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UTILIZATION OF CLASSROOM ENVIRONMENT AND ITS EFFECTS ON ACADEMIC PERFORMANCE IN SUB COUNTY LEVEL SECONDARY SCHOOLS IN UASIN GISHU COUNTY, KENYA

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ABSTRACT

School infrastructure is a key pillar for effective learning process in any educational institution. The purpose of this study was to utilization of classroom environment affect academic performance in Sub County level secondary schools in Uasin Gishu County. This study was guided by Production theory. The study was guided by pragmatism philosophy and adopts descriptive survey research design. The study area was carried out in Uasin Gishu County. The target population of the study was 18960 respondents. Stratified simple random and purposive sampling was employed to select the respondents. The sample size was 530 respondents comprising of 48 principals, 97 teachers, 384 students and a Quality Assurance and Standards Officer The data collection instruments were questionnaire, interview schedules and observation check list. A pilot study was carried out in five public schools in the neighboring Trans Nzoia County to check on the consistence of the instruments. The researcher yielded both quantitative and qualitative data. Quantitative data was analyzed using descriptive statistics that resulted in percentages and frequencies that were represented in tables, pie charts and bar graphs and inferential statistics. Qualitative data was analyzed thematically. Therefore, from the research findings based on the multiple regression models, the coefficient of determination (R squared) of 0.441 showed that 44.1% of the variation in student performance was explained by the utilization of selected school infrastructure. The study found out that the classroom environment influenced academic performance. The study concluded that the more conducive the classroom environment the higher the academic performance. The research recommended that sub county level secondary schools management in Uasin Gishu County should develop infrastructural development initiatives to solve the inadequacy of these facilities and enhance their utilization in the schools. There should be consistent routine supervision of quality of facilities in schools done by the government to ensure that schools are operating with good facilities that would help the learners.

KEY WORDS: *School infrastructure utilization of classroom environment, academic performance*

INTRODUCTION

Countries are constantly facing the ever-changing economic challenges and social transformations due to globalization and technological development. Education helps the countries overcome these challenges by developing knowledge and high skills, allowing better opportunities and faster economic progression (OECD, 2019). In both developed and developing countries, education is a very crucial process through which an individual's life chances are determined (Makori and Onderi, 2013; Sarker et al., 2019a). Educational institutions are mandated to use education as a tool for social transformation and the quality of a school is measured by the quality of grades students produce through academic performance (Biama, 2014). The social and economic development of a country is directly linked to student academic performance. Academic performance is a threshold assessment used to measure a student's ability to meet performance criteria. Grades are used to measure learning or knowledge and attainment of learning objectives and acquisition of skills and competencies (York et al., 2015). They noted that academic failure is not only frustrating to pupils and parents; its effects are equally grave on the society in terms of death of manpower in all spheres of the economy and politics. Farombi (2018) opined that the wealth of a nation or society could determine the quality of education, emphasizing that a society that is wealthy would establish good schools with quality teachers, learning infrastructures, where such students may learn with ease thus bringing about good academic achievement.

Arif (2017) argues that in the US educational system, student advancement is predicated on graded performance in a series of classes. Failing to achieve passing grades has numerous additional implications during secondary school and beyond the school level. Students' academic failure is a major determinant of status attainment and adult well-being. Low-performing students are less likely to graduate from high school and less likely to go to college. This increases high school dropouts, and substantially lower adulthood wages. Globally, in the U.K., research has shown that the physical environment can impact a student's academic progress by 25%. Alternatively, crowded classrooms result in

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lower student achievement with a poorer disposition. Even if educational policy makers focus on the quality of education and the school learning environments, many countries adopted a fragmented or piecemeal approach to investing in their educational infrastructure. In California Queiroz, Sampaio, & Sampaio (2020) reported that classes and comfortable classroom temperature contribute to good opportunities for students to participate fully in discussions.

Further, Ikegbusi, Eziamaka and Iheanacho (2021) asserted that school facilities are needed to develop cognitive areas of knowledge, abilities and skills that are necessary for academic achievement. This problem of poor performance is more pronounced in ill-equipped schools (Ikegbusi, Onwuasoanya & Chigbo-Okeke, 2016). They also pointed out that for effective teaching and learning situation, school facilities and educational goals, should be viewed as being interwoven. School facilities such as buildings are very essential to the academic development of the students. Apart from protecting the pupils from the sun, rain, heat and cold, school building represents learning environment which has great impact on the comfort, safety and performance of the children (Okechukwu & Oboshi, 2021). From the fore going, school facilities play a crucial role in academic achievement of students.

In Tanzania, Yusuph (2019) stated that the student's enrolment has challenged school's infrastructure on implementation of free secondary education policy, as schools require adequate learning infrastructure, including classrooms, desks, tables, toilets, staff houses, and offices. In Tanzania, poor physical infrastructure is a common feature in many public educational institutions. Saga (2014) researched on access and quality challenges facing community secondary schools in Kilolo District Iringa Region in Tanzania. The findings revealed that the challenges facing the heads of schools in community schools include inadequate teaching and learning materials as well as school infrastructure. High academic performance of secondary schools was influenced by the availability of learning resources including teacher and students' ratio.

Similarly, Simiyu (2013), who did a study to determine the factors affecting the academic performance of learners in public secondary institutions of learning in Trans Nzoia West Sub County confirmed that physical resources that influence most good academic performance of students in learning institutions were the existence of a library with the right types and number of books, pertinent textbooks, teachers resources who have had the relevant training, classrooms which are adequate, as the elements that play the most important part in leading to very satisfactory academic performance of students. Mwangi & Obiero (2019) study on factors influencing Academic Performance of learners with physical Handicaps in primary schools in Kapseret Sub County in Uasin Gishu found out that availability of physical facilities and educational resources influence learner's performance highly followed by teachers support and school learning environment.

In Kenya, the Kenya Certificate of Secondary Education (KCSE) examination administered by the Kenya National Examinations Council (KNEC) measures student performance. It is used as the main basis for judging a student's ability and also as a means of selection for educational advancement and employment (Kieti, 2017). The education system in Kenya places a minimum grade C+ which students must obtain before they are admitted to public and private universities (Kigotho, 2012). In the Kenyan context, education is considered a basic need and academic performance is positioned quite high on the national agenda with educators and policy makers putting effort in testing, accountability and other related concerns (Kaimenyi, 2013). From the K.C.S.E 2021 results, released by C.S of education on 23/4/2022 indicate that 831,026 candidates sat for this year examination up from 2020 which was 743,299. The 2021 KCSE results are shown in the table below.

Table 1: Analysis on how the KCSE 2021 Candidates performed nationally

Number of Candidates	Grade attained
1138	A
5973	A-
13463	B+
25045	B
39683	B-
59843	C+
81345	C
99406	C-
116355	D+
145916	D
187264	D-
46151	E

Source: KNEC News (2022)

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From the results the cabinet secretary made the following remarks in Citizen T.V Station

> *"A large number of candidates representing over 50% of students have scored below grade C+ (plus) and thus have not gotten a university entry. A total of 441 candidates saw their exam results withheld because of irregularities''.*
> *(Magoha, 23/04/2022)*

The students' declining performance in KCSE Examination has been a major headache to all stakeholders in the education sector including parents and teachers who are directly involved in the learning process and outcomes. A significant proportion of learners nationally tend to score very low marks and fail to progress to institutions of higher learning hence discontinue from learning. The national development can only be realized in a country if students are able to complete the education cycle from Primary, Secondary to institutions of higher learning.

Chepkonga (2017), who asserts that there is scarcity of school infrastructure in secondary schools in Kenya and found that most secondary schools lack school infrastructure and that schools were running out of adequate learning facilities which influenced the quality of education. Also, Gichu, Kabaara and Njagi (2017) research on challenges faced by head teachers in public schools in Kenya and found out that heads of schools with poor and unsatisfactory infrastructure affected the implementation and improvement of academic performance in their schools. Students from marginalized and deprived backgrounds and socio-economically marginalised sections of the society may not even afford books and required reference materials. Such facilities in a school give them a chance to perform better in examinations (Maina, 2017).

STATEMENT OF THE PROBLEM

The Government of Kenya introduced Free Primary Education policy in 2003 and many pupils were enrolled in primary schools; in 2003 about 1.3 million pupils were enrolled in the program me. Further in 2008 the introduction of Free Day Secondary Education led to increased enrolment in public secondary schools in Kenya. Despite this most of the sub county level schools have not increased the development of physical infrastructure needed to cope with increased enrolment to enhance quality of education and academic performance in National Examinations. The government introduced 100% transition policy in 2018 in a joint effort that involved the ministry of Education and interior and has sustained it amid some hitches. This policy has registered an impressive progress so far, with a reported rate to secondary schools standing at 98% after a recent mop out. Education cabinet secretary added that parents' attitudes and poverty has been a major hindrance to the remaining uptake of 20% but emphasized that the government has accounted for all students in its bid to ensure 100% transition and he was quoted making the following remarks in Citizen digital news.

> *''Out of the 1,179,192 Candidates that sat the 2020 KCPE Examination, 1,171,265 have been placed in Secondary Schools, this is after excluding inmates, overage and candidates from refugee Camps. We have therefore placed all Candidates in Secondary Schools in keeping with our 100% transition policy from primary to secondary Education''.*
> (*George Magoha, 15/6/2021)*

FPE, FDSE and 100% transition policies has increased enrolment in secondary schools constraining the physical infrastructure such as; classroom, laboratories, utilities, boarding facilities among other. This has led to poor utilization of physical facilities which in turn affect academic performance of students in National Examination K.C.P.E and K.C.S.E especially those in sub county level secondary schools in the country. Sub County Schools in Kenya form the lowest cadre of secondary schools; these schools come after National, Extra County and County schools respectively. From studies done in primary and secondary schools to establish how infrastructure affects overall performance of students, it was clear that performance is influenced by many factors which include; home and school based factors, parental level of education and income and physical facilities among others. One of the assumptions of this study was that schools in Uasin Gishu County had adequate infrastructure, but the problem was the poor academic performance, hence the researcher conceived utilization of the selected infrastructure on academic performance. Therefore, this study was to investigate the utilization of selected infrastructure and its effects on academic performance in Sub County level secondary schools in Kenya. A case of Uasin Gishu County.

PURPOSE OF THE STUDY

The purpose of this study was to investigate how utilization of classroom environment and how it affects academic performance in Sub County level secondary schools in Uasin Gishu County, Kenya.

METHODS

This study adopted descriptive survey research design. The study was conducted in Uasin Gishu County. The study targeted sub county schools in Uasin Gishu County. The researcher used purposive sampling to select Quality Assurance and Standard Officers. Uasin Gishu County was stratified into six sub counties with each of them forming a stratum. From each stratum, simple random sampling was used to select Sub County level secondary schools and principals, while teachers and students were selected as respondents using purposive sampling. From each stratum, simple random sampling was used to select 48 Sub County level secondary schools and 48 principals, as respondents. From the target population of 162 Sub County level secondary schools, 30% was used to select 48 principals and 10% was used select 97 teachers from a target population of 972 TSC teachers. According to Pandey and Pandey (2021), 10% to 30% of the target population forms a representative sample for descriptive study; hence, the researcher took 30% as the upper limit. From the target

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population of 17820 students, the following formula is recommended in social science to determine the sample size (Mgenda & Mgenda 2003).

$$n = \frac{Z^2pq}{d^2}$$

Where n=the desired sample size (if the target population is greater than 10,000)

Z= standard normal deviate at required confidence level.

P=the proportion in the target population estimated to have characteristics being measured

Q=1-p

D= the level of statistical significance set.

Therefore, if no estimate available of the proportion in the target population with the characteristics of interest,50% should be used. Z- statistic is 1.96, accuracy at the.05 level hence sample size is;

N= (1.96)"(.50)(.50)/(.50)=384

Therefore, the sample size for students is 384 and table below shows the sample sizes of principals, teachers, students and SCQASO.

Table 2: Sample Size

Description	Population	%	Sample size
Principals	162	30	48
Teachers	972	10	97
Students	17820	-	384
SCQASO	6	30	1
Total	**18960**		**530**

Source: (Author, 2022)

Questionnaire was the major tools of collecting data from the principals, teachers and students. The interview schedules were used to collect data from Board of Management (BOM) Secretary and QASOs on policy guiding establishment and development of school infrastructure, adequacy and challenges of establishing school facilities. The researcher observed classroom environment. The study yielded both qualitative and quantitative data, and was analyzed using thematic analysis and descriptive and inferential statistics respectively. The quantitative data gave percentages and frequencies that were represented in statistical tables, pie charts and bar graphs. Inferential statistics showed whether there was any relationship between dependent and independent variables in the study.

REVIEW OF THE RELATED LITERATURE

Classroom environment has a positive impact on students' academic achievement, as by provision of physical facilities like furniture, electric supply, painted walls, drinking water, models, charts, overhead projector and other ICT related instructional material, students take much interest in classroom activities which help them to get high marks in examinations (Kausar, Kiyani & Suleman, 2017). Provision of physical facilities to schools like well-equipped library, clean drinking water, well-furnished classroom, laboratory with related appliances are the main factors which play vital role for better teaching and uplifting students' learning (Omae, et al., 2017).

Classroom environment contained on proper lighting system, bright atmosphere, use of ICT instructional technologies, cupboards and shelves, electric power supply, air coolers or ceiling fans, audio-visual aids in classrooms play active role in improving students' achievement. Whereas, un-conducive classroom environment consists on small classroom size, in-appropriate ventilations, high classroom temperature, lack of ICT instructional teaching aids, in-appropriate desks, improper seating arrangements, lack of fresh air and overcrowded classrooms prove negative impact on students' performance (Umar, 2017).

The literature review results revealed that the classroom environment is a significant determinant for students' academic performance and also their musculoskeletal discomfort. While we consider educational activities or environments, ergonomics is a key science not only to remove undesired design features from the environment or equipment but also to enhance the educational experience (Zunjic et al., 2015). For evaluating the physical environment of the classroom, several studies have analysed students' physical environment, such as lighting, classroom size, and technology (Ramli, Ahmad, and Masri, 2013; Yang, Becerik-Gerber, and Mino, 2013; Widiastuti, Susilo, and Nurfinaputri, 2020). Widiastuti et al., (2020) stated that the greatest influence on the learning comfort of students comes from the physical conditions in the classroom. The number of green buildings and their implementation in school environments as an alternative to conventional buildings is growing rapidly (Liu and Wang, 2022).

In the global arena, in the United Kingdom (UK) Halder and Argyropoulous (2019) did a study that investigated the impact of school physical environment in the provision of quality secondary school education in the United Kingdom. The study revealed that most classrooms in the UK schools lacked decency. The schools also lacked adequate space, ventilations and heat insulation. This study also reported that urinals and incinerators were inconveniently located, making the schools' plant be in poor conditions. These numerous shortcomings created significant gaps in the consistency of the learning environments, resulting in non-attainment of goals and expectations of public secondary schools. The study had highlighted many adverse effects of physical environment in the provision of quality education in the UK. Therefore, the shortcomings had translated to secondary students' underachievement. This study revealed the status of public schools' physical learning environment in the UK to be in dilapidated situations. In other words, majority of the schools

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were inadequately equipped to provide quality education to the UK secondary school students. Although UK is a developed world, the study findings have revealed that the public-school physical learning environment was in bad state and required stakeholder attention.

Queiroz, Sampaio, & Sampaio's (2020) research, as supported by Akoto-Baako (2018), reported that smaller classes and comfortable classroom temperature contribute to good opportunities for students to participate fully in discussions, thus reducing indiscipline cases and thereby enhancing better performance. It is opposite to schools which have sub-standard buildings. Although this initiative is similar to the done study, the researcher aimed to find out the influence of classroom environment among other facilities, on students' academic performance in public sub county schools in Uasin Gishu County.

In the East African region, Namusisi, (2015), in Uganda conducted a research study whose findings showed that well-designed classrooms increased learning progress in reading, writing and Math by 16%. The learning environment is an arena that exerts greater influence on learner performance. This happens more especially when co-curricular activities, teaching techniques and appropriate relationships were provided, developed, maintained and are well-coordinated. Lyimo, Too and Kipng'etich (2017), in Tanzania investigated the Perception of teachers on availability of instructional materials and physical facilities in secondary schools of Arusha District, Tanzania. This study investigated on teachers' perception on availability of instructional materials and physical facilities in secondary schools of Arusha district, Tanzania, and the study concludes that there was inadequate number of textbooks, reference books, maps and globes in schools under investigation due to increase of students in Community Schools. Further, schools have inadequate physical facilities such as classrooms, desks, chairs and the available classrooms are poorly constructed with inadequate spacing. Researchers recommend that Curriculum developers at Tanzania Institute of Education together with policy makers should come up with a policy guideline that would enhance provision of instructional materials and physical facilities.

In Kenya Osundwa (2016) explained that the school learning environment was a composition of physical, social, academic and cultural environments that have greater influences on students' learning and academic achievements. In Makueni County, Kitonyi (2013) investigated the Influence of Learning Environment on Pupil Academic Performance in Kenya Certificate of Primary Education in Kaiti Division, Makueni County. The study revealed that different learning environments contributed to poor performance in the schools in the area and necessitated the need to investigate on the school and home environment affecting the academic results in KCPE.

RESULTS AND DISCUSSIONS

The objective of the study was to determine how classroom environment affect students' performance in Sub County public secondary schools in Uasin Gishu County. This was achieved by obtaining the views of the teachers, students and principals on the status of classroom environment.

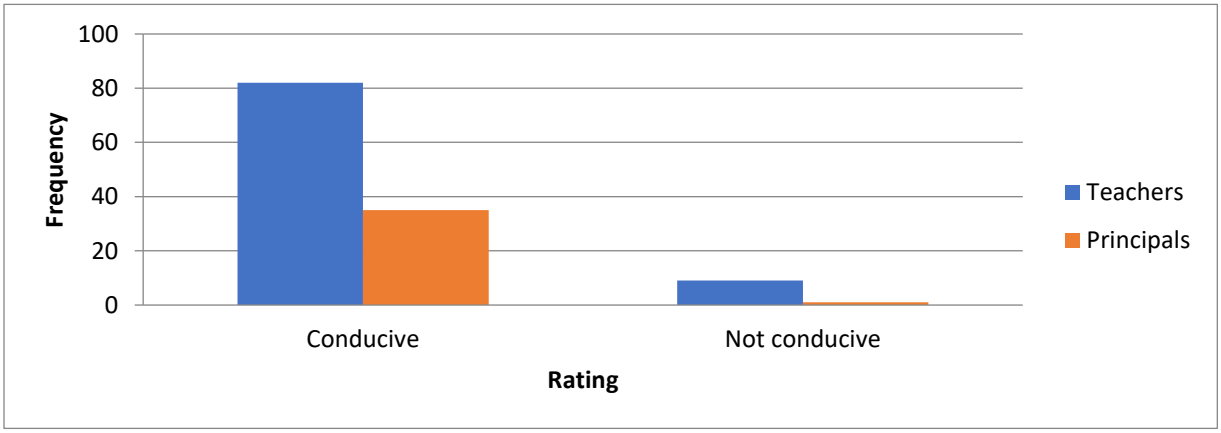

Figure 1 Classrooms located in a conducive environment

Majority 82 (91%) of the teachers and 35(97.2%) agreed that the classrooms were located in a conducive environment. However, 8 (9%) of the teachers and 1 (2.8%) principal disagreed that they were not located in a conducive environment as shown in Figure 1. This showed that majority of the schools had classrooms located in a conducive environment. This agrees with Suleman & Hussain (2014) that conducive classroom environment comprises various components like room size, lighting, temperature, walls, ventilation, whiteboards, mats, seats, floor, PCs and other material prove fruitful effects on students' learning. Further agrees with Umar (2017) that, un-conducive classroom environment consists on small classroom size, in-appropriate ventilations, high classroom temperature, lack of ICT instructional teaching aids, in-appropriate desks, improper seating arrangements, lack of fresh air and overcrowded classrooms prove negative impact on students' performance.

Physical layout of learning facilities

The students were requested to rate the various aspects of physical layout of learning facilities in their school and the responses are summarized in Table 3.

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Table 3: Physical layout of learning facilities

	Fairly placed		Not placed well		Fairly placed		Not sure	
	F	%	F	%	F	%	F	%
Classroom	21	13.5	23	14.8	94	60.6	17	11.0
Library	9	5.8	46	29.7	64	41.3	36	23.2
Computer facilities	6	3.9	38	24.5	27	17.4	84	54.2
Playground	14	9.0	42	27.1	68	43.9	31	20.0

Most of the students 43.9% rated the playground to be fairly placed, as well as classroom 60.6% and library at 41.3%. The students were not sure on the computer facilities at 54.2%. This implies that the physical layouts of learning facilities in sub county level secondary schools were fairly placed except computers. This agrees with Koroye (2016), that the school physical environment consists of physical infrastructures and facilities which include school building, classrooms, furniture, equipment, instructional materials, laboratories, libraries, playground, among others.

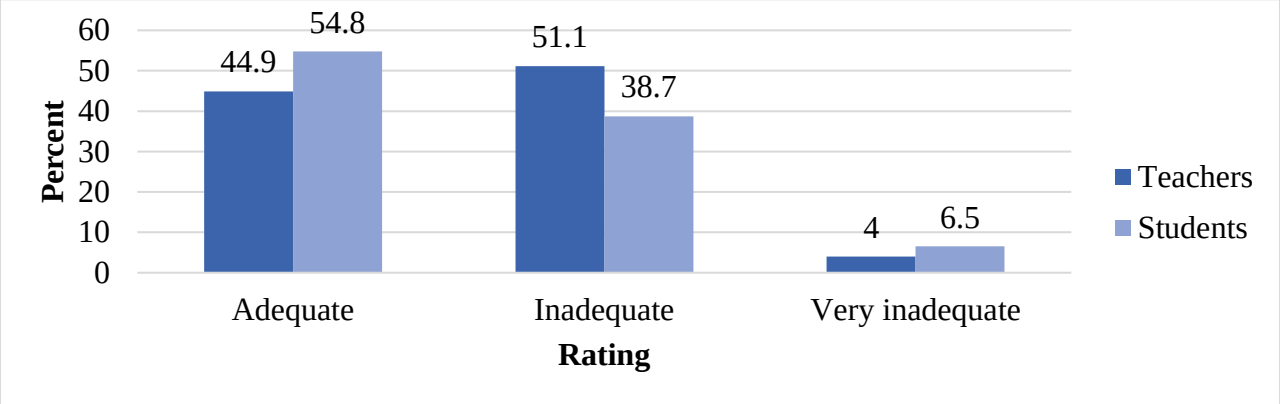

Figure 2: Rating the spacing of learners' lockers and chairs

Majority of the teachers (61.1%) and 45.2% students rated the spacing of lockers to be inadequate, with 44.9% teachers and 54.8% rating them to be adequate as shown in Figure 2. Most of the students rated the spacing of learners' lockers to be adequate. This implies that the spacing of learners' lockers and chairs in class or school in public sub county schools in Uasin Gishu County was adequate. In consideration of the crucial role that school infrastructure plays in achieving the desired learning outcomes, the increase in number of student results in the need for additional resources: materials, informational resources, physical resources, and total textbooks per student. This agrees with the World Bank (2016) that the enrolment of secondary schools increases from year to year. This increase, which is not proportionate to improvement of school infrastructure to accommodate the increasing numbers, leads to overcrowding in the classrooms where one class has more than 74 students.

Frequency of repairs and maintenance

The principals were requested to rate how frequent do they carry out repair and maintenance of classrooms, Library, Computer/ICT, and Playground facilities in their school.

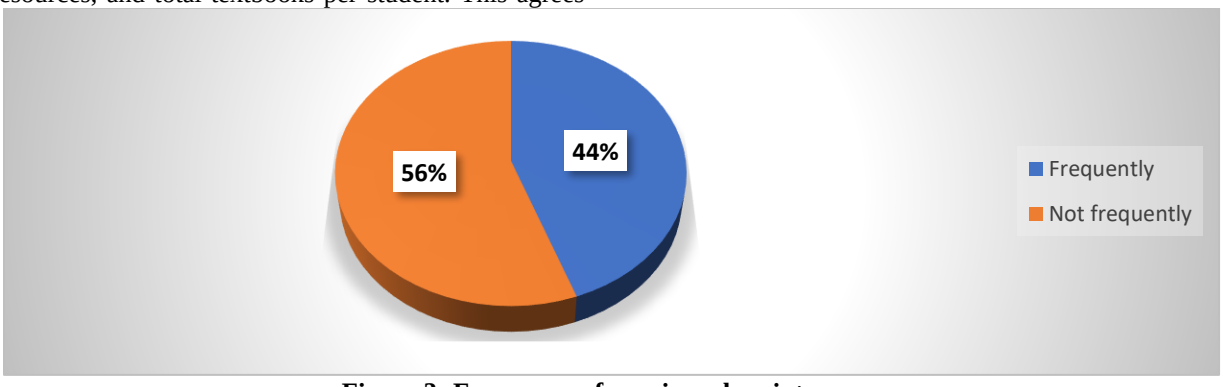

Figure 3: Frequency of repair and maintenance

Results show that most of the principals 56% do not frequently repair the infrastructure facilities and only 44% do repair as shown in Figure 3. This implies that the repair and maintenance of classrooms, Library, Computer/ICT, and Playground facilities in Sub County public secondary schools in Uasin Gishu County was not done frequently. The Ministry of Education in Kenya has

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come up with Safety Standards Manual for Schools in Kenya (MoEST, 2015). Classroom should be properly lit and ventilated, floor should be level and clean always and for cemented floors any cracks should be repaired in good time. The researcher's observation was different because some of the classrooms had cracks,' pot-holes' and the overall paint cannot be distinguished since it has never been repainted since construction in most Sub County level secondary schools in Uasin Gishu County.

Rating Learning facilities in relation to students' academic performance

The principals were requested to rate the various learning facilities in relation to students' academic performance and the responses are summarized in Table 4.

Table 4: Learning facilities in relation to students' academic performance

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	F	%	F	%	F	%	F	%	F	%
Classroom	1	2.8	-	-	6	16.7	15	41.7	14	38.9
Library	6	16.7	2	5.6	3	8.3	9	25.0	16	44.4
Computer/ICT	6	16.7	2	5.6	7	19.4	8	22.2	13	36.1
Playground	4	11.1	2	5.6	7	19.4	14	38.9	9	25.0

Most of the principals agreed that class room environment (80.6%, library services (69.4%), computer/ICT (58.3%) and playground (63.9%) affect students' academic performance as shown in Table 4. This implies that all the infrastructure facilities in public sub county schools affected students' academic performance. This finding agrees with Awan (2018) that school facilities like school buildings, electricity, natural/artificial lighting and ventilation in classrooms, drinking water, wash rooms and playground were the main attributes to improve students' learning.

Descriptive Results on Classroom Environment

The study sought to determine how classroom environment affect students' performance in sub-county level secondary Schools in Uasin Gishu County. A total of 7 statements were used to establish the teacher's views on status of classroom environment and their responses elicited on a 5-point likert scale, shown in Table 5.

Table 5: Descriptive Results on Classroom environment

	Strongly disagree		***Disagree***		***Undecided***		***Agree***		***Strongly agree***		***Mean***	***SD***
	F	%	F	%	F	%	F	%	F	%		
The shape and size of classrooms and availability of educational materials, change the way through which students participate in school instruction.	3	3.3	2	2.2	14	15.6	44	48.9	27	30.0	4.00	0.92
The state of the classroom when in good condition will support the continuity of learning.	2	2.2	1	1.1	8	8.9	45	50.0	34	37.8	4.20	0.82
The arrangement of classroom environment plays a significant role in enabling instructional process	2	2.2	2	2.2	7	7.8	44	48.9	35	38.9	4.20	0.85
The classrooms have sufficient space and have the convenience for students to move and work.	3	3.3	10	11.1	21	23.3	37	41.1	19	21.1	3.66	1.04
The classrooms have convenient seating arrangements suitable for activity-based learning	3	3.3	2	2.2	14	15.6	45	50.0	26	28.9	3.99	0.92
The classrooms have sufficient light and ventilation	1	1.1	2	2.2	15	16.7	52	57.8	20	22.2	3.98	0.76
Size of the class is according to ministry of education recommendations	4	4.4	3	3.3	16	17.8	43	47.8	24	26.7	3.89	0.99
Mean											3.99	0.58

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On the shape and size of classrooms and availability of educational materials, change the way through which students participate in school instruction. Majority of the teachers 48.9% agreed and 30% strongly agreed with 15.6% undecided and 5.5% disagreed as indicated by a mean of (M=4.0; SD=0.92). Most of the teachers 50% agreed and 37.8% strongly agreed with 8.9% undecided and 3.3% disagreed that the state of the classroom when in good condition would support the continuity of learning as indicated by a mean of (M=4.20; SD=0.82). On the arrangement of classroom environment playing a significant role in enabling instructional process, majority of the teachers 48.9% agreed and 38.9% strongly agreed with 7.8% undecided and 4.4% disagreed as indicated by a mean of (M=4.20; SD=0.85).

On the statement that the classrooms have convenient seating arrangements suitable for activity-based learning majority of the teachers 50% agreed and 28.9% strongly agreed with 15.6% undecided and 5.5% disagreed as indicated by a mean of (M=3.99; SD=0.92). Most of the teachers 41.1% agreed and 21.1% strongly agreed with 23.3% undecided and 14.4% disagreed that the classrooms have sufficient space and have the convenience for students to move and work as indicated by a mean of (M=3.66; SD=1.04). On the size of the class was according to ministry of education recommendations, majority of the teachers 47.8% agreed and 26.7% strongly agreed with 17.8% undecided and 7.7% disagreed as indicated by a mean of (M=3.89; SD=0.99). Most of the teachers 57.8% agreed and 22.2% strongly agreed with 16.7% undecided and 3.3% disagreed that the state of the classrooms have sufficient light and ventilation as indicated by a mean of (M=3.98; SD=0.76).

From the findings of the study, the 7 statements used to explain the classroom environment had an overall mean of 3.99 and a standard deviation of 0.58. These shows that majority of the teachers agreed on the statements explaining classroom environment. On the status of classroom environment teachers agreed that the shape and size of classrooms and availability of educational materials, change the way through which students participate in school instruction. The state of the classroom when in good condition supported the continuity of learning. The arrangement of classroom environment played a significant role in enabling instructional process. The classrooms had convenient seating arrangements suitable for activity-based learning and sufficient space, convenience for students to move and work. The size of the class built was according to Ministry of Education recommendations. The state of the classrooms had sufficient light and ventilation.

The findings of the study revealed that the teachers from sub-county level secondary schools agreed that: adequate furniture (chairs, desks, boards) in classrooms makes the students feel comfortable for learning, observing considerable class size ratio enhances students focus and attention in learning activities, availability of spacious and well-ventilated classrooms keeps the environment conducive for effective learning among others have influence on students' academic performance. The findings of this agrees with Namusis (2015), whose study showed that well-designed classrooms increased learning progress in reading and writing Maths by 16%.

Students' performance in Sub County public secondary schools in Uasin Gishu County

The study sought to determine students' performance in Sub County public secondary schools in Uasin Gishu County. A total of 10 statements were used to establish the teacher's views on students' performance and their responses elicited on a 5-point likert scale, shown in Table 4.

Table 4: Students' performance

	Strongly disagree		*Disagree*		*Undecided*		*Agree*		*Strongly Agree*		*Mean*	*SD*
	F	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**		
Classroom arrangement, seating positions and space management, in general, has a more significant impact on the students' level of understanding, and consequently, their academic performance,	3	3.3	4	4.4	16	17.8	39	43.3	28	31.1	3.94	0.99
Classroom arrangement affects the core of teaching and learning – communication			6	6.7	15	16.7	50	55.6	19	21.1	3.91	0.80
Students grades improve when they are involved in extracurricular activities.	2	2.2	5	5.6	13	14.4	42	46.7	28	31.1	3.99	0.94
Participation in extracurricular activities has a positive effect on academic performance among students	2	2.2	5	5.6	13	14.4	40	44.4	30	33.3	4.01	0.95

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Participation in athletics improve academic performance,	3	3.3	12	13.3	24	26.7	34	37.8	17	18.9	3.56	1.05
Participation in musical performance improve academic performance among the student	4	4.4	12	13.3	29	32.2	34	37.8	11	12.2	3.40	1.01
There were improved grades by students	3	3.3	10	11.1	24	26.7	38	42.2	15	16.7	3.58	1.01
There is improved students' termly scores	3	3.3	10	11.1	27	30.0	36	40.0	14	15.6	3.53	1.00
There is improved class participation	1	1.1	7	7.8	20	22.2	49	54.4	13	14.4	3.73	0.85
There is improved scores in class assignments by students	2	2.2	8	8.9	19	21.1	47	52.2	14	15.6	3.70	0.92
Mean											**3.74**	**0.65**

On the statement that classroom arrangement, seating positions and space management, in general, has a more significant impact on the students' level of understanding, and consequently, their academic performance as shown in the Table 4.9 below. 74.4% agreed, with 17.8% undecided and 7.7% disagreed as indicated by a mean of (M=3.94; SD=.99). Most of the teachers 76.7% agreed, with 16.7% undecided and 6.7% disagreed that classroom arrangement affects the core of teaching and learning – communication as indicated by a mean of (M=3.91; SD=.80). The student's grades improve when they are involved in extracurricular activities, majority of the teachers 77.8% agreed, with 14.4% undecided and 7.8% disagreed as indicated by a mean of (M=3.99; SD=.94). Most of the teachers 77.7% agreed, with 14.4% undecided and 7.8% disagreed that participation in extracurricular activities has a positive effect on academic performance among students as indicated by a mean of (M=4.01; SD=0.95).

On the statement that participation in athletics improve academic performance, majority of the teachers 56.7% agreed, with 26.7% undecided and 16.6% disagreed as indicated by a mean of (M=3.56; SD=1.05). On participation in musical performance improve academic performance among the student, majority of the teachers 50% agreed, with 32.2% undecided and 17.7% disagreed as indicated by a mean of (M=3.40; SD=1.01). On the statement that there were improved grades by student's majority 58.9% agreed, with 26.7% undecided and 14.4% disagreed as indicated by a mean of (M=3.58; SD=1.01).

Most of the teachers 55.6% agreed, with 30% undecided and 14.4% disagreed that there was improved students' termly scores as indicated by a mean of (M=3.53; SD=1.00). There was improved class participation, since majority of the teachers 68.8% agreed, with 22.2% undecided and 8.9% disagreed as indicated by a mean of (M=3.73; SD=.85). Most of the teachers 67.8% agreed, with 21.1% undecided and 11.1% disagreed that participation in extracurricular activities has a positive effect on academic performance among students as indicated by a mean of (M=3.7; SD=0.92). From the findings of the study, the 10 statements used to explain the students' performance had an overall mean of 3.74 and a standard deviation of 0.65. These shows that majority of the teachers agreed on the statements explaining students' performance in Sub County public secondary schools. The classroom arrangement, seating positions and space management, had significant impact on the students' level of understanding, and consequently, their academic performance. The classroom arrangement affected the core of teaching and learning – communication.

The student's grades had improved due to involved in extracurricular activities. The participation in extracurricular activities had a positive effect on academic performance among students. The participation in athletics improves academic performance. There were improved grades and students' termly scores and class participation. This finding agrees with Qamar et al., (2018) that conducive classroom environment helps both teachers to teach effectively and students to learn with ease and perform better academically. Use of proper available teaching and learning resources in classrooms enhances learning outcomes of students.

Overall influence of infrastructure facilities on student academic performance

The students were requested to rate the overall influence of infrastructure facilities on their academic performance of the school and the responses are summarized in Table 5.

Table 5: Overall influence of infrastructure facilities on student academic performance

	Low		Very low		Average		High		Very high	
Facilities	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**
Learning facilities (classroom)	20	12.9	17	11.0	70	45.2	38	24.5	10	6.5
Library facilities	60	38.7	41	26.5	35	22.5	13	8.4	6	3.9
Computer facilities	100	64.5	18	11.6	23	14.8	6	3.9	8	5.2
Playground infrastructure	44	28.4	40	25.8	59	38.1	10	6.5	2	1.3

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Most of the students 45.2% rated the learning facilities (classroom) to averagely influence the school academic performance, with 31% having high and 23.9% low effect. The library facilities (66.2%), computer facilities (76.1%) and playground (54.2%) were rated to have low effect on academic performance. This implies that the library facilities, computer facilities and playground in public secondary sub county schools had low overall influence on academic performance. Suleman & Hussain, (2014) found that various components like room size, lighting, temperature, walls, ventilation, whiteboards, mats, seats, floor, PCs and other material prove fruitful effects on students' learning. It has positive impacts on improving students' learning. Ikegbusi, Eziamaka and Iheanacho (2021) in support of the study, explained that a good school building structure, location, safety, accommodation, classrooms and furniture affect learning and have influence on pupils' academic achievement.

Correlation Analysis between classroom environment and academic performance

The correlation analysis was conducted to determine the relationship between variables. Correlation results of the study showed that there was a significant positive and average relationship between classroom environment and student performance (r= 0.426, p =0.000).

Table 6: Correlation Analysis between classroom environment and academic performance

		Student Performance	Classroom environment
Student Performance	Pearson Correlation	1	.426**
	Sig. (2-tailed)		.000
Classroom environment	Pearson Correlation	.426**	1
	Sig. (2-tailed)	.000	

**. Correlation is significant at the 0.01 level (2-tailed).

b. Listwise N=90

The adequate/good infrastructure or facilities and good school management contributed to good performance in these secondary schools. This result had also been established by Duruji (2014) and Madiba (2016) whose studies revealed that physical structure in a learning environment influence pupils' and students' academic achievement in such school. These findings resonate with conclusion by Olufemi and Olufemi (2018) that student's related factors, parental background, school factors as well as teachers' factors have serious influence on students' academic performance.

Regression analysis on classroom environment and student performance

A linear regression model explored the effect of classroom environment on student performance. The R^2 represented the measure of variability in student performance that classroom environment accounted for. From the model, $R^2 = 0.182$ shows that classroom environment accounted for 18.2% variation in student performance. The classroom environment predictor used in the model captured the variation in the student performance. The adjusted R square of 0.172 depicts that the classroom environment explained the variation in student performance by 17.2%.

Table 7: Model Summary on classroom environment and Student performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.426[a]	.182	.172	.58801

a. Predictors: (Constant), classroom environment

Analysis of Variance on classroom environment and Student performance

The study used Analysis of variance to check whether the model could forecast the result better than the mean. The regression model that used classroom environment as a predictor was important (F=19.55, p value =0.000), indicating that classroom environment has a substantial impact on student performance.

Table 8: Classroom environment and Student Performance Analysis of Variance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	6.760	1	6.760	19.551	.000[b]
	Residual	30.426	88	.346		
	Total	37.186	89			

a. Dependent Variable: Student Performance

b. Predictors: (Constant), classroom environment

Classroom environment and Student Performance Coefficients

In addition, the study generated β coefficients in order to test the hypothesis under study. The β-value for classroom environment had a positive coefficient, depicting positive influence on student performance as summarized in the model as:

$Y = 1.873+0.465X_1 + \varepsilon$ …… Equation 4.1

Where: Y = Student performance, X = classroom environment, ε = error term.

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Table 9: Classroom environment and Student Performance Coefficients

Model		*Unstandardized Coefficients*		*Standardized Coefficients*	*T*	*Sig.*
		B	Std. Error	Beta		
1	(Constant)	1.873	.426		4.399	.000
	Classroom environment	.465	.105	.426	4.422	.000

a. Dependent Variable: Student Performance

The study had hypothesized that there was no significant relationship between classroom environments on student performance. From the findings classroom environment had significant influence on student performance (β=0.465 and p =0.000). Therefore, an increase in classroom environment leads to an increase in student performance. The study therefore rejected the null hypothesis. The findings showed that an improvement in classroom environment led to an increase in student performance. The study was in agreement with the earlier findings of Okechukwu and Oboshi (2021) who explained that overcrowded classrooms have negative impact on pupils' academic achievement and negatively affects the delivery of instruction as teachers find it difficult to measure pupils' level of achievement in overcrowded classrooms.

Conclusion

The study found out that for students' efficient and effective academic performance in a school learning environment to be realized, there should be the proper provision of quality infrastructure. The researcher found classrooms had a significant influence on academic performance in Sub- County level secondary schools in Uasin Gishu County. However, from the linear regression model, $R^2 = 0.182$, indicating that classroom environment accounted for 18.2% variation in student performance. From the finding's classroom environment had significant influence on student performance (β=0.465 and p =0.000). An increase in classroom environment leads to an increase in student performance.

Recommendations

The research recommended that sub county level secondary school management in Uasin Gishu County should develop infrastructural development initiatives to solve the inadequacy of the facilities in their schools. There should be consistent routine supervision of quality of facilities in schools done by the government to ensure that schools are operating with good facilities that would help them better results. The school board of management together with Public works department should ensure that classrooms are spacious enough to enable teachers and students to move freely during lessons and other learning activities.

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