =  $61.844 + 3.034X_1 + \varepsilon$  where, Y = Preschoolers' overall learning experience,  $X_1$  = overall outdoor environment.

environment increases by one unit, then the level of the pre-schoolers' overall learning experience would improve by 3.034 units; this is a substantial effect from one independent variable. In addition, the P-value was 0.000, confirming a statistically significant influence of the overall outdoor environment on the overall pre-schoolers' learning experience.

During the interview schedules with the primary school head teachers, the study further established that outdoor environment usually facilitated pre-school children's physical, social, emotional, and mental development in their various ECDE centres. On this note, some of the respondents had this to say:

*"Play gives the child with the opportunities to explore with his/her own world where he or she was free of adult values and external realities." (HT-03)*

*"As the preschool children were interacting through play, they developed the feelings of belonging in peer groups, positive feelings for children like enjoyment, happiness, freedom, relaxation, excitement, and entertainment." (HT-13)*

On the development of various skills, 39 (92.86%) of the preschool lead teachers noted that rich outdoor environments enabled children to learn about cooperation and collaboration. It was also observed that children from pre-school centres which had adequate and rich outdoor environment generally worked together sharing space and materials amicably, worked toward the same goal and talked with one another as they played, unlike those centres which did not have adequate rich outdoor environment. *Like in SCH19, the pre-school children were observed sharing experience that required them to listen to others in order to understand how to work together to achieve mutual goals.*

As children interacted in the school, they communicated their needs, ideas, feelings, desires, and knowledge to each other, and to their preschool teacher.

In SCH15, a girl was observed assigning tasks and roles to others, or assumed roles and volunteered for certain tasks which involved inviting other children into their play. In school SCH11 children were observed engaging in collaborative problem-solving and at various times, assuming leader

and follower roles. As they shared space, materials and plans, they learned to take turns, negotiate, and compromise. When there was conflict, they had the opportunity to practice conflict resolution skills.

During the interviews, it was established that a rich outdoor environment facilitated pre-schoolers' development of early mathematics and problem-solving skills. For instance, in SCH06, some boys were observed exploring patterns, the attributes of objects, and shapes. In SCH01, some girls were counting as a way to identify and describe their play using a song. Children also used counting to convey information to others and to solve problems when there was a disagreement among four girls in SCH07.

On the development of science skills, children in SCH24 were observed exploring nature by trying to discover various parts of the flowers and chancing butterflies. This often involved telling others what they knew about flowers and butterflies.

During the researcher's visit to various preschool centres, it was reported by HT18 that the space and nature of the materials in a rich outdoor environment provided many opportunities for children to purposefully move and use their bodies. It was also observed that preschool who were in school that had rich outdoor environment had better balance and confidence abilities as they manipulated various outdoor equipment than those schools which did not have rich outdoor components.

During the observation schedules, it was observed that the space and materials within the outdoor environment were provided multiple opportunities for children to develop construction skills as they engaged in a variety building experiences (evident in more than half 69.05% of the preschool centres). Some of the specific skills that were identified during the observations



included: learning the concept of construction through experimentation; creating enclosures, walls and bridges; emptying and filling, balancing and bracing objects as they experimented with weight and stability.

During the interview schedules, a statement was put to the preschool lead teacher with a view to solicit their views regarding the importance of play in learners' cognitive development. The majority of preschool teachers observed that a rich outdoor environment with adequate and safe playground was important for learners' cognitive development. In elaborating their answers, the teachers had the following to say:

*"Play develops the children's sense of reasoning and imagination which also stimulates creativity." (T-02)*

*"Learners enhance their cognitive skills by thinking while enjoying themselves within the outdoor environment." (T-7)*

*"Play develops the child's brain to think for themselves and find solutions to the challenges they face as they play." (T-13)*

*"The ability to think critically and solve problems help in their growth." (T-22)*

*"Play allows children to think critical and coherent." (T-37)*

*"Play develops children's fine motor skills, reasoning and thinking." (T-40)*

### Implications

The findings of the present study are important for the Kenyan education system because improving the outdoor environment and pre-school learning experiences will have a positive impact on the long-persisting challenges facing the pre-school education sector in Kenya. In addition, the results could serve as a basis for developing a hypothetical model for studying the direct and indirect effects of the fore-mentioned factors on improving the education standards in Kenya. In general, these findings could serve as a guideline for teachers, educational practitioners and curriculum developers in developing and utilizing educational policies, methodologies and activities that could help in improving ECDE programmes. The study findings finally fill the existing gap in other research carried out to identify the factors contributing to the existing low enrollment and high rates of grade retention in pre-primary schools in Kenya. This paves way for more comprehensive national and international research.

### Conclusion

The study sought to establish the links between utilization of the outdoor environment and pre-school children's learning experiences. It has shown that there is general agreement about a positive relationship between use of rich outdoor environment and pre-school children's positive learning experiences associated with development of various skills and competencies. From the study it can be concluded that the ability of pre-school children to perform various loco-motor and rhythmic movement activities is associated to the adequacy, availability, site and effectiveness outdoor components. Based on the results of this study, it can be concluded that, despite the many challenges that constrain having a rich outdoor environment, children continue to use the playgrounds as a major component of the outdoor environment. This study undoubtedly exemplifies the significance of children spending time in a well-designed, nature-filled outdoor environment under the support of peers and preschool lead teachers. This outdoor environment is crucial in supporting children's success and skill development.

As educators take charge of outdoor activities, they need to be flexible in their expectations of children in nature-based outdoor classrooms. It is through this expanded freedom that children more fully experience the space, materials and environment, adding to their skill development and to the depth of their understanding of the world around them. Lastly, the overarching philosophy of outdoor environments should embrace the value of unstructured play for children, the role of child-initiated activities in learning, and the importance of children spending time outdoors, connecting with nature. All children deserve the rich learning that can occur through opportunities to experience the beauty of nature that spending time in an intentionally designed outdoor classroom can provide.

### Recommendations

It is the aim of all educational systems and, indeed, all parents, teachers and all stakeholders in education at all levels, to improve the foundation of their children's education. Based on the findings of this study, the following recommendations are made with the view of improving the state of outdoor environments and pre-school children's learning experiences while within the pre-schools' outdoor environment.





*Recommendations for Policy Makers* - For the head teachers in the field, regular in-service may be necessary so that they are updated with current trends relevant to pre-school education. This will make them aware of the children's rapidly changing world from which their learning experiences emanate. The government of Kenya should have in place policy guidelines to all pre-schools with regard to the availability, adequacy site and effectiveness of outdoor environment.

*Recommendations for Head Teachers* - The head teachers should have schools' policies for monitoring outdoor activities. They should regularly assess and monitor children's learning and development.

*Recommendations for the ECDE Teachers* - The ECDE teachers should participate in outdoor play as well as involving all children in outdoor play. They should also enrich the ECDE learning environment with locally available teaching and learning support materials,

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