



International Journal of Social and Development Concerns

ISSN 2524-1478 (Online)

Vol. 27 | Post COVID-19 Recovery and
Sustainable development

Vol. 27 Article 12 | September 5, 2025

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(An International Publisher for Academic and Scientific Resources)

Influence of Physical Resources on Academic Outcomes in Imenti South Sub-County, Meru County, Kenya

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Cite as: Gitonga, F. K., Koros, P., & Mwaniki, C. N. (2025). Influence of Physical Resources on Academic Outcomes in Imenti South Sub-County, Meru County, Kenya. *International Journal of Social and Development Concerns*, 27(12), 152–168.
<https://doi.org/10.5281/zenodo.17060727>

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Abstract: The study aimed at investigating influence of physical resources on academic outcomes in Imenti South sub-county, Meru County, Kenya. This study was guided by two research questions: How do availability of adequate classrooms impact on academic performance in public secondary schools in Imenti South Sub County, Meru County, Kenya? How does lack of laboratory influence academic outcomes in Imenti South Sub County, Meru County, Kenya? The study was grounded in the Education Production Function Theory by Dewey, Husted, and Kenny. A mixed research method was employed, specifically using a convergent design to gather both quantitative and qualitative data. The target population included 71 schools in Imenti South Sub County: 14 boys' boarding schools, 16 girls' boarding schools, and 41 mixed day schools, along with 639 heads of department and 71 principals. Both probability and non-probability sampling methods were applied, focusing on 189 heads of department and 21 principals. Data from heads of department were collected using questionnaires, while interviews were conducted with principals. Quantitative data was analyzed using descriptive statistics, with findings presented in percentages, tables and graphs. Qualitative data was analyzed through content analysis, and results were presented in thematic categories. The study findings revealed that insufficient facilities such as classroom and laboratories negatively influenced poor academic performance. The study recommended that the government through Ministry of Education should ensure that schools had these valuable facilities if at all good academic results were to be achieved in Kenyan schools. In addition, principals should actively engage with relevant authorities when additional facilities were required.

Keywords: Physical Resources, Academic outcomes, Educational Facilities, Academic Performance

1.1 Background to the Study

Education serves as an investment that fosters the development of both individuals and society, and is recognized globally as a fundamental human right. According to Naisiano et al. (2020), education lays the foundation for progress, providing the essential groundwork for the development of our social and economic well-being. In any civilization, formal education continues to be the main tool for social, political, technological, and economic mobilization. Exam results through proper team work can

significantly impact learners' academic performance hence growth of a nation's human resources (Wang, C., Xiao, A., & Zhou, Y. 2024).). Education's main goal is to prepare people for the workforce by passing on knowledge, skills, attitudes, and cultural norms to the next generation. Globally, countries are on the run to investment in education in order facilitate improved learners' academic performance (Hammond, 2020).

The United Nations noted enough teachers, textbooks, classrooms, laboratories, computers, chairs and desks are critical teaching and learning resources that determines how students perform in the examinations. A report by U.S.A Department of education (2019) in a study conducted in Florida, revealed that provision of enough resources that are required in the classroom coupled with maximum utilization of the resources by teachers goes a long way in the improvement of learners' academic achievement.

In Iran A review of the literature by Vakili et al. 2024, on overcrowded classrooms: difficulties, repercussions, and cooperative solutions for teachers was conducted in Iran. The study's objectives were to investigate how crowded classrooms affect both teachers' and students' performance and learning outcomes, assess the difficulties that these environments present for both parties, and suggest methods that help teachers deal with the difficulties that come with big class sizes. To find pertinent research up to June 2024, the study conducted a review using internet databases such as PubMed, Web of Science, Scopus, CIVILICA, and Google Scholar. The findings showed that both teachers and students suffer when classrooms are overcrowded. According to the study's findings, packed classrooms pose serious problems that impair both student learning and the efficacy of instruction. Because of this, teachers are less able to offer individualized instruction, which lowers academic attainment and causes disengagement. Evidence-based tactics including technology integration, improved teacher preparation, and cooperative learning frameworks must be used.

A report by UNESCO (2014) asserts that poor quality education remains endemic in developing countries. In Africa, Chepkonga (2017) observed that schools have inadequate physical facilities which impacts negatively on the academic performance of learners. For instance, lack of enough classes and furniture result into crowded classrooms which limit the concentration of the learners hence affecting the retention capacity that is manifested in poor academic performance. It is for the essential nature of textbooks and good textbooks at that UNESCO, the World Bank and research insights recommend that student-to-textbook ratios range from 1:1.

In Nigeria a recommendation by Bamson et al. (2024) asserts that physical resources such as library, classroom and information and communication technology tools should be adequately provided to enhance utilization towards better academic performance among students in the study area. Assoumpta et.al (2020), observed that the availability of libraries can help learners improve their study habits by providing support from well-staffed and well-stocked school libraries. In addition, having a large collection of books and ICT tools can help students develop their reading skills. Students must feel comfortable around teaching and learning resources in order to interact productively with the materials. Not only that, but students require the assistance of librarians, who can offer and direct them to both manual and electronic resources. The study shows that the presence of well-equipped libraries and library personnel promotes learning habits and improves students' study skills hence improved academic performance.

In 2003, the Kenyan government introduced free primary education (FPE) and later extended it to Free Day Secondary Education (FDSE) in 2008 to increase access to basic education. Additionally, funding for secondary schools through the Constituency Development Fund (CDF) has been aimed at improving teaching resources and infrastructure, contributing to better academic outcomes in national exams. The expansion of national secondary schools also intends to boost student performance. The Kenyan education system is structured into eight years of primary education followed by four years of secondary education. After completing secondary school, students take the Kenya Certificate of Secondary Education (KCSE) examination, which varies by school and year. Several studies have examined the factors influencing KCSE academic outcomes. For example, Wambua, Murungi, and Mutwiri (2018) discovered that the availability of physical resources, such as libraries, playgrounds, and classroom environments, contributed positively to students' performance in social studies in Makueni County, Kenya. The research also highlighted a strong link between the quality of school facilities and teaching methods that foster collaborative learning, resulting in students sharing common goals.

Instructional materials play a significant role in shifting from teacher-centered to student-centered learning environments. Research indicates that schools equipped with sufficient resources outperform those lacking such materials. Kariuki and Ogeta (2019) explored how the availability and use of textbooks affected academic progress in public day secondary schools. The study emphasized the importance of having adequate textbooks for the successful implementation of educational programs. The findings of the study of Mutuku et. al 2021, led to the conclusion that improving the sections of the school infrastructure that are given priority would most likely increase the performance efficiency of the various forms of human resource management in the delivery of improved academic performance in the schools.

Mogaka (2020), research suggested that libraries should be installed in all public day secondary schools and that teachers should get in-service training on how to make effective use of the resources that are available to them so that they may better serve their students. More information was generated for the Ministry of Education and education policy makers as a result of this research, which also contributed to the policy of secondary schools on the allocation and usage of resources. Performance in national exams is often seen as a key determinant for future educational and employment opportunities. Research across various counties has indicated that factors such as teaching resources, physical infrastructure, staff quality, and leadership influence academic performance (Wambua, Murungi, and Mutwiri, 2018; Mogaka, Kariuki, and Ogeta, 2019; Ngugi, 2019; Wanjala and Baariu, 2019). In Meru County, academic performance has been poor since 2016. Kilemi (2020) identified cultural practices, such as chewing miraa (khat), early marriages, and economic activities like miraa farming, as contributors to poor academic outcomes in Tigania, Meru. In contrast, Bagine (2022) in Imenti North sub-county, Meru County, attributed low academic performance to inadequate school infrastructure and ineffective management strategies by principals

1.2 Statement of the Problem

The expansion of access to basic education in Kenya has seen the introduction of initiatives like free primary education and Free Day Secondary Education. Additionally, the government has invested in secondary schools through the Constituency Development Fund, aimed at improving school operations and enhancing academic performance (KIPPRA, 2010). Despite these efforts, academic performance in the Kenya Certificate of Secondary Education (KCSE) remains a concern in Meru County, particularly

in Imenti South Sub County, where public secondary schools continue to underperform. This persistent issue has prompted stakeholders and the broader Imenti South Sub County community to question the root causes affecting the education sector. To address the challenge of low academic performance in public secondary schools, it is essential to closely examine the physical facilities contributing to this trend. Thus, the researcher sought to explore the role these physical facilities play in shaping academic outcomes in Imenti South Sub County. Several studies have highlighted the impact of physical resources on academic outcomes (Ngeno 2025, Mogaka 2020, Mutuku et.al 2021). Although some research has addressed factors influencing school-level performance, no study has specifically focused on how physical resources correlate with the academic performance of students in public secondary schools in Imenti South Sub County. This gap in the literature forms the basis for the current study, which aims to investigate the influence of physical resources affecting the academic performance of learners in Imenti South Sub County, Meru County, Kenya.

1.3 Research Questions

The study was guided by two research questions:

- i. How do availability of adequate classrooms impact on academic performance in public secondary schools in Imenti South Sub County, Meru County, Kenya?
- ii. How does lack of laboratory influence academic outcomes in Imenti South Sub County, Meru County, Kenya?

1.4 Theoretical Framework

The research was grounded in Dewey, Husted, and Kenny's Education Production Function Theory (1998), which explores the relationship between educational resources and student outcomes. This theory focuses on the economics of education, particularly the role of physical and educational facilities. It posits that different inputs can be substituted to produce the same educational results. The education production function is commonly represented as $A = F(X)$, where A denotes the outcome of the educational activity, and X refers to the inputs. Studies by Callan and Santerre (1990) and Nelson and Hevert (1992) support this idea, showing that the substitutability of educational inputs such as teachers, facilities, resources, and student performance is limited. The hypothesis underscores the ongoing nature of academic achievement, even when assessed at specific points in time. This theory is relevant to the research, as it links various school-based resources, including human, physical, and curriculum-related factors, to student success. The study employed this framework to identify the school-related factors influencing academic performance in the Kenya Certificate of Secondary Education (KCSE) in public secondary schools. The Education Production Function theory provides essential guidelines for key education stakeholders, including the ministry of education, school administrators, and managers, on establishing new educational institutions. These guidelines encompass the need for sufficient land, resources, and qualified teaching staff, among other factors. At its core, the education production function aims to assist policymakers, economists, and educators in analyzing the connection between educational resources (inputs) and student performance (outputs). A key aspect of the theory is the emphasis on efficiency optimizing the use of inputs to achieve desired educational results (Distance Learning Institute, 2024).

1.5 Review of Related Literature

A review of the literature on overcrowded classrooms: difficulties, repercussions, and cooperative solutions for teachers was conducted in Iran. The study's objectives were to investigate how crowded

classrooms affect both teachers' and students' performance and learning outcomes, assess the difficulties that these environments present for both parties, and suggest methods that help teachers deal with the difficulties that come with big class sizes. To find pertinent research up to June 2024, the study conducted a review using internet databases such as PubMed, Web of Science, Scopus, CIVILICA, and Google Scholar. The findings showed that both teachers and students suffer when classrooms are overcrowded. According to the study's findings, packed classrooms pose serious problems that impair both student learning and the efficacy of instruction. Because of this, teachers are less able to offer individualized instruction, which lowers academic attainment and causes disengagement. Evidence-based tactics including technology integration, improved teacher preparation, and cooperative learning frameworks must be used (Vakili et al. 2024). The study used online based method to collect data while the study in consideration used primary source of data; of questionnaires and interview guides.

The authors of the study, Anaman et al. (2022), conducted research in which they investigated the relationship between school infrastructure and academic attainment in four Senior High Schools (SHS) in Ghana. Constructivism and production theory were used in the research project, which gathered data via the use of questionnaires and interviews. During the course of the study, it was discovered that schools needed theaters, music rooms, church halls, and mosques in addition to sports grounds. The investigation came to the conclusion that classrooms and restrooms needed to be expanded in schools. Based on the findings of the study, it was determined that schools need modern classrooms, spacious scientific laboratories, and a greater variety of extracurricular activities in addition to computer labs and outdoor recreation. According to the findings of the research, the infrastructure of learning, boarding, and extracurricular activities contributed to an increase in student success. According to the findings of the interviews, instructors at SHS considered that school infrastructure contributed to improved academic attainment. For the purpose of improving students' academic performance, the research recommended constructing and situating school buildings in an optimal manner, as well as stocking and extending school labs to accommodate all students. A greater number of computers and supplies are required for the information and communications technology lab at the school.

This study was a multiple-case study and questionnaires, drawings done by the students as well as individual and group interviews were applied to gather information at national department of education. The study developed that educational facilities are relevant in complementing the learning process which means that the absence of facilities has a negative implication on learning process which also affects the quality of learning. In this study, multiple-case study was employed and it was done in South Africa. The information was gathered using national department of education. The current research was able to fill the geographical research in that it was done in the Eastern region of Kenya in public secondary schools and it obtained the primary information that is principals and teachers (HODs) through the use of questionnaires and interview guides.

A study by Yangambi, (2023) intended to find out how the school infrastructure would affect the role of student learning and learning achievement in three schools within the education division of Kinshasa-Ngaliema. Quantitative research was conducted to analyze the data retrieved through a questionnaire that was specifically prepared to study the effect of school facilities in the success of students which was based upon the literature on the same. The research population (N = 108) was confined to teachers working in three official secondary schools in the education division of SDK, Kinshasa-Ngaliema. The easily accessible population was determined by the research interest and based on this, there was the

non-probability sampling called convenience sampling. The findings of the current research demonstrated a number of contributions worthy of note in establishing the fact that school infrastructure plays a significant role in the learning and achievement of students. The finding of this particular paper recommended that all schools needed continuous improvement of school infrastructure in order to maximize on student achievement and teacher delivery. This study differed with the present study in terms of the sampling techniques whereby only non-probability type of sampling was used while the study in consideration used both probability and non-probability sampling.

An investigation that was carried out by Mwikali (2024) investigated the selection of the technique that can be used to identify the use of school infrastructures, as well as the ways in which this may have an impact on the academic performance of students attending a secondary school located inside Makeni County. The study was conducted using a mixed research method research design, specifically a convergent research design, and it was influenced by the Education Production Function Theory. In order to conduct research, questionnaires and interview schedules were used as tools. Validity was determined via the use of expert opinion, and reliability was determined by the use of the test-retest method. The following is a list of the demographic that was targeted: 60 secondary schools in the county, sixty principals, and one hundred and four instructors. Both the basic random method and the stratified sampling technique were used in order to collect samples from the schools. On the other hand, the methodology of sampling teachers and principals was carried out via the utilization of systematic and purposive sampling. The group of 30 county schools, 30 administrators, and 286 teachers was selected as a representative sample for the value. The total number of people that responded was 316. Descriptive statistics, including the mean, percentages, and multiple regression, as well as thematic analysis, were used in order to quantify the extent to which students' academic performance was influenced by the school's infrastructure. The crucial realization that there is a need for the efficient use of school infrastructure in order to assist the accomplishment of success via academic performance was a significant conclusion.

1.6 Research Design and Methodology

The researcher used convergent mixed method research design. The phenomenological research designs were combined with cross-sectional survey design in this study. In the case of quantitative data, cross sectional survey design was applied and in the case of qualitative data, phenomenological research design was applied. Under this method, data was obtained both quantitatively and qualitatively at the same instance, analysis of both types of data took place also at the same instance and decisions were made. To achieve a balance between the strengths of either approach and the shortcomings of both of them, this design relied on quantitative and qualitative differences. The study employed the combination of cross-sectional survey study design, through obtaining data in a time of pointing and the phenomenology study design, through usage of interview guides and observation. The designs provided a comprehensive insight to the research problem than single-sided approach where there was also the possibility of compensating the demerits of applying a single rigor in using an approach of the research problem.

The target population of the research study was seven hundred and eighty-one participants (781), comprising seventy-one public secondary schools in Imenti south Sub County that is: fourteen boys boarding schools, sixteen girls boarding schools and forty-one mixed day schools, seventy-one principals and six hundred and thirty-nine (639) heads of departments (HODs). The principals and HODs were

considered as they are they are saddled with the responsibility of controlling the curriculum and academic concerns of the school and they are assumed to know the factors that have some impact to the performance of the learners.

This being both a mixed research method the probability and non-probability methods of sampling were applied in obtaining the target populations of the research. Participants in the research included all HODs and principals since they are the key bearers of curriculum implementation and academic performance in Secondary schools. The HODs were sampled on basis of type of school by means of stratified method of sampling. They also applied simple random sampling to identify the persons who qualified to participate. The study was conducted among 639 HODs representing Imenti South Sub County and proportions of 9 HODs per school were allowed to take part in the study which gave a total of 189 HODs. The researcher used purposive sampling to sample the principals.

This research used two types of equal data analysis that is; Quantitative data analysis and Qualitative data analysis. The quantitative data was done by inserting a critical analysis of raw data collected to identify mistakes and gaps. All received questionnaires were numbered and the questions in the questionnaire coded so that they could be entered into the data. The coding of the data was achieved by assigning symbols to them in order to place the responses in a few categories. The classification of data to each research variable was implemented through the reduction of data into homogeneous groups with a view of obtaining meaningful relationships. According to the study questions, the data was input into the computer in a methodical way. The data was then presented in tables, graphs, and charts, as well as analyzed and discussed using descriptive SPSS version 24. The data were presented in percentages with the objective of giving reliable descriptions, and the researcher was in a position to come up with conclusions and recommendations based on the responses obtained through the questionnaire. Qualitative data, from principals' interviews were analyzed through Verbatim and development of thematic categories allowing identification of patterns. The study considered ethics before, during as well as after.

1.7 Findings

Instruments Response Rate

The researcher sent 189 questionnaires to department heads, of which 150 (70%) were completed and returned. The researcher conducted interviews with 21 principals, resulting in a total of 171 respondents in the study. Table 1 provides an overview of the response rate.

Table 1: Instruments Response Rate n=171

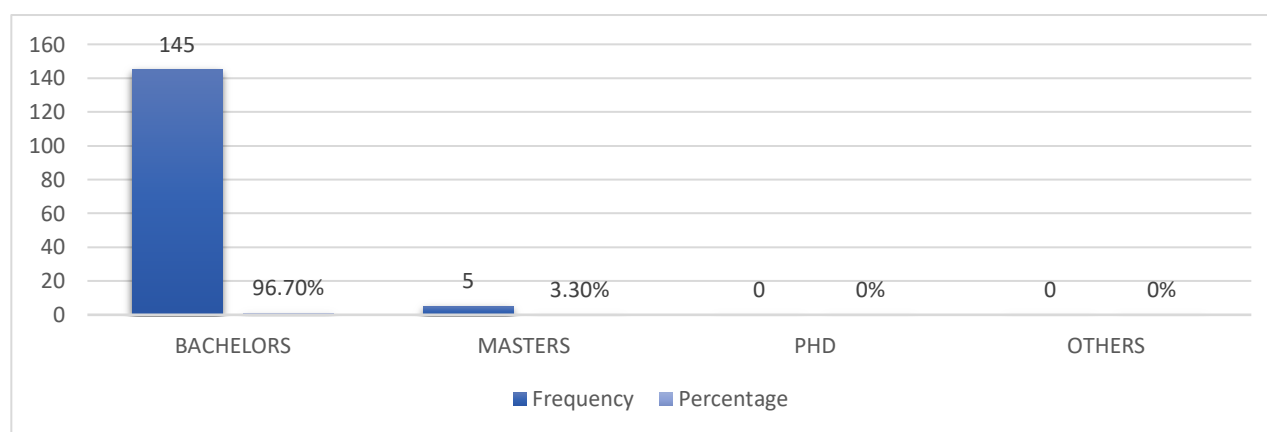
Category	Total Instruments	Returned Instruments	Response Rate
Principals	21	21	100%
Head of departments	189	150	70%
	210	171	81.4%

Source: *Field Data (2025)*

Figure 1: Gender of the Teachers (Heads of Departments)

From the study findings, 56.7 % of the respondents were male against 43.3 % female. Based on the results, it is seen that there is a little higher number of male teachers who are head of departments than there is the female counterpart. The results showed that the area of study was located in the rural location of Kenya which was an interruption factor as a low number of female teachers had been attracted. This could perhaps be because the females teachers prefer to work in the urban centres since there are no sufferings as compared to the male counterparts who can survive anywhere. Loss of female teachers to secondary schools in rural regions has continued to concern education authorities all over the globe as reports indicate that challenges faced in ensuring that these places maintain female teachers, are still rearing their heads.

Level of Education

Figure 1: Level of Education of the Heads of Departments

Source: *Field Data (2025)*

Figure 1 presented the level of education of the heads of departments. The results shows that the 145 which is 96.7% were bachelor holders and only 5 teachers, 3.3% had attained master's level. From the table presented, it is evident that none had attained a doctorate and there was no other level of education. Hence there were only two levels of education attained. From the findings, all the heads of departments (100%) are degree holders. This means that they are well prepared to head the various departments that they have been charged with and are also qualified and competent in the curriculum implementation which helps in academic performance. So, all the heads of department were therefore also in a position to give information related to school factors that influence academic performance.

Table 2: Distribution of Principals' Demographic Information n=21

Variable	Frequency	Percentage	Change
Length of Service	Less than 5 years	8	38.1
	5-10 years	6	28.6
	11-15 years	4	19.1
	Above 15 years	3	14.2
Qualifications	Degree	21	100

Source: Field Data (2025)

For the purposes of this study, length of service was important because it ensured the quality of the services provided. Table 2 shows that the principals who had served less than 5 years were 8 (38.1%). Another 6 (28.6) principals who had served for a duration of between 5-10 years. Further, there were 4(18.1%) principals who had served for between 11 and 15 years. The principals who had served for more than 15 years were 3(14.2%). The research determined that the majority of principals (61.9%) had served in their roles for over five years. The majority of the questioned principals had tenure exceeding five years and have expertise about school characteristics that affect academic achievement. It was crucial to determine how well-prepared the school principals were for their professional service, hence the need to examine their professional qualifications. The outcome of the study indicated that all the 21 (100%) principals who participated in the study were degree holders. This demonstrated unequivocally that they could provide pertinent information for the study and were capable of handling academic issues in their individual schools. It shows that they are fully trained and prepared for the task, this is consistent with Mukindi's (2019) findings, which indicated that in order to implement the curriculum, secondary school principals need both training and experience.

Physical Facilities and Academic Performance

In order to establish how the physical resources influence learners' academic performance in public secondary schools in Imenti south Sub County, Meru County. The heads of departments were tested on 5 likert scale items concerning physical resources. The scale ranged from: Strongly Agree = 5, Agree = 4, Undecided = 3, Disagree = 2 and Strongly Disagree = 1. The researcher used a frequency table to establish the responses concerning physical resources on academic performance. This analysis is presented in Table 3.

Table 3: Respondents' views on physical resources on academic performance in Imenti South Subcounty

n=150

Statement	SD		D		U		A		SA	
	F	%	F	%	F	%	F	%	F	%
There are enough classrooms in the school	60	40	42	28	15	10	22	15	11	7
There is a furnished laboratory in this school	57	38	46	31	11	7	25	17	11	7
There is a functional equipped library in this school	45	30	41	27	15	10	28	19	21	14

There are enough toilets in this school	76	51	41	27	9	6	15	10	9	6
There are enough games facilities in this school	79	53	42	28	11	7	11	7	7	5

Source: Field Data (2025)

Table 3 revealed that most of the respondents 60 (40%) HODs strongly disagreed while 42(26%) disagreed with the statement. Another 22(15%) HODs agreed as 11(7%) strongly agreed that the classrooms are not enough. Hence majority 402(66%) HOD'S disagreed that classrooms are not enough. This implies that classes are not enough in many public secondary schools in Imenti south Sub County, Meru County. Classrooms are places where learners sit to receive instructions. When the classrooms are not enough, then instructions are not well done which negatively influence the performance of learners. Research by Vakili et al. (2024) showed that both teachers and students suffer when classrooms are overcrowded. According to the study's findings, packed classrooms pose serious problems that impair both student learning and the efficacy of instruction. Because of this, teachers are less able to offer individualized instruction, which lowers academic attainment and causes disengagement.

In addition, 57(38%) HODs strongly disagreed as 46(31) disagreed with the statement that there is a furnished laboratory in this school. Another 28(19%) HODs agreed as 21(14%) strongly agreed. A majority of 103(69%) HODs disagreed that there were furnished laboratory in their schools. This implies that many schools in Imenti South Sub County, Meru County do not have furnished laboratory. Another 45(30%) HOD'S strongly disagreed as 41(27%) disagreed that there are functional libraries. 28 (13%) HOD'S agreed as 21 (14%) strongly agreed. A majority of 86 (57%) disagreed that there are functional libraries in their schools. This implies that there are many public secondary schools in Imenti South Sub County, with no functional libraries in their schools. Libraries play crucial role in complementing what is taught in class. Murillo and Román (2011) revealed that the availability of infrastructure such as laboratories and libraries have an impact on the achievement of primary education students.

Besides, 76(51%) HOD'S strongly disagreed as 41(27) disagreed there are enough toilets in the schools. Another 15 (10%) HOD'S agreed while only 9 (6%) strongly agreed with the statement. A total majority of 117(78%) HOD'S disagreed having enough toilets in their schools. This means there are many public secondary schools without enough toilets in Imenti South Sub County, Meru County. Toilets have a significant, yet frequently overlooked, impact on secondary school students' academic achievement and general well-being. Students' health, attendance, focus, and dignity especially for girls are strongly impacted by their availability, accessibility, cleanliness, and privacy. Availability of toilets increases attendance. One of the main causes of absence, particularly among girls during their periods, is a lack of adequate sanitary facilities. Regular attendance at school is encouraged by private, clean washrooms. Toilets are facilities that are responsive to gender. For instance, girls feel more at ease and are less likely to skip school when schools provide separate washrooms for them and males. Availability of enough and clean toilets enhance comfort and focus hence less distraction.

Students who refrain from using unclean or dangerous restrooms may feel uncomfortable and find it difficult to focus in class. Further availability of toilets lead to improved learning environment: Students are better able to concentrate on their studies when they feel safe and at ease. Clean toilets promote hygiene and health hence disease prevention. Maintaining good hygiene lowers the chance of diseases which can cause absenteeism and meager academic results. Toilets are vital parts of a safe, welcoming, and productive learning environment. Maintaining adequate sanitation in schools is an investment in the academic performance, well-being, and dignity of the kids. A research by Okemwa et al. (2020) showed that by providing sufficient facilities like classrooms, labs, libraries, and sanitary facilities, should guarantee a positive teaching and learning environment in public secondary schools.

Most HODs 79(53%) strongly disagreed as 42(28%) disagreed with the statement that there are enough games facilities in their schools. Another 11 (7%) HODs agreed with 7(5%) strongly agreeing. Total majority of 121(81%) disagreed that there are games facilities in their schools. This implies that many schools in Imenti South Sub County lack games facilities. Playgrounds, sports fields, indoor game rooms, and equipment for physical activities are examples of game facilities that have a major impact on improving secondary school students' academic performance. They have a direct and indirect impact on students' social, emotional, and physical health, which promotes improved academic performance. Games facilities encourage physical well-being. For instance, students' physical health improves when they have regular access to games and sports facilities, which promote physical activity. Healthy students perform better academically because they attend school more frequently, have more energy, and are attentive in class. Games facilities enhance improvement of mental abilities. Improved brain function, including enhanced memory, attention, and problem-solving abilities, is associated with physical activities such as sports and games. Exercise improves mental alertness and learning readiness by increasing blood flow to the brain. Games and sports participation lowers stress and anxiety, these are two factors that have been shown to have a detrimental impact on academic achievement. Recreational activities promote a positive learning environment by providing students with a healthy way to release tension and emotions. Generally, games are associated with discipline and time management. Organized sports develop discipline, time management, and responsibility. Students' organizational abilities and general academic discipline are enhanced as they learn to strike a balance between their coursework and extracurricular activities. Many games involve team hence calls for team work. Therefore, game facilities offer chances for team sports and group games, encouraging cooperation, leadership, and communication.

These social skills are crucial for group tasks and classroom instruction. Students' interest and attachment to school can be raised by providing them with access to games and leisure activities. This improves school involvement, attendance, and academic motivation. Game centers support comprehensive education in addition to being used for leisure. They are essential in helping secondary school students succeed academically because they enhance social and cognitive abilities, encourage physical and mental wellness, and boost school engagement. Extra curricula activities are recommended as something that contributes to both physical and mental health of learners. When games facilities are not enough, the physical and mental health of the learners is affected and consequently affects learners' performance. The researcher sought to establish what physical resources they have and how they influence academic performance in their school. The principals made various responses. One of the principals said:

“Physical facilities include classrooms, laboratories and libraries among others. For

instance, spacious and ventilated classrooms influence learners' concentration. Further, when the classes are spacious desks and table fit well and this enables the learners to sit comfortably and they do not get tired quickly. However, I feel our classes are crowded because of the big enrolment that we have. So, desks are squeezed and it becomes difficult to make movements in such classes". (SP6, March 20, 2025)

Another principal added:

"Crowded classes are not comfortable so you find that learners are uneasy and would want to be outside the classroom. I think this affects their concentration span as learners sit there wishing that the lesson should end quickly so that they move out. This eventually influences poor performance". (SP1, March 19, 2025)

Another principal confirmed:

"Physical facilities like laboratories and libraries influence learners' performance a great deal. Therefore, it is not just enough to have the structures but they are not equipped. Laboratories should be well equipped and libraries be stocked with reading materials such as resource books. You find that our laboratories at times lack the necessary apparatus and chemicals which inhibit timely practical lessons. Further, our libraries lack variety of reading materials that is information rich to complement classroom learning". (SP8, March 19, 2025)

Another principal observed:

"Sanitation facilities such as toilets are also other important facilities in the school. Toilets are facilities that can affect health in the event that they are not there or they are not enough. Hence, they can affect the health of learners and lead to high absenteeism. When learners miss school, they miss lessons where by it might be not be easy to catch up with others. Anyway, when learners miss classes, their performance tends to be poor. Our toilets are not enough so when learners are out for break, they have to queue and break ends before they all done. So, students will either go back to class a few minutes late or they have to move out in the middle of the lesson. All these affect the performance of the learners". (SP5, March 19, 2025)

The responses by both the HODs and the principal show that there are no enough physical infrastructure in public secondary schools in Imenti south Sub County, Meru County. Physical infrastructure plays a key role in the teaching and learning process since it creates a good learning environment. When the learning environment is not conducive, it affects the academic performance of the learners. A study by Amadi and Ezeugo (2019) showed that both teachers and students need good physical facilities such as classes, libraries and laboratories among others for effective teaching and learning to take place. The findings of the current study are in line with the findings of Amadi and Ezeugo who revealed that lack of physical resources have adverse effect on the performance of the learners.

Within the Imenti south sub county of Meru County in Kenya, the purpose of the research was to investigate the elements that were selected to have an effect on the academic performance of learners with regard to their progress. The questions that were investigated are as follows: how do the availability of adequate classrooms impact on the academic performance in public secondary schools located in Imenti south Sub County, Meru County, Kenya, how does lack of laboratory influence academic outcomes in public secondary schools in Imenti South Sub County, Meru County, Kenya?

The Theory of Education Production, which was developed by Dewey, Husted, and Kenny, was the theory that was used in the research. According to the idea, the result of education is contingent upon the inputs that are made into education. These inputs might take the shape of physical facilities. The idea that a combination of certain inputs might result in high performance and, hence, good outcomes is the reasoning that underpins this theory.

Based on the findings of the research, it was discovered that schools have limited access to physical resources, which results in a learning atmosphere that is not very beneficial to the learners. The number of classes is insufficient, and it is possible that the students are crammed in the classrooms. It is not pleasant for students to attend classes that are overcrowded, and this may have an effect on the results of their education. Other types of physical amenities, such as labs, libraries, restrooms, and gaming facilities, have the potential to have a detrimental impact on performance if they are absent. The results of the research indicate that all of the criteria that were chosen for this investigation have an effect on the academic performance of public secondary schools, in Imenti South Sub County. Based on the replies provided by the respondents, it was determined that physical facilities such as classrooms, labs, or libraries, are not sufficient enough hence resulting to overcrowding. This disrupts the natural flow of learning, which in turn has a detrimental influence on the academic performance of the students.

1.8 Conclusion

The results of the research indicate that all of the criteria that were chosen for this investigation have an effect on the academic performance of public secondary schools, in Imenti South Sub County. Based on the replies provided by the respondents, it was determined that insufficient physical facilities lead to poor academic outcomes. For example, when the classrooms are not enough and there is a lack of laboratories, libraries, and other amenities then the result is overcrowding, which also leads to fatigue and overburdening the teachers and the lab assistants hence not able to deliver adequately. This disrupts the natural flow of learning, which in turn has a detrimental influence on the academic performance of the learners.

1.9 Recommendations

The researcher made the following recommendations to various stakeholders in light of the data that were obtained from the respondents on the chosen elements that influence the academic performance of learners in public secondary schools located in Imenti South Sub County, Meru County: It is the responsibility of principals to: Be at the forefront of identifying the resources that are required in the school, as well as the speed with which they can address shortages and contact the appropriate authorities when the resources are not forthcoming. Whenever there is a shortage of necessary resources, the school has the ability to make up for it by soliciting the assistance and donations of parents and other caring individuals. The students in the Imenti South sub county will see an improvement in their academic performance as a result of this; Be conscious of the fair resource allocation and distribute equally among the public secondary schools, particularly with the CDF funds, which have been politically mishandled, in order to limit the difficulty of physical resources in public secondary schools in Imenti South. This is especially important in order to address the issue of CDF funds; By utilizing the Ministry of Education to facilitate the majority of the resources that are necessary for secondary school, such as the construction of additional classrooms, laboratories, libraries, and dormitories within schools in order to alleviate the congestion that is caused by a hundred percent transition policy, with the expectation of a smooth transition to the Competence Based Curriculum (CBC).

References

- Adeniran, S. A. (2020). Influence of teaching and learning resources on student's performance in senior secondary schools in Gusau Local Government, Zamfara State. *The Eurasia Proceedings of Educational and Social Sciences*, 18, 124-131.
- Aggrey, D., Quainoo, E., & Aggrey, R. (2022). The utilisation of educational resources on academic achievement: a case of boa Amponsem senior high school and Dunkwa senior high technical school. *Asian Journal of Education and Social Studies*, 26(2), 54-67.
- Agnetta, P. M., Kiende, G. H., & Ogulu, O. N. (2022). Influence of teacher resource utilization on students' academic performance in public secondary schools in Makueni County, Kenya. *Journal of Education*, 2(4), 11-25.
- Alkadri, H., Ningrum, T. A., Santoso, Y., & Afriansyah, H. (2017). *Essentiality of Management of Facilities and Infrastructure toward a Number of Students of Early Years Institution*. Paper presented at the International Conference of Early Childhood Education (ICECE 2017).
- Anaman, P. D., Zottor, D. M., & Egyir, J. K. (2022). Infrastructural challenges and student academic performance: Evidence from a developing nation. *International Journal of Innovative Science and Research Technology*, 7(11), 1189-1200.
- Assumpta, U. I., & Andala, H. O. (2020). Relationship between School Infrastructure and Students Academic Performance in Twelve Years Basic Education in Rwanda. *Journal of Education*, 3(1), 60-74.
- Awuor, C. B. (2018) *effect of subsidized secondary education policy on enrolment, retention and quality of education in public secondary schools of Rongai sub-county, Nakuru county, Kenya*. Unpublished Master Thesis. Egerton University.
- Bagine, P. M. (2022). *Principals' Management Strategies on Students' Academic Performance, in Public Secondary Schools in Imenti North Sub-County of Meru County* (Doctoral dissertation, KeMU).
- Bamson, T., Jamaica, N. J., & Jamaica, P. D. N. J. (2024). Availability of Physical Resources and Academic Performance Of Students In Rivers State Universities. *Sagbama Journal of Review in Education*, 2(1), 139-147.
- Bolman, L. G., & Deal, T. E. (2021). *Reframing organizations: Artistry, choice, and leadership*. John Wiley & Sons.
- Bulowa, J., Maiyo, J., & Likoko, S. (2023). Influence of Staffing Status on Academic Performance in Public Secondary Schools in Trans Nzoia County in Kenya.
- Burke, J. & Christensen, C. (2012). *Educational Research. Qualitative, Quantitative and Mixed Approaches*. Thousand Oaks: Sage Publications Inc.
- Chepkonga, M.C., (2017). *Influence of Learning Facilities on Provision of Quality Education in Early Childhood Development Centres in Kenya*. PHD, Eldoret.
- Creswell, J. W., & Clark, V. L. P. (2017). *Designing and conducting mixed methods research*. SAGE publications.
- Creswell J. W. (2022). A concise introduction to mixed methods research (2nd ed.). SAGE Publishing.
- Creswell J. W. (2020). Introduction to mixed methods research. [Workshop presentation]. City University of New Jersey.
- Etomes, S. E., & Lyonga, F. I. N. (2020). Student-teacher ratio and students academic performance in public universities: the case of the university of Buea, Cameroon. *European Journal of Education Studies*, 7(6).
- Galang, A., Andho, I., Cruz, D.A. & Cruz, R.D. (2021). Investigating Student-Teacher Ratio as a Factor in Reading Performance: The Case of the Philippines. *Journal of Education* vol 7(1), 52-64
- Galle, S. A., Agahu, I. S., & Tigga, M. R. (2020). Impact of Instructional Materials on Students' Academic Performance in Quantitative Economics in North-West State Colleges of Education, Nigeria. *Quest Journals Journal of Research in Humanities and Social Science*, 8(12), 01-10.

- Germain, S., Dushimimana, J. D. (2023). Effect of Teaching and Learning Resources on Students Academic Performance at Selected Schools Kagogo Sector, Burera District, Rwanda. *International Journal of Innovative Science and Research Technology*, 8(3) 2456-2165
- Goodman, M. (2018). *A History of Judaism: From Its Origins to the Present*. Princeton University Press.
- Goshu, B. S., & Woldeamanuel, M. M. (2019). Education quality challenges in Ethiopian secondary schools. *Journal of Education, Society and Behavioural Science*, 31(2), 1-15.
- Hammond, L. M. (2020). *Culturally responsive teaching: Theory, practice, and research*. Teachers College Press.
- Hanushek, E. A., & Wößmann, L. (2007). The role of education quality in economic growth.
- Hussain, S., Hussain, M., Ullah, M., Ayaz, M., Anwar, M., Khan, A. A., & Ullah, S. (2022). Availability and utilisation of multimedia at Higher Secondary School Level in Pakistan and its impact on students' academic achievement. *Journal of Positive School Psychology*, 6(9), 759-768.
- Ikram, M., & Kenayathulla, H. B. (2023). Education quality and student satisfaction nexus using instructional material, support, classroom facilities, equipment and growth: Higher education perspective of Pakistan. In *Frontiers in Education* 8 (1140971). Frontiers Media SA.
- Kamau, A. N. (2021). *Relationship Between Principals' 'strategic Management Practices And Students' academic Performance At Kenya Certificate Of Secondary Education Examination In Murang'a County, Kenya* (Doctoral dissertation).
- Kapur, R. (2019). *Impact of Resource Utilization in Education*: University of Delhi. Department of Department of Adult, Continuing Education & Extension
- KIPPRA (2010). *Kenya Economic Report 2010*, Nairobi: Kenya Institute for Public Policy Research and Analysis.
- Japheth, K. S. (2020). *The Influence of Miraa Trade on Boys and Girls Participation in Primary School Education in Tigania Central Division, Meru County, Kenya* (Doctoral dissertation, University of Nairobi).
- John, U., & Mkulu, D. G. (2020). Influence of school heads' leadership styles on students' academic performance in public secondary schools in Nyamagana District, Mwanza, Tanzania. *International Journal of English Literature and Social Sciences*, 5(6), 2327-2340.
- Kothari, C. R., & Garg, G. (2019). *Research methodology, methods and techniques*. (4th ed.) New Delhi: New Age International Publishers.
- Lani, A., & Pauzi, H. (2024). Instructional leadership: Principal's challenges and solutions in enhancing students' academic performance. *Jurnal Kependidikan: Jurnal Hasil Penelitian dan Kajian Kepustakaan di Bidang Pendidikan, Pengajaran dan Pembelajaran*, 10(3), 1268-1282.
- Li, J., Chan, P. W. K., & Hu, Y. (2023). The effects of principals' instructional leadership on primary school students' academic achievement in China: Evidence from serial multiple mediating analysis. *Sustainability*, 15(3), 2844.
- Llemit, R. (2024). Personnel Management Practices in Relation to Teachers' Teaching and School Performance. *International Journal of English Literature and Social Sciences*, 9(2).
- Malik, A., Elahi, H., & Shah, S. A. (2020). Relationship of Organizational Structure, Physical Facilities and Leadership Practices of Principals with School improvement: An Evidence from Pakistan. *Sjesr* 3(2), 214-222.
- Mallillin, L. L. D., Caday, A. T., & Canda, E. G. (2024). Integration of Leadership in an Organizational Context: A Perspective Tool for Management System. *International Journal of Advanced Multidisciplinary Research and Studies*, 4(3).
- Mogaka, M. M. (2020). Availability And Utilization of School Resources on Students' academic Achievement in Public Day Secondary Schools in Kisii County, Kenya. *Kenyatta*

University.

- Mogaka, M. M, Kariuki S. I. and Ogeta N. (2019). Availability and Utilization of Textbooks on Students' Academic Achievement in Public Day Secondary Schools. *International Journal of Research and Innovation in Social Science (IJRISS)*. 3(2)
- Morgan, H. (2022). Conducting a qualitative document analysis. *The qualitative report*, 27(1),64-77.
- Mugenda, O.M & Mugenda, A.G. (2019). *Research Methods. Quantitative and Qualitative Approaches*. (3rd edn) Nairobi: Laba Graphics Services Ltd.
- Muindi, M. M. (2011). Impact of free secondary education on quality of secondary education in Katangi, Yatta District-Machakos County, Kenya. *Unpublished master dissertation, Kenyatta University*.
- Mulinya, L. C., & Orodho, J. A. (2015). Free Primary Education Policy: Coping Strategies in Public Primary Schools in Kakamega South District, Kakamega County, Kenya. *Journal of Education and Practice*, 6(12), 162-172.
- Musambachime, L. (2022). *The impact of the free education policy on the infrastructure and learning materials at primary school level: a case of selected schools of Solwezi district* (Doctoral dissertation, The University of Zambia).
- Mutunga, B. K. (2023). *Principals' administrative practices influencing students' academic performance in public secondary schools in Yatta sub county, Machakos County, Kenya* (Doctoral dissertation).
- Mutuku, A. W. (2022). *Human resource management practices, school infrastructure and academic performance of secondary schools in Machakos County, Kenya* (Doctoral dissertation, Machakos University Press).
- Mwangi, N. I. & Nyagah, G. (2013). Determinants of Academic Performance in Kenya Certificate of Secondary Education in Public Secondary Schools in Kiambu County, Kenya. *Journal of Education & Practice*, 4, 12 ,
- Mwisa, J. M; Wafula, J. A & Marwa, Z. M. (2022). Challenges Related to the Supply of Textbooks that affect Academic Performance in Public Secondary Schools in Mbooni East Sub-County, Makueni County, Kenya. *Journal of Popular Education in Africa*. 6(11), 5 – 27.
- Mwove, P. N. (2023). *Principals' leadership styles influencing students' academic performance in public secondary schools in Mwala Sub-County, Machakos County* (Doctoral dissertation).
- Ndambuki, B. K. (2020). *Influence of principals' instructional leadership practices on students' academic performance in public secondary schools in Makueni County, Kenya* (Doctoral dissertation).
- Ngeno, V. (2025). Student-Teacher Ratio as a Predictor of Academic Achievements in Public Secondary Schools in Kericho County, Kenya. *International Journal of Research and Innovation in Social Science*, 9(7), 1056-1070
- Ngugi, E.W. (2019). Performance management practices and employee performance in selected public schools in Kiambu County, Kenya. Master of Business Administration (Human ResourceManagement), Kenyatta University. *International Academic Journal of Human Resource and Business Administration (IAJHRBA)*.| ISSN 2518-237
- Nyagah, G., & Irungu, N. M. (2013). Determinants of academic performance in Kenya certificate of secondary education in public secondary schools in Kiambu County, Kenya.
- Okemwa, K.O, Momanyi, M., & Ntabo, A. (2020). Influence of Board of Managements infrastructural Development practices on students' academic performance in public secondary schools in Nyamira County Kenya. *African Education research journal*,8(3), 575-585
- Selvam, S.G. (2017). Empirical Research. A Study Guide. Nairobi: Pauline Publications Africa.
- Stevenson, J. F., Hicks, S. J., & Hubbard, A. (2016). Evaluating a general education program in transition. *New Directions for Evaluation*, 2016(151), 37-51.

- Thuranira, J. M., Ikiara, L., & Thuba, E. (2022). Influence of Teaching-Learning Resources on Academic Performance among Public Primary Schools in Laikipia West Sub-County. *Journal of Education*, 2(3), 1-9.
- Timotheou, S., Miliou, O., Dimitriadis, Y., Sobrino, S. V., Giannoutsou, N., Cachia, R., ... & Ioannou, A. (2023). Impacts of digital technologies on education and factors influencing schools' digital capacity and transformation: A literature review. *Education and information technologies*, 28(6), 6695-6726.
- UNESCO, (2014). Teaching and Learning: Achieving Quality for All. EFA Global Monitoring
- Vakili, R., Vakili, S., Ajilian, M., Masoudi, S. (2024). Overcrowded Classrooms: Challenges, Consequences, and Collaborative Solutions for Educators: A Literature Review. *Journal of Medical Education Bulletin*, 5(2) 961-972. Doi: 10.22034/MEB.2024.492269.1103
- Wambua, M. M., Murungi, C. G., & Mutwiri, C. (2018). Physical facilities and strategies used by teachers to improve pupils' performance in social studies in Makueni County, Kenya. *Int J Pregn & Chi Birth*, 4(6), 241-245.
- Wang, C., Xiao, A., & Zhou, Y. (2024). Teamwork and human capital development. *Journal of Human Resources*, 59(5), 1425-1457.
- Wanjala, G. Baariu, I.M. (2019). "Staffing Practices of the Teachers' Service Commission And Academic Performance in Public Primary Schools in Merti Sub-County, Kenya." *East African Scholars Journal of Education, Humanities and Literature* . 2(11)683-691.
- Yangambi, M. (2023). Impact of school infrastructures on students learning and performance: Case of three public schools in a developing country. *Creative Education*, 14(4), 788-809.