Influence of Physical Resources on Learners' Educational Outcomes in Public Pre-Primary Schools in Mombasa County, Kenya

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ABSTRACT

A child's early years are widely recognized as a critical stage in life in which social, motor, emotional, language, cognitive, and perceptual skills develop. This study aimed to examine the influence of physical learning resources on learner's educational outcomes in public pre-primary schools in Mombasa County, Kenya. The study embraced Bronfenbrenner's (1997) Theory of Human Development and a mixed methods research design for the study. Stratified, simple random and purposive sampling techniques were used to select a sample of 78 head teachers, 116 teachers, and 7 ECE Sub County supervisors from a target population of 97 head teachers, 388 teachers, and 7 Sub County ECE supervisors. A questionnaire, an interview schedule and an observation guide were used to collect data. The pilot study was done in two schools to enhance instruments validity and reliability. Percentages, mean, and standard deviation were run to answer research questions. With a t-test of t = 5.298, and $p < .05$, the study concluded that public pre-primary schools in Mombasa County that had adequate physical resources had higher learner's educational outcomes than those with inadequate physical resources.

Keywords: learner's educational outcomes, physical resources, Early Childhood Education

BACKGROUND OF THE STUDY

Education is perceived as a critical process through which an individual's life is determined (Sarker, Wu, & Hossin, 2019; Makori & Onderi, 2013). According to Department for International Development (DFID) in (DFID, 2007) students' performance is pegged on teaching and learning materials, effective administrative supervision and well-trained, equipped, facilitated and motivated teachers. Alimi (2004) support this proposition by noting that the aim of learning resources is to improve educational outcomes that include attendance, enrollment, staff motivation and overall academic performance.

According to Department for International Development (DFID, 2007), teacher characteristics, availability and adequacy of physical resources and instructional materials are key ingredients to effective learning and students' academic performance. In fact, OECD (2007) attributes inequality in students' educational outcomes to disparities in resource allocation across schools. Akungu (2014) note that the quality of students' education is compromised by inadequate and overstretched teaching and learning resources in the backdrop of overcrowded classrooms. Thus, not only do the physical resources influence the quality of education, but they also impact on students' and teachers' motivation, and subsequently on educational outcomes.

To underscore the importance of physical resources to learning, Suleman and Hussain (2014) conducted a study on the influence of classroom characteristics on secondary school students' academic performance in Pakistan. The study embraced an experimental research design and a questionnaire was designed for data

collection. It was established that the provision of conducive temperature and ventilation systems, the adaption of Information Communication Technology (ICT) facilities, having sizeable classroom, proper furniture arrangement and proper storage facilities, all relate to academic performance.

In most developing countries, the need to make classrooms child friendly is affected by overcrowding that minimizes play space and sitting arrangements. Due to the declaration of compulsory and free education, and the subsequent abolishment of fees payment in Uganda, Tanzania Malawi and Kenya, the limited physical facilities and resources are overstretched (Fisher, 2012). This limits facilitation of the teaching and learning thereby reducing the attractiveness of education and the interest of young children. In Uganda, for instance, the physical environment of schools is wanting as many have uncontrolled noise, unfinished and dilapidated classrooms, poor lighting, and unsuitable temperatures, which make the teaching and learning process inefficient; the irregular maintenance of school infrastructural resources further leads to ill health and inconsistency in school attendance (Ostendorf, 2001; Frazier 2002; Lyons, 2001). In Ghana, Dei (2013) established that rural community schools were faced with dilapidated physical facilities, inadequate planning, and a lack of material inputs and teaching staff that resulted in dismal academic performance.

Despite the critical role played by learning resources in the implementation of early childhood education programme, these resources are not sufficiently available in many pre-primary schools, more so in the public pre-primary schools which are government-owned. Studies done in Nigeria have established that inadequate learning resources hampers educational outcomes in most public pre-primary schools (Osho, Okolie & Onifade, 2013; Okewole, Iluezi-Ogbedu & Osinowo, 2015; Amali, Bello & Okafor, 2012; Viatonu, Usman-Abdulqadri & Dagunduro, 2011). However, Usman (2007) cautions that teaching and learning resources alone cannot achieve the intended goal of education without considering training and availability of teachers.

In Kenya, Jepleting (2013) reported that most pre-primary school classrooms in Uasin-Gishu County were semi-permanent and community-owned. A later study by Mawere and Muguti (2015) reported that 80% of the pre-primary schools lacked adequate classrooms; and that 67% of pre-primary school classrooms were not learner-friendly as they had substandard ventilation, and poor finished roofs, walls, floors and ceilings. Mabatuk (2016) in Baringo County further established that most pupils in primary schools were learning in open fields and under shades of trees due to the unavailability or inadequacy of classrooms. Mabatuk (2016) further noted that in most of the primary schools, physical facilities did not meet the threshold of quality of education. Findings by Sitati, Mwangi, Bota and Rapongo (2016) in Kakamega County resonate with the above findings by noting that most pre-primary schools in Kakamega County had insufficient permanent physical infrastructure that hindered the effective implementation of the ECDE curriculum.

Adenike (2016) succinctly captures the following major challenges to effective implementation of the pre-primary school curriculum: funding, teacher-pupil ratio, supervision, implementation of early childhood curriculum, continuous teacher's professional development, and availability of professionally qualified teachers and caregivers. The County governments in Kenya have the responsibility to manage ECDE programs as dictated in the Constitution of Kenya of 2010 (Odundo, 2018). However, this directive had only enabled a significant increase in provision of classrooms and furniture from its inception from the year 2013 to 2016. Odundo (2018) noted with concern that other areas of infrastructural resources such as; play equipment and facilities, health and sanitation facilities, and facilities for learners with disabilities were inadequate. These inadequacies occasion low educational outcomes.

STATEMENT OF THE PROBLEM

The first few years of a child's life are a particularly sensitive period in the process of their wholesome development. Early childhood lays a strong foundation for cognitive functioning; social, behavioral, and self-

regulatory abilities; and physical health and growth. Yet, many children face various stressors within the school environment during these years that can impair their learning and healthy development. It is acknowledged that the adequacy and effective use of physical resources and instructional materials is pivotal to the facilitation of meaningful teaching and learning, as they enhance learner concentration, motivation and mastery of concepts. At pre-primary school level especially, learning only becomes practical, child-oriented and child-friendly when children constantly interact with a variety of well-selected and relevant learning resources. The inadequacy reduces institutional capability to facilitate and implement curriculum goals and objectives, consequently leading to low learner's educational outcomes, in the short term and in the long term. Mombasa County is an island and urban setting that is characterized with slum dwellings, overcrowding and different categories of socio-economic status. Thus, most public pre-primary schools are characterized with high enrollment and low levels of learner's educational outcomes. Mombasa County was selected because there has been no study on influence of physical resources on learner's educational outcomes in public pre-primary schools.

Purpose of the Study

The purpose of this study was to investigate the influence of physical resources on learners' educational outcomes in public pre-primary schools in Mombasa County, Kenya.

Objective of the Study

To determine influence of physical resources on learner's educational outcomes in public pre-primary schools in Mombasa County, Kenya

Research question

How do physical resources influence on learner's educational outcomes in public-primary schools in Mombasa County, Kenya?

Research hypothesis

H_{01}: There is no significant difference on learner's educational outcomes in Mombasa County when public pre-primary schools are classified as providing adequate or inadequate physical resources.

THEORETICAL FRAMEWORK

The study was premised on Bronfenbrenner's (1997) Theory of Human Development. The theory is anchored on the ecological theory that emphasizes the environmental factors that play a pivotal role in the future development of individuals. The theory provides an opportunity of studying the individual and the environment in which the individual lives, and the outcome relationship between the environment and the individual. Bronfenbrenner (1997) theory therefore adequately explains the environmental learning conditions such as physical resources that enable the child's educational outcomes in a pre-primary school setting. According to this theory, children growth and development is a complex system of inter-relationships that are affected by different levels of the suitable learning environment (Berk, 2006). According to Bronfenbrenner, five ecosystems influence a child's development, these are;

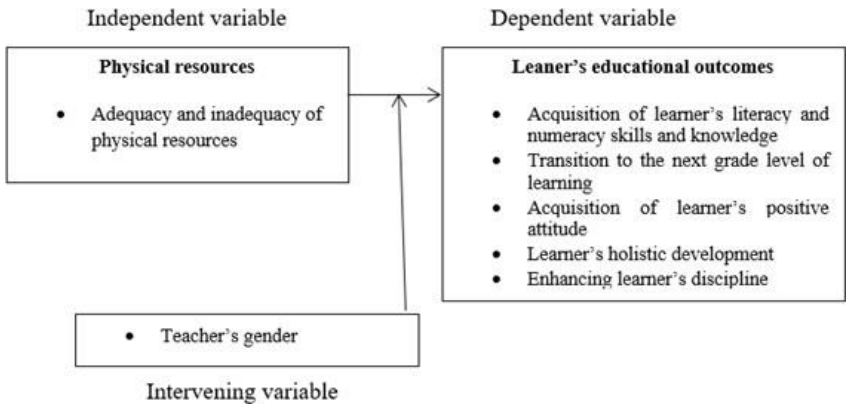
- Microsystems environment that indicates how the child freely interacts with the teachers, classmates, and peers for the growth of character development. In this microsystem, children spend most of their time at pre-school with the teachers, peers, support staff and learning resources through teaching and learning. The children interact with the school learning environment such as school physical resources which includes; classrooms, equipment, furniture, play facilities, instructional materials, water supply,

safety and health facilities and, sharing of meals for acquisition of learner's educational outcomes. In the home environment just as the school environment, the child spends most of the time with the family members for physical, cognitive, social and emotional development which is equally important for public pre-primary school learner's education outcomes.

- Mesosystem is the environment in which the child takes most of his/her time that including the home-school, school-peer, home-peer school-classmates' experiences.
- Exosystem in which the experiences in another setting, in which the child has an inactive role, exert an influence on children and teachers' experience in their immediate setting. For example, the father's/mothers termination of work, the training of teachers and policies.
- Macrosystem comprises the influence from the broader perspective of the cultural setting that the individual lives in. This includes the beliefs, norms, socioeconomic status, ethnicity, and values of the society.
- Chronosystem is the socio-historical experiences in which the individual lives grows and develops. In this ecosystem, the child's experiences may contrast with the past and present. These include; digital advancement, urban and rural life, literacy levels of parents, and finally, boy and girl child education. Focusing majorly on the microsystem level of Bronfenbrenner's (1997) Theory of Human Development, this study focused on the school environment that enhance provision of adequate physical resources that support pre-primary school learner's educational outcomes in Mombasa County, Kenya.

Conceptual Framework

The conceptual framework indicates that when learning resources are readily available and adequate, teaching and learning results in learner's educational outcomes. The learner's educational outcomes are: acquisition of learner's literacy and numeracy skills and knowledge, acquisition of positive attitude, holistic development, discipline and transition to the next level of learning. However, teacher's gender may influence learner's educational outcomes either positively or negatively. In this study, teacher's gender was controlled for by being included in the findings of the study.



RESEARCH METHODOLOGY

The study employed mixed methods research design. According to Kothari (2011) mixed methods research design aims to gather precise and valuable information from a wide scope of respondents concerning the present status, and draws pertinent conclusions obtained from the gathered information. The design was applied to generate data on the present variables of the study by combining both quantitative and qualitative explanatory information about the phenomenon of the study. The use of both qualitative and quantitative methods enables triangulations, credibility and generalization of the results rather than using a single data point that tends to be biased.

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The target population was 97 head teachers, 388 teachers and 7 Sub County Early Childhood Education (ECE) supervisors from which a sample of 78 head teachers, 116 teachers and 7 ECE supervisors were selected (See Table 1.1). Head teachers were selected because they are the administrative custodians of public pre-primary schools.

Table 1.1: Sampling frame

County	Sub County	Head teachers	ECDE teachers	ECDE supervisors	Total
Mombasa	Kisauni	19	33	2	54
	Mvita	17	27	1	45
	Likoni	15	23	1	39
	Nyali	10	13	1	24
	Jomvu	7	7	1	15
	Changamwe	10	13	1	24
Total		78	116	7	201

Pre-primary teachers were identified because they execute the day-to-day implementation of the Early Childhood Development Education curriculum. Head teachers were selected because they host and are in-charge of administrative and management roles of the public pre-primary schools in their area of jurisdiction. The ECE supervisors were selected because they play an advisory and policy formulation role that pertains to the Early Childhood Education in the County. Stratified sampling technique was employed to select sample head teachers and teachers from the six Sub Counties in Mombasa County. Consequently, simple random sampling technique was used to select the final sample size of head teachers and teachers from each of the six Sub Counties of Mombasa County. Purposive sampling technique was used to select the seven Early Childhood Education supervisors because of their minimal representation and their vital and rich-information about the phenomenon of the study. Therefore, a final sample of 78 head teachers, 116 teachers, and 7 ECE Sub County supervisors was selected from a target population of 97 head teachers, 388 teachers, and 7 Sub County ECE supervisors.

Questionnaire for the head teachers and teachers, interview guide for the ECE supervisors and an observation guide were the three instruments used to gather data. The use of the three tools facilitated triangulation to enhance credibility of the findings. The pilot study was conducted in two public pre-primary schools that were excluded from the final study. The pilot study respondents were; 2 head teachers, 4 teachers and 1 Early Childhood Education supervisor from the neighbouring Kilifi County that had similar characteristics to those of Mombasa County. The pilot study allowed the researcher to identify and refine the flaws in the study tools before the actual study. The instruments were also subjected to peer and expert reviews.

The test-retest technique was applied to test for instruments reliability. Pearson correlation was applied run to determine the extent to which the tools were consistent in eliciting similar test results after between the two administrations. The reliability test yielded a coefficient of 0.76 for head teacher's questionnaire and 0.78 for the teacher's questionnaire. According to Orodho (2009) an instruments' reliability coefficient of 0.7 and above is deemed appropriate for the actual use of data collection and analysis.

Instrument return rate and respondent profile

The instrument return rate was 69% for head teachers, and 84% for teachers (See Table 1.2). Mugenda and

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Mugenda (2003) consider a response rate of 50% is good, above 60% is very good and above 70% is excellent. Thus the response rate for all tools was good and considered appropriate for analysis and meaningful generalization. This is indicated in Table 1.2.

Table 1.2: Respondents return rate

Respondents	Sample size	Number returned	Percentage
Head teachers	78	54	69
Teachers	116	98	84
Total	194	152	

The relatively high response rate was achieved because the researcher personally administered the instruments and observed the ethical issues of the study. From the instruments return rate, the gender of respondents was indicated as shown in Table 1.3.

Table 1.3: Respondents Gender

Respondents	ECE supervisors		Teachers		Head teachers	
	frequency	percentage	frequency	percentage	frequency	percentage
Female	2	40%	93	95%	20	38%
Male	3	60%	5	5%	33	62%
Total	5	100%	98	100%	53	100%

As indicated in the table 98 (93 females and 5 males) teachers, 53 (20 females and 33 males) head teachers was sample used for the final study. Consequently, 5 (2 females and 3 males) Early Childhood Education supervisors was used for the final study. It can be deduced from the finding that the Early Childhood Education supervisors and primary school head teachers were gender sensitive. This is consistence with the Kenyan 2010 constitution which stipulates that employment opportunities should be two-thirds of either gender. However, the study established that a majority of public pre-primary teachers were female gender. This could be attributed to a negative attitude from male teachers who view teaching of pre-primary learners as degrading and a female professionalism.

FINDINGS AND DISCUSSIONS

Head teachers (n=54) and teachers (n=98) provided their responses on adequacy of physical resources in their public pre-primary schools. This is indicated in Table 1.4.

Table 1.4: Adequacy of physical resources

Items	Respondents	A	FA	IN	Mean	Std. dev.
		%	%	%		
Adequate, well-finished and spacious classrooms	Head teachers	20.8	32.1	47.2	1.7358	0.78816
	Teachers	21.5	45.8	32.6	1.8878	0.73052
Presence of a wide, clear and visible blackboard	Head teachers	35.8	20.8	43.4	1.9245	0.89548
	Teachers	31.6	63.9	4.4	2.2755	0.53304

Adequacy of storage facilities for learning materials and facilities	Head teachers	26.4	22.6	50.9	1.7547	0.85273
	Teachers	17.5	62	20.5	1.9694	0.61684
Availability of ventilations in the classrooms	Head teachers	35.8	15.1	49.1	1.8679	0.92065
	Teachers	14.5	14.4	71.1	1.4286	0.73218
Availability of desks, tables and chairs for the learners	Head teachers	18.9	15.1	66	1.5283	0.79913
	Teachers	17.5	70	12.5	2.051	0.54437
Adequacy of instructional materials	Head teachers	30.2	24.5	45.3	1.8491	0.86372
	Teachers	13.5	59.9	26.6	1.8673	0.61991
Adequacy of playground, play equipment and other recreational facilities	Head teachers	7.5	5.7	86.8	1.2075	0.56699
	Teachers	13.4	68	18.6	1.949	0.56299
Availability of Information Communication Technology devices for instructional process	Head teachers	3.8	5.7	90.6	1.1321	0.44018
	Teachers	2.3	14.5	83.2	1.1837	0.439
Toilet facility	Head teachers	22.2	11.1	66.7	1.5281	0.78811
	Teachers	18.4	8.2	73.4	1.3363	0.72381
Water supply	Head teachers	33.3	7.4	59.3	1.7234	0.83164
	Teachers	34.7	5.1	60.2	1.3976	0.77562
Safety and health facilities	Head teachers	18.4	1.8	79.8	1.0953	0.4165
	Teachers	15.3	1	83.7	1.1887	0.43891

A=Adequate (3), FA = Fairly Adequate (2) and IN= Inadequate (1).

It is deduced from the finding that a high percentage of head teacher 47.2 and mean 1.7358 agree that most of the classrooms in their schools are not spacious enough. On contrary, a large percentage of the teachers 45.8 and mean of 1.8878 opined that most classrooms in their schools are fairly spacious. Furthermore, it was observed that most classrooms in schools were inadequate and tiny to accommodate the high enrollment of children. This was against the Ministry of Works guidelines of a standard classroom measurement of 27 feet long and 25 feet wide. A further interview from the Sub County ECDE supervisors revealed that only a minimal number of classrooms that were constructed by the county government of Mombasa had the correct Ministry of works measurement policy guidelines. One of the ECE supervisors had this to say, " *Most schools have inadequate classrooms that are not spacious enough to accommodate the high enrollment as a result of free and compulsory education in public pre-primary schools. The county government has not sufficiently constructed adequate and spacious classrooms due to insufficient funds, (ECE supervisor, 5").*

These tiny classrooms lead to overcrowding of learners in the classrooms. It was observed that most of these classrooms didn't have fitted ceiling boards, walls lacked plaster, had cracked floors, walls were not painted and some either lacked fixed shutters or didn't have them at all. This implies that most public pre-primary schools in Mombasa County do not have adequate, well-furnished and spacious classrooms for realization of the learner's educational outcomes. Most of these classrooms are not spacious enough because they were constructed in dis-regard to public works requirements for the class size of 27 feet long by 24 feet wide. The finding is supported by Suleman and Hussain (2014) who averred that the inadequacy of physical resources has a negative influence on learner's educational outcomes. In the same vein, Suleman and

Hussain (2014) argued that although the inadequacy of physical resources results in learner's educational outcomes, it may however not be a guarantee to to learner's educational outcomes. The finding is consistence with Mbugua, et al. (2012) who opined that the performance of mathematics activity is affected by overcrowding in the classrooms. Similarly, Kiptum (2018) concurs by noting that availability of the physical facility in public primary schools, the school learning environment, and the overall arrangement of the classroom influence teacher's work satisfaction to enable pupils' educational performance.

From the finding that head teachers established that most of their public did not have wide, clear and visible blackboards as indicated by a percentage of 43.4 and mean of 1.9245. Similarly, majority teachers affirmed a fairly adequate of wide, clear and visible blackboards as indicated by a percentage of 63.9 and men of 2.2755. An observation conducted by the researcher depicted the availability of sufficient chalk walls in the classrooms. The chalks were strategically placed within the pupils' central point of view. The availability of a chalk wall is a key child friendly school initiative that enables easy visibility, teacher explanation and demonstration, and pupils' acquisition of writing and reading skills of the concepts being learned. The finding is consistent with those of Sitati, Mwangi, Bota and Rapongo (2016) and Onyara (2013) who averred that a majority of pre-primary schools and secondary schools had insufficient permanent physical infrastructure such as blackboards for effective implementation of the Early Childhood Education and secondary curriculum respectively. The finding is also in line with Kimeu, Tanui and Ronoh (2015) who affirms that student's performance is dependent on the availability of on chalk wall and chalk.

Slightly above half of head teachers provided response of their schools having inadequate storage facilities for instructional materials and facilities for effective learning as shown by a percentage of 50.9 and mean of 1.7547. Additionally, three-fifth 62.0 and mean 1.9694 of public pre-primary school teachers also confirmed a fairly adequate existence of the facility. Besides, the study also established that most storage facility were mere cartons, open tables and floors that are used for storage of text books, exercise books, play equipment and other teaching aids. Moreover, ECE supervisor 3 also stated that most of the pre-primary school teachers sought their own alternative means of storing teaching and learning facilities. Storage facility is pivotal for the safety, cleanliness and durability of the teaching and learning materials and facilities needed for the implementation of the ECE curriculum and acquisition of learner's educational outcomes. Suleman and Hussain (2014) support this view by noting importance of storage facilities for safe keeping of instructional materials needed for effective implementation of learners' acquisition of mathematics competencies. The finding was also consistent with Kithungu (2019) who assert that availability of learning facilities and equipment are determining factors influencing learner's active participation and achievement of holistic de development.

On flip flop, half 49.1% (mean 1.8679) of head teachers and seven-tenths 71.1%, mean= 1.4286, of pre-primary school teachers noted that their schools had inadequate ventilation facility in their classrooms. Further, the study noted less than half of the public pre-primary classrooms did not have this facility. One of the ECE supervisors supported this sentiment by noting *"Most classroom conditions were not very comfortable for the learning environment. For example, the ventilation system is missing in most classrooms, ECE supervisor 4".* This shows how learners are exposed to sweat that deters effective concentration during teaching and learning hence, low learner's educational outcomes. This condition is prevalent because Mombasa County is an island that experience hot and warm climatic condition.

Still, large percentage head teachers (66%) with a mean of 1.5283 and standard deviation of .79913 and 70% of teachers with a mean of 2.0510 and a standard deviation of .54437 indicated an inadequate provision of desks, tables, and chairs in the classrooms. Almost all the ECDE supervisors also held the view that most pre-primary schools have inadequate furniture facilities. A further observation by the researcher showed limited availability of furniture in the classrooms. An interview conducted between the researcher and most ECDE supervisors revealed inadequate furniture in the classrooms as a result of budgetary constraints

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experienced by the county government to provide this facility. A lack of appropriate sitting arrangements in public pre-primary schools results in pupils experiencing difficulty in writing, seating on the floor, dirty clothing, and learning while standing which affects their physical growth and development. This indicates that most public pre-primary schools in Mombasa County do not have an environment that is child friendly school initiatives to realize learners' educational outcomes. This finding is in line with those conducted in Nigeria, which noted inadequate learning resources such as furniture is a limiting factor to child friendly school initiatives to learners' educational outcomes in most public pre-primary schools (Osho, Okolie & Onifade, 2013; Okewole, Iluezi-Ogbedu & Osinowo, 2015; Amali, Bello & Okafor, 2012; Viatonu, Usman-Abdulqadri & Dagunduro, 2011). Similar findings were echoed by Obuchere (2011) who asserts that the physical facilities and instructional materials are ingredients in the learning environment in early childhood development education centres.

On adequacy of instructional materials, a large percentage 45.3 of head teacher, mean=1.8491 and standard deviation = .86372, noted its inadequacy in their schools. In fact, 59.9% of teachers with a mean= 1.8673 and standard for the implementation of early childhood education deviation .61991, of the public pre-primary had a contrary opinion that their schools had fairly adequate instructional materials. Through observation during the course of the study, it was observed that in addition to the reported teaching aides, teachers also used improvised instructional materials when conducting their lessons. In the present study, it was in fact observed that most public pre-primary school's teachers heavily depended on using text books when teaching; they made very limited use of supplementary materials that are key to pupils' understanding and concept formation. The finding was consistent with one of the ECE supervisor who said *"A large number of our pre-primary schools lack adequate text books, pictures, charts and other related reference materials for early childhood education".* An instructional material is a perquisite for learner's educational outcomes. It ensures facilitation of the learning process through active learner participation, experimentation, demonstration, illustration and retention of the content learnt during learning process. This sentiment is similar to Gogoi (2015) and Dhakal (2017) who assert that most secondary schools in India have limited instructional materials and ICT devices that hampers effective acquisition of educational outcomes.

The findings sharply contrast those of UNESCO (2005) which established that in Mozambique, Malawi, Zambia, Uganda, and Tanzania more than 50% of primary class six learners could not access a single text book on the shelf for effective classroom learning. The contrast is attributable to the recent initiative of the Kenyan Government to have a 1:1 student to textbook ratio in schools. The report by more than 80% of teachers in this study that books were in adequate supply is an attestation to the implementation of this initiative by the Kenyan Government. The finding is in line with that of Teygong, Kapkiai and Oduor (2017) in Chepkorio Division in Kenya, who established that the most commonly applied teaching aids were rated as follows: textbooks (82.6%), other reference materials (48.9%), charts and maps (29.3%), shapes and geometry aides (20.7%), pictures (18.5%), models and realia (12.0%) and lastly radio (9.8%).

The present study findings further support those of Makori and Onderi (2014) whose results established the inadequacy of reference materials in Kenya. In the present study, it was in fact observed that most public pre-primary school's teachers heavily depended on using text books when teaching; they made very limited use of supplementary materials that are equally important to learners understanding and concept formation. This finding was corroborated by ECDE Supervisor 3 that: *"Teachers in ECDE centres tend to use curriculum text books with little focus on other reference materials that could excite, motivate and sustain learner attention during the learning process*".

Over-reliance on textbooks denies pupils exposure to other use of instructional materials for learning. This study supports the conclusions from a large body of studies that indicated that the use of instructional materials should be varied, culturally relevant, developmentally appropriate, and linked to learning goals

(Gakii, 2015; Prince Edward Island Department of Education, 2008). This study agrees with Teygong et al. (2017) who made it clear that the use of a variety of resources inspires confidence in learners and creates room for competition. Further, Bishop (1995) in Teygong et al. (2017) asserts that with a variety of resources, schools can produce learners who are intellectually alert, who are able to explore, and who benefit from what their immediate environment offers them.

It should be noted that a large percentage 86.8 and mean 1.2075 of head teachers indicated that most pre-primary schools had inadequate playground, play equipment and other recreation facilities. Moreover, another percentage 68.0 and mean= 1.9490 of pre-primary teachers alluded inadequate play grounds, play equipment and recreational facilities. Yet, another ECE supervisor 3 also noted lack of outdoor facilities to facilitate effective learner's educational outcomes in public pre-primary schools. The study identified less than 10% of public pre-primary schools with playgrounds but none with other recreation facilities. Most of the pre-primary school play grounds were sandy, rough and uncomfortable for learners use. It should however be noted that playgrounds, play equipment and other recreation facilities are considered important because they focus on holistic development and identification and nurturing of children talents.

From the findings, an overwhelmingly large percentage 86.8% of head teachers and (68%) of the teachers responded that public pre-primary school play grounds were inadequate. The survey showed that in most of these pre-primary schools, the play grounds were owned by the host public pre-primary schools. As was observed by the researcher, in some circumstances, pblic preprimary school learners had to use the fields at the same time with the older children which limited their expression and further posed physical danger of injury. In other cases, they had to forfeit their physical education lessons to give way to their older counterparts. It was only in schools where the timetable was well synchronized between public pre-primary and primary school that the lessons would take off. A Sub County ECDE supervisor had this to say: *"Public pre-primary schools do not own the play fields they use. This always interferes with implementation of the primary curriculum", ECDE supervisor 5.*

This implies that pre-primary children had only limited access to the play grounds. Osuji (2016) asserts that physical resources such as play fields create a stimulating learning environment for achievement of pupils' educational outcomes. Further, Amadi and Ezeugo (2019) and Mumbi (2017) acknowledge the need for teachers and students to have an appropriate learning environment that is child friendly that encompasses play grounds and health safety for the acquisition of pupils' educational outcomes.

It can be seen from the finding only less than 10%, mean 1.1321 of public pre-primary school head teachers assert adequate and fairly adequate existence of ICT devices in schools. Apart from supply of electricity in schools, the finding showed minimal existence and use of ICT learning. Furthermore, the entire ECE supervisors noted use of ICT devices in private owned pre-primary schools in contrast to public pre-primary schools. The use of ICT in learning is crucial in strengthening blended learning that incorporates online learning and face-to face pedagogy to actualize the learning process. Use of ICT in learning makes learning real, motivating, exciting, increase children concentration and follow-up activities during teaching and learning process. The finding agrees with those of Dhakal (2017) and Gogoi (2015) whose study confirmed that most secondary schools in India have limited access and use of ICT in learning.

As shown in Table 1.4, 66.7 of the public pre-primary school head teacher and 73.4% of the public pre-primary school teachers, opined that the toilet facilities were inadequate. The study further established that 60% of public pre-primary schools had a pupil: latrine ratio of higher than the proportion recommended by The World Health Organization and Kenya's Ministry of Education of 1:25 for girls and 1:30 for boys. A physical observation by the study indicated that most public pre-primary school learners in the sampled schools had to share toilets with the primary school learners as the public pre-primary school classes are hosted within the public primary schools. One of the Early Childhood Development Education supervisors said: *"Most ECDE learners do not have toilets. The infrastructural development from the County government of Mombasa is limited and therefore only a few centres have the facility (ECDE Supervisor, 2)."*

The public pre-primary school learner's thus lacked adequate space, privacy and appropriate aperture for suited for young children. The essence of the inadequacy of toilet facilities in public pre-primary schools denotes overcrowding which is a health hazard to the pupils. It also implies that toilets would need very frequent cleaning and adequate clean water which has already been shown to be lacking in a previous finding of this study. From the foregoing, it can be noted that on this indicator, the majority of public pre-primary schools in Mombasa County do not have a supportive environment that supports learner's educational outcomes. The study findings are in concurrence with those of Chepkonga (2017) who affirmed that inadequate infrastructural facilities, that include toilets, affect the provision of quality education for pre-primary school learners. The finding is in agreement with that of Hammond (2019) who opined importance of play activities on children social, emotional, physical and cognitive development.

Further findings of this study presented in Table 1.4 show that 59.3% of head teachers and 60.2% of teachers reported that public pre-primary schools had inadequate clean and drinking water supply. The differences in the percentage opinions may be due to the differing roles played by teachers and head teachers; the head's responsibilities such as managing feeding programs and project execution may make them rate the need for water as a higher priority than teachers. It emerged from the survey that though some public pre-primary schools had piped water and boreholes, most of them experienced problems with maintenance, dry pipes, and poor drainage. One of the ECDE supervisor 5, noted that almost all the public pre-primary schools depends on their host primary schools for supply of clean drinking water.

According to UNICEF (2010), it is important for the health of school children that they have clean water to drink, enough water to use for hygiene, and adequate sanitation facilities. UNICEF (2010) continued to note that children's behavioural patterns are distinctively different from adults; these patterns place them at risk of exposure to environmental threats that adults may not face. For instance, these risk tendencies include placing fingers and other objects in the mouth and not washing hands before eating.

Schools need water for drinking, washing up, cleaning utensils, and cleaning toilets and classrooms, for children's safety and hygiene. Inadequate water supply, especially in an urban setup like Mombasa County, is evidence of a learning environment that does not support child friendly activities. With the tropical heat of Mombasa County, lack of water to clean up and refresh after rigorous activities for children could be one of the reasons why teachers would limit the activities of children that supports learner's educational outcomes. In an impromptu visit during a study of 62 schools in Kenya, Alexander et al. (2014) found that 25% had no hand washing water in their toilet facilities, 23% of the schools reported that they never had water on the school premises.

This study also revealed that most public pre-primary schools lacked adequate safety equipment and health facilities. This was reported by 79.8% of head teachers and 83.6% of teachers. Most ECDE supervisors reported inadequate availability of safety and health facilities in public pre-primary schools. None of the schools had a health unit or health practitioner on the institution. It further emerged from the physical classroom observation that a very marginal number of the sampled public pre-primary schools had first aid kits. The kit is important for emergency treatment of burns, cuts, bites, shock and sickness, before help can be sought from a health facility. Lack of health facility affects learner's educational outcomes due to low parental socio-economic status and health complications that lead to absenteeism and unavailability of this facility to traeat minor ailments that easily be overcome at school.

According to the World Food Programme (2014), children lack the experience to judge risks associated with their behaviours, and thus commonly find themselves injured from handling dangerous objects, and other risks such as jumping and climbing on unstable structures. Thus, for most public pre-primary schools, quick action in case of emergency is limited by the lack of care kits.

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The survey sought responses from the respondents about learner's educational outcomes that emanate from adequate physical resources. The responses were based on a 3-point Likert scale of agree (3), neutral (2) and disagree (1). This is shown in Table 1.5.

Table 1.5: Physical resources and learner's educational outcomes

Item	Respondents	Agree	Neutral	Disagree
Adequacy of physical resources results in learner's smooth transition to the next grade level of learning	Head teachers	44 (81.5%)	6 (11.1%)	4 (7.4%)
	Teachers	75 (76.5%)	13 (13.3%)	10 (10.2%)
Adequacy of physical resources results in learner's cognitive, physical, social and emotional development during learning	Head teachers	47 (87.0%)	4 (7.4%)	3 (5.6%)
	Teachers	86 (87.8%)	8 (8.2%)	4 (4.1%)
Adequacy of physical resources results in learner's acquisition of positive attitude in learning	Head teachers	46 (85.2%)	3 (5.6%)	5 (9.3%)
	Teachers	86 (87.8%	9 (9.2%)	3 (3.1%)
Adequacy of physical resources results in learner's acquisition of literacy and numeracyskills and knowledge during learning	Head teachers	50 (92.6%)	3 (5.6%)	1 (1.9%)
	Teachers	89 (90.1%)	5 (5.1%)	4 (4.1%)
Adequacy of physical resources results in enhancing learner's discipline during learningprocess	Head teachers	44 (81.5%)	2 (3.7%)	8 (14.8%)
	Teachers	71 (72.4%)	12 (12.2%)	15 (15.3%)

Findings from the study presented in Table 1.5 show that majority of head teachers and teachers respondents were in agreement that adequacy of physical resources results in leaner's; smooth transition to the next grade level of learning, holistic development (cognitive, physical, social and emotional), acquisition of positive attitudes, acquisition of literacy and numeracy skills and knowledge and enhance discipline during learning process. The findings are reflective of achievement of key milestones of quality learner's educational outcomes for public pre-primary schools in Mombasa County, especially with the very high enrollment, low levels of absenteeism and high transition rates. However, the foregoing findings on inadequacy of learning resources and physical facilities point to the manifest possibility of increasing efficiency in learning and enriching the schooling experience for pre-primary pupils. Hammond (2019) states importance of play activities on children social, emotional, physical and cognitive development. According to Department for International Development (DFID, 2007), teacher characteristic, availability and adequacy of physical resources are ingredients to effective learning and students' educational outcomes. Further, the Organization for Economic Co-operation and Development ([OECD], (2007) Programme for International Student Assessment (PISA) note that inadequate and unavailability of learning resources is a

hindrance to effective instructional processes and students acquisition of educational outcomes.

Influence of physical resources on educational outcomes

The study sought to find out whether there was a significant difference between adequacy of physical resources and pupils' educational outcomes in public pre-primary schools. This was intended to answer the study hypothesis that:

H_{01}: There is no significant difference on learner's educational outcomes in Mombasa County when public pre-primary schools are classified as providing adequate or inadequate physical resources.

Adequacy of physical resources was computed to get two categories: schools with adequate resources and those with inadequate resources. A t-test was run to establish whether there was a significant difference on learner's educational outcomes when schools have adequate or inadequate physical resources. To achieve this, public primary school head teachers and public pre-primary school teachers were requested to rate their responses on the level of adequacy of physical resources. For each school, the pupils' educational outcomes (acquisition of positive attitude, acquisition of literacy and numeracy skills and knowledge, transition to the next grade level of learning, holistic development and enhancement of discipline) were computed into one continuous variable. The study differentiated the means for educational outcomes of the two groups (schools with adequate physical resources and schools with inadequate physical resources), to find out whether the two means were statistically different. The results are indicated in Table 1.6.

Table 1.6: Physical resources and pupils' educational outcomes

Physical resources	Mean	Std. Deviation	Std. Error Mean
Adequate	1.967	.180	.006
Inadequate	1.902	.298	.012

Table 1.6 shows that the mean for pupils' educational outcomes for the public pre-primary schools with adequate physical resources was 1.967, and those for public pre-primary schools with inadequate physical resources was 1.902. This implies that there was a positive difference of 0.065 between the two categories of schools. To ascertain whether the means were statistically significant, a t-test of significance was run and the results are as indicated in Table 1.7.

Table 1.7: T-test on physical resources and educational outcomes

	Hartley Test of Equal Variance				t-test for Equality of Means				95% Confidence level of the Difference
								Lower	Upper
	F	Sign	t	dif.	Sig (2-tailed)	Mean dif.	Std. Error dif.		
Equal variances assumed	2.74	0.00	-5.289	1524	.00	-.065	.012	-1227	-07374
Equal variancesnot assumed		0.00	.4.699	820.4	.00	-.065	.014		

From Table 1.7, Hartley's test of equality of variance shows that there was a significant difference in the variances of the two groups; consequently, the t-test value that was interpreted as the value for equal variances was not assumed. It is indicated that t= -5.298 with a p-value of .00 (which is less than alpha level of .05), implying that the means of the two groups were statistically different. Thus, there was a positive and significant difference in achievement of educational outcomes between public pre-primary schools with adequate physical resources than those with inadequate physical resources.

The findings correspond to a study by Christopher (2011) who notes that the adequacy and use of physical resources are pivotal to the facilitation of effective and meaningful teaching and learning, increasing learners' concentration and motivation and mastery of subject concepts. Still, Olaleye (2009) and Okebukola (2000) studies agree with the findings that most schools in Nigeria had inadequate physical resources (such as furniture, spacious classroom, instructional materials, water supply, and health facilities), hygiene, demotivated teachers, and inappropriate methodology.

CONCLUSION

The study concluded that most of the public pre-primary schools in Mombasa County have inadequate physical resources to facilitate implementation of Early Childhood Education for effective acquisition of learner's educational outcomes.

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REFERENCES

1. Adenike, A.A. (2016). Challenges in Implementation of Early Childhood Education in Nigeria: The Way Forward. Journal of Education and Practice Vol.7, No.7, page 33-38.
2. Akungu, J.A. (2014). Influence of teaching and learning resources on students' performance in Kenya Certificate of Secondary Education in Free Day Secondary Education in Embakasi District, Kenya. (Unpublished master's Project), University of Nairobi, Kenya.
3. Alimi, O. S. (2004). Appraisal of the Adequacy of Available School Plant for Primary Education in Ayedaade Local Government Area of Osun State. Educational Thought, 4(1): 64-69.
4. Almon, J. (2013). Risky Play is good play. Play and playground magazine, 8-10.
5. Amadi, E. & Ezeugo, C. R. (2019). Physical Resources Availability and the Academic Performance of Students in the Universal Basic Education Scheme, Rivers State. International Journal of Innovative Development and Policy Studies volume 7, item 1, page 13-23
6. Amali, I. O.O., Bello, M., & Okafor I. P. (2012). An Assessment of Pre-Primary School Programme Activities in Kwara State, Nigeria. Journal of Education and Practice, 3(6), 100-105.
7. Bold, T., Kimenyi, M. S., and Sandefur, J. (2013). Public and private provision of education in Kenya. Journal of African Economies, vol. 22, No. 2 page 39-56.
8. Christopher, J. (2011). Inclusive education and child-friendly schools, Miske: Witt and Associates.
9. Dei, G. J. S. (2013). Schooling and education in Africa, the case of Ghana, Accra: African World Press.

10. Dhakal, K. R. (2017). Availability and utilization of instructional materials in teaching geography in secondary schools, Nepal. Journal of geography, the third pole, 17 (3) :51-58.
11. DFID (2007) in, Bontoux V and Buchan A (2007) Secondary Textbook and School Library Provision in Sub-Saharan Africa: A Review based on 19 National Case Studies World Bank, Washington, USA.
12. Fisher, H. (2012). Progressing towards a model of intrinsic inclusion in a mainstream primary school: a SENCo's experience. International Journal of Inclusive Education, 16(12), 1273–1293.
13. Frazier, L. M. (2002). Deteriorating School Facilities and Student Learning. Eric Digest, Number 82.
14. Gogoi, S. (2015). Importance of teaching materials for young children. International journal of Current research, 7 (9), 20269-20273.
15. Hammond, O. (2019, April 12th). 3 Benefits Of Outdoor Playground Equipment. Retrieved from http://www.3benefitsof.com/3-benefits-of-outdoor-playgroundequipment.
16. Ituaruchiu, S. (2013). Impact of Play Materials on Performance in English Language In Early Childhood Education Centers, Ngong Zone, Kajiado County. University of Nairobi: Unpublished Research project.
17. Jepleting, C.S. (2013). Effect of Classroom Environment on Academic Performance in Mathematics of ECDE Children in Pioneer Zone, Uasin Gishu County, Kenya. MED in ECDE Project, University of Nairobi, Kenya
18. Kimeu, R.M., Tanui, E.A. & Ronoh, A. (2015). Influence of Instructional Resources on Secondary School Students' Academic Performance in Makueni County, Kenya. International Journal of Scientific Research and Innovative Technology Vol. 2 No. 1, page 70-81.
19. Kithungu, E.P. (2019). Determinants of children's engagement in outdoor play: Case of ECD centres in Kwale County, Kenya. (Unpublished, master's thesis), Kenyatta University, Nairobi, Kenya.
20. Kothari C. R. (2011). Research Methodology, Methods and Technology. 2nd Ed. New Age. New Delhi: International Publisher Ltd.
21. Lyons, J. B. (2001). Do school facilities really impact a child's education. CEFPI Brief Issue Trak, page 1–6.
22. Makori, A., and Onderi, H. (2013). An evaluation of secondary school principals' perception of learning resources in free secondary education era in Kenya. African Educational Research Journal, 1(3): 171-182.
23. Mbugua ZK, Kibet K, Muthaa GM & Nkonke GR 2012. Factors Contributing to Students' Poor Performance in Mathematics at Kenya Certificate of Secondary Education in Kenya: A Case of Baringo County, Kenya. American International Journal of Contemporary Research, 2(6):87-91.
24. Mumbi R.R. (2017). Influence of school feeding programme on participation of pupils in public primary schools in Kilome Division, Makueni County, Kenya. (Unpublished, master's thesis), Kenyatta University, Nairobi, Kenya.
25. Nath, S., & Szücs, D. (2014). Construction play and cognitive skills associated with the development of mathematical abilities in 7-year-old children. Learning and Instruction 32, 7380.
26. Odundo, A.M. (2018). Devolution of Early childhood development education in Kenya: Improvements in the status of infrastructural facilities and its influence on enrollment in Siaya County. Journal of Education and Training Volume 5, Number 2 Page 221-245.
27. Okebukola, P. (2000). The child-friendly school as a new dimension in educational development in Lagos State, Nigeria.
28. Okewole, J. O., Iluezi-Ogbedu, V. A., & Osinowo O. A. (2015). An evaluation of the implementation of early childhood education curriculum in Osun State. Journal of Education and Practice, 6(4), 48-54.
29. Okyerefo, M. P. K., Fiaveh, D. Y. and Lamptey, S. N. L. (2011). Factors prompting pupils' academic performance in privately owned junior high school in accra, ghana. International Journal of Sociology and Anthropology, 3(8): 280-89.
30. Olaleye, F.O. (2009) Creating A Friendly School Learning Environment for Nigerian Children. European Scientific Journal vol. 8, (8) page 138-147.
31. Orodho J. A. (200), Elements of Education and Social Science Research Methods. Nairobi:

32. Osho, L. O., Aliyu, N., Okolie, O., & Onifade, O. (2013). Implementation of early childhood education: A case study in Nigeria. Universal Journal of Educational Research 2(2), 119-125.
33. Ostendorf, J. (2001). Indoor Air Pollution Threatens Kids' Health in Schools. United States Environmental Protection Agency, Retrieved from http://www.epa.gov/ Region8/air/iaq/iaq.html.
34. Sarker, M. N. I., Wu, M., and Hossin, M. A. (2019a). Economic effect of school dropout in Bangladesh. International Journal of Information and Education Technology, 9 (2): 136–142.
35. Suleman, Q & Hussain, I. (2014). Effects of Classroom Physical Environment on the Academic Achievement Scores of Secondary School Students in Kohat Division, Pakistan. International Journal of Learning & Development, Volume 4, No 1 page 71-82.
36. UNICEF, (2010). Education of section program, New York: division of community, UN Plaza.
37. Usman, A. (2007). The relevant material resources to the teaching and learning of Arabic and Islamic studies. An encyclopedia of the Arts Vol. 7, item 1, page 47-52.
38. Viatonu, O. A., Usman-Abdulqadri, T. & Dagunduro, O. M. (2011). An Assessment of Implementation Strategies of Integrated Early Childcare and Development (IECD) in Epe Local Government Area of Lagos State. African Research Review, 5(4), 501-510.
39. World Food Program. (2013). School meals. Available at http://www.wfp.org/schools_meals.